WATERBORNE COATING PAINT PROJECT

LENOVO

GOLDEN BRICK ORCA TANZANIA CO., LIMITED Plot No. 1656502/31079, Block Y, Pangani, Kibaha CBD, Pwani

Contents

INTRODUCTION

Golden Brick Orca Tanzania Co., Limited, headquartered in Dar es Salaam, excels in high-quality, innovative industrial coatings; it emphasizes sustainability and exceptional customer service to meet diverse industrial needs. The company offers eco-friendly industrial coatings, which include epoxies, polyurethanes, acrylics, powder coatings, and heat-resistant varieties. Additionally, it provides custom paint solutions, consulting, and application services.

1.2 Products and Services

Golden Brick Orca Tanzania Co., Limited specializes in providing a versatile range of industrial coatings, including epoxies, polyurethanes, and acrylics, catering to various industrial needs. Its products are eco-friendly and designed to meet the highest sustainability standards, which is a growing requirement in the industry. Additionally, Golden Brick Orca offers bespoke paint solutions alongside consulting and application services, ensuring their clients receive tailored, comprehensive support.

1.3 Market Opportunity

Targeting mid to large industrial manufacturers, Golden Brick Orca Tanzania Co., Limited is entering a Dar es Salaam market projected to expand in five years. This growth, about 8%, is primarily driven by the increasing demand for eco-friendly products and various infrastructure projects. The company's focus on sustainability positions it well to capture a significant share of this expanding market.

1.4 Unique Selling Proposition

Unmatched in customer service and cost competitiveness, Golden Brick Orca Tanzania Co., Limited delivers specialized, high-quality industrial coatings while maintaining a focus on sustainability. The combination of premium products and excellent customer service sets Golden Brick Orca apart from competitors, fostering long-term relationships with clients.

BUSINESS OVERVIEW (INDUSTRIAL COATINGS AND PAINT MANUFACTURING BUSINESS PLAN)

2.1 Business Description

Golden Brick Orca Tanzania Co., Limited is an Industrial Coatings and Paint Manufacturing company based in Dar es Salaam, TX, USA. It specializes in innovative and durable paint solutions for various industrial applications; however, it emphasizes quality and sustainability to meet diverse customer needs. This commitment is essential because customers today prioritize sustainability, although some may overlook the importance of durability.

2.2 Mission Statement

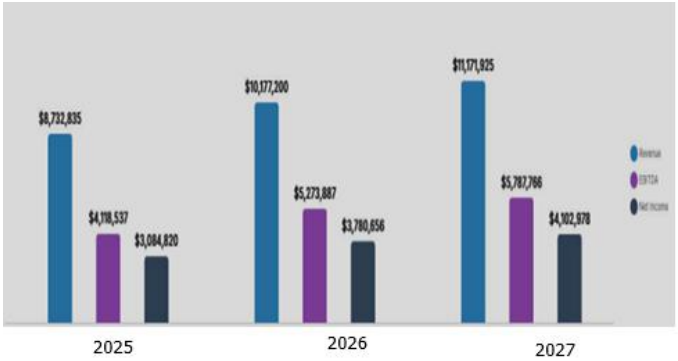
Golden Brick Orca Tanzania Co., Limited is dedicated to delivering high-quality, sustainable industrial coatings and paints. This commitment fosters innovation and excellence; however, it also emphasizes exceptional customer service. Although the company thrives on these principles, it recognizes its responsibility to contribute positively to the community and the environment. Because of this, Golden Brick Orca aims to balance profitability with social responsibility, ensuring a brighter future for all.

2.3 Legal Structure

Golden Brick Orca Tanzania Co., Limited functions as a Limited Liability Company (LLC); it provides flexibility, liability protection, and efficient tax options. This structure is ideal for supporting growth and innovation in the industrial coatings sector; however, it also presents challenges. Although there are benefits, such as tax efficiency, the complexities of compliance must not be overlooked. Because of these factors, careful management is essential for sustained success.

2.4 Financial Performance

Golen Brick Orca Tanzania Co., Limited, projecting $15 million in revenue, expects to achieve a 12% net profit margin within three years. However, a $2 million investment is necessary due to an anticipated four-year payback period. This projection is ambitious; although challenges may arise, the potential for success remains significant, yet uncertain. This forms a vital component of the Industrial Coatings and Paint Manufacturing Business Plan, showing potential stakeholders the promising financial outlook and critical need for investment.



MARKET ANALYSIS

3.01 Introduction

The paint industry in Tanzania is driven by consumption and growth in both Decorative and Protective Segment.

The factors for growth of the market includes growth in real estate construction, automotive industry, industrial sector and disposable income and increased Government expenditure on infrastructure. Tanzania is an emerging economy with a rising GDP and the market is optimistic about its impact on the paint industry. For new constructions, paint has become an integral component of the development stage. The per capita consumption of paint in Tanzania is about 3 kg against 10-13 kg globally. The low per capita consumption of paints in Tanzania provides enough opportunity for further growth in this sector.

The paints and coatings industry can be categorized into three markets:

- Decorative/ Architectural
- Protective/Industrial
- Special purpose coatings

Decorative coating is the largest segment followed by protective/industrial coatings and special purpose coatings. The protective/industrial coatings segment was driven by rise in industrial production and automotive OEM sector.

Rapid urbanization and availability of easy housing loans have become the prime drivers of growth in the decorative paint segment, which comprises about 80% of the Tanzanian Paint industry.

3.02 Global Paints Scenario

Due to the huge demand in the construction industry, the global paints and coatings market is still growing. In 2014, sales of global paints reached 43.38 million tons, with total sales of about $ 132.3 billion. The architectural coatings sales was 21.69 million tons, accounting for 50% of sales of $63.5 billion; industrial coating was 12.58 million tons, accounting for 29% of total sales of $33.07 billion. The remaining 21% accounts for other paint sectoTshs.

3.03 Domestic Paint Scenario

The current Tanzanian Market size is under 4 million tonnes per year

Following are the key growth drivers:

- Growth in real estate construction sector @ 12%
- Growth in automotive industry accompanied by rising disposable incomes @ 10%

3.04 PROCESS DESCRIPTION

3.04.01 General

Paint manufacturing is a process which aims at converting a wide range of raw materials into a range of finished goods that meet the sophisticated needs of customers. Making up the final suspension or emulsion from predetermined ingredients is by itself a simple operation, but the establishment of formulation ratios, exact recipes and the choice of appropriate pigments, binders, additives etc is a expertise of this business.

3.04.02 Major Constituents of Paint

Water based Decorative Paints are manufactured from four major constituents; Pigments (5-15%), Emulsion (30-35%), Water (25 - 35%), Additives (3-5%) and Extenders (5-10%).

03.04.01 Based on End-use

Paints tend to be classified into two broad groups in the market as per their end use applications. These are:

(i) **Decorative Paints** which are mostly household paints used for indoor and exterior wall, wood & metal finishing purposes. They are based on various types of binders, essentially synthetic polymers such as styrene acrylics, pure acrylics, versatate blends, acetates and alkyds. These binders give good film coverage in various types of paints including high gloss and enamels.

Industrial Paints are pigmented liquids or powders that are used to protect and/or beautify substrates. Industrial paints are used in the aerospace, architectural and construction, automotive, electrical and electronics industries. They are also used in marine, medical, military, optical, pharmaceutical, semiconductor, and textile applications. In Tanzania, the major industrial paints are used for automotives and a good amount of them are used for coil coatings

03.04.02 Paint manufacturing Process

The key operation in paint making is the dispersion of fine pigment particles into a liquid polymer binding medium, using high speed dispersers which wet the pigments. A typical process flowsheet for the paint plant has been shown in below diagram.

Making paint consists of following carefully, a series of systematic procedures which have been described below :

1. Raw material testing and storage.
2. Weighing and transfer of appropriate raw materials into the mill.
3. Dispersion / Grinding operation

4. Stabilizing the dispersion.
5. The dispersion is pumped into the blending / mixing tank.
6. Incorporation of other additives by mixing to a uniform state.
7. Tinting is carried out at this stage if required.
8. Samples are taken for colour evaluation and analysis of other rheological properties of film.
9. Final check for viscosity, density etc is carried out. Eventual addition of additives/water, and or driers if necessary to meet viscosity and drying specifications.
10. Material is strained and filtered for filling into cans.
11. Product is gravimetrically or volumetrically filled into cans and labelled.

Storage in warehouse & dispatch to customeTshs.

The main general process steps in paint manufacturing are as below:

a. Dispersion stage
b. Scaling up stage/sieving (Blending/Mixing to required specifications)
c. Quality Control stage
d. Packaging and Shipping.

a) **Dispersion Stage**

This stage is the most essential and in fact determines the paint quality. It should also be pointed out that pigment is the most expensive and important paint component and is usually introduced into a finished product system in the physical state of dispersion.

A great deal of attention should be accorded to the process of dispersion in order to achieve maximum pigment utilization, that is optimum hiding power (opacity) and colour.

Dispersion is composed primarily of a combination of pigment, binder and water. In addition to these, three main components, dispersion contains a fourth ingredient called additives.

This dispersion process can be separated with three distinct phases. In practice, these stages overlap and occur simultaneously rather than strictly consecutively during the dispersion process. These three phases are:

1. Wetting
2. Particle separation
3. Stabilization

Wetting involves replacement of the pigment – air and pigment – moisture interface with the pigment – emulsion interface. Wetting can be accomplished by mixing which permits intimate physical contact between the exposed pigment surface and the liquid media.

The particle separation phase involves the reduction of the pigment particle size during the dispersion process.

Although the primary pigment particle size is either equal to or more commonly below that size required to be achieved during dispersion, therefore, the phase of dispersion process is to accomplish reduction of agglomerate and aggregate sizes. Ideally, this phase which can be called deagglomeration or deaggregation,

separates the agglomerates and aggregates completely into primary pigment particle during this stage.

The third phase of dispersion process is stabilization and it involves the development and maintenance of a homogenous distribution of pigment particles in the liquid media. Subsequent to deagglomeration, particles could dump together and form floe, floccules or flocculates. Thus, this is the process of stabilization.

However, the dispersed raw materials (pigments, binder, water and additives) are charged into the processing equipment or better called dispersers and allowed to disperse for a minimum of 45 minutes. For high viscosity range required, 42% by wt of the total binder needed are employed at this stage with 100% by wt of the total pigment needed.

A satisfactory dispersion is confirmed by the quality control department after test.

b) Sieving and Scaling Up Stage (Blending / Mixing to required specifications)

Sieving involves the filtration of unused agglomerates, if any, thereby allowing only the passage of pure paint.

The purpose of scaling up is to bring the paint to the required standard, quality and workable viscosity. This is achieved by adding the remaining emulsion, water and then the paint additives and driers respectively into the paint slurry system. The paint is then transferred to a storage tank inside the production area.

c) Quality Control Stage

Quality control is an important parameter in paint production. This is done in various stages of the process starting from dispersion till final shipment.

This stage provides the desired end point. But before this, the paint content from the dispersion section will be transferred to the mixing machine through a tube. The mixing machine or low-speed mill is fed by means of a pipe from the dispersion container. Then, the binder and more bodying elements are added. These agents will make up for "adjustments" in volume and quality of paint, where eventually if mix is too thick, it will be made less viscous by adding a thinning agent.

In the quality control stage, along with the quality or property, the degree of dispersion must be measured and ascertained.

To measure degree of dispersion, either a fineness or tint strength as a quality control test can be used. Fineness method is the one extensively used by many paint factories.

d) Packaging and Shipping

From the storage tank, the paint is then packed and subsequently shipped/Transported. All paint packaging materials must form an effective barrier to skinning (oxidation drying of paint at the wrong place and at the wrong time) moisture, dirt and other micro-organism which might act on the paint. Hence, paint products are packed in cans made of tins or they may be packed in plastics made of P.V.C or polyethylene.

The common container sizes used in the paint industry range from 20, 10, 4, and 1 litre, and then sub-litre sizes of 500, 250 and 100 mls. The 20 and 10 litre sizes are referred to as "pails", and from 4 litres down as "tins" or "cans". Plastic containers are also used, particularly for latex paints. Metallic containers need to have their interiors coated.

03.04.03 Labelling of Paints

Successful marketing of paints depends to some extent on presentation. Cans used for holding paints can thus be lithographed with multiprint colours, or pasted with printed paper material.

4.01 Waterborne Paints

4.02 Process Route Description

Dispersion

Measured quantities of raw materials – pigments, extenders, water and small additives are added as per the batch card (recipe sheet), into the dispersion equipment (high speed disperser), to manufacture slurry.

The disperser is run for specified time, as required by the recipe. The finish and particle size distribution of the slurry is checked. The slurry is transferred to mixing tanks. The mixing tanks are intermittently agitated.

Mixing

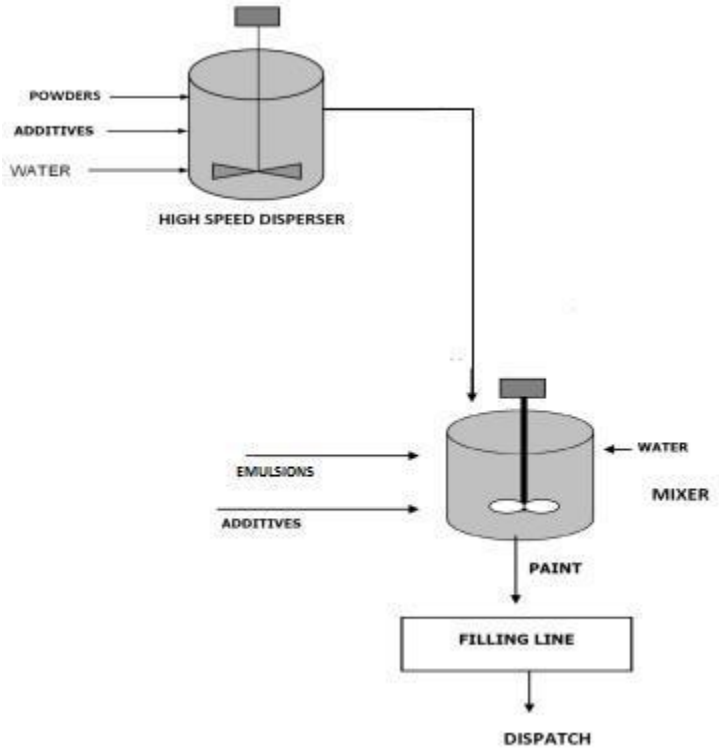
Other raw materials like balance emulsion resin, water, and other additives are also measured and added into the mixers, as per the recipe.

The mixer is run for specified time as required by the recipe to prepare the paint. The density, viscosity, strength are checked in laboratory.

Filling

If the paint meets all quality parameters in the mixer, the paint is filled into the containers of different pack sizes – 250 ml, 500 ml, 1litre, 4litre, 10litre and 20litre.

Typical Block Diagram of Waterborne Paints Process



4.03 Tentative Product Mix

The product mix considered for the proposed paint plant:

S.N.	Type	Unit	Ph-I	Ph-II	Total
A.	**Paints**				
1.	Exterior Paints	KL	52,000	52,000	104,000
2.	Interior Paint	KL	43,000	43,000	86,000
3.	Enamels & Varnishes	KL	5,000	5,000	10,000
B.	**Copolymer Emulsions** (for water based paints)	Tons	**-**	40,000	40,000

A typical equipment list for the plant is given in table 03.01

Table - 3.01

Sr. No.	Equipments
1.	Raw Material Handling and Storage System
2.	Emulsion, Resin and Monomer Storage Tanks
3.	Hoisting & Handling
4.	Weighbridge
5.	Dispersing Equipment
6.	Milling Equipment
7.	Mixing Equipment
8.	Batching Screw
9.	Pneumatic Diaphragm Pumps
10.	Centrifugal Pumps
11.	Water ring vacuum pump
12.	Automation system
13.	Area Lighting
14.	Air compressors / Instrument Air system
15.	Bag Filters & Dust collectors
16.	Emulsion & Water storage tanks
17.	Automatic Filling Machine and packing system
18.	Automated storage & retrieval system
19.	Cooling Tower/ Chilling unit
20.	Soft Water Plant
21.	Electricals, Automation & Controls
22.	Firefighting & Safety Equipment
23.	Lab Equipment
24.	Pollution Control System

25.	DG Set
26.	Effluent Treatment Plant

5.01 RAW MATERIAL REQUIREMENT

5.02 General

The main raw material for the proposed plant would be pigment, emulsion, additives, extenders, monomer & water. The plant would produce water based paints to cater to the market requirements.

5.02 Requirement of Raw Material

Catalogue of waterborne coating raw materials and equipment

I. Paints and fillers

1. Rutile Titanium Dioxide: Rutile Titanium Dioxide
2. Talcum Powder: Talcum Powder
3. Expanded earth: Bentonite
4. Heavy Calcium Carbonate: Ground Calcium Carbonate (GCC)
5. Calcined Kaolin: Calcined Kaolin
6. Washed Kaolin: Washed Kaolin
7. Barium Sulfate: Barium Sulfate
8. Mica Powder: Mica Powder

9. Pearlescent Powder: Pearlescent Pigment

10. Natural Colored Sand: Natural Colored Sand

11. Wollastonite Powder: Wollastonite Powder

II. Polymers and membranous substances

1. Pure Acrylic Emulsion: Pure Acrylic Emulsion

2. Styrene - Acrylic Emulsion: Styrene - Acrylic Emulsion

3. Epoxy Resin: Epoxy Resin

4. Epoxy Curing Agent: Epoxy Curing Agent

5. Silica Sol: Silica Sol

III. Additives

1. Water Based Dispersant: Water-based Dispersant

2. Water Based Wetting Agent: Water-based Wetting Agent

3. Water Based Defoamer: Water-based Defoamer

4. Waterborne Bactericide: Water-based Bactericide

5. Waterborne Mildewproof Agent: Water-based Mildewproof Agent

6. Water Based Thickener: Water-based Thickener

7. PH Regulator: pH Regulator

8. Alcohol ester 12: Texanol (2,2,4-Trimethyl-1,3-pentanediol monoisobutyrate)

9. Waterborne Multicolor Protective Gel: Water-based Multicolor Protective Gel

10. Wax Emulsion: Wax Emulsion

11. Antiflash Rust Agent: Anti-flash Rust Agent for Water Rust

IV. Cellulose and related materials

1. Hydroxyyethyl Cellulose: Hydroxyethyl Cellulose (HEC)

2. Hydroxypropyl Methyl Ciliomycin: Hydroxypropyl Methyl Cellulose (HPMC)

3. Calcium Formate: Calcium Formate

4. Starch Ether: Starch Ether

5. Latex Powder: Redispersible Polymer Powder

V. Solvents and Others

1. Ethylene Glycol: Ethylene Glycol

2. Waterborne Color Paste: Water-based Color Paste

VI. PRODUCTION EQUIPMENT

1. High-speed Disperser: High-speed Disperser (with stainless steel mixing parts)

2. Filters: Filter

3. Horizontal Mixer: Horizontal Mixer (with stainless steel mixer shaft / blade)

4. Granulator: Granulator

5. Electronic Scale: Electronic Scale

6. Forklifts: Forklift

7. Grinding machines: Grinder

8. Stainless Steel Storage Tank: Stainless Steel Storage Tank (for storage of raw materials, semi-finished products or finished waterborne coatings)

9. Stainless Steel Reaction Kettle: Stainless Steel Reactor (for chemical reaction or mixing process in coating production)

10. Ultra-fine Grinder: Ultra-fine Grinder (used to crush the material to a finer particle size, improve the quality of the coating)

VII. Experimental equipment

1. Small High Speed Disperser: Small-scale High-speed Disperser

2. Scrub Resistance Tester: Scrub Resistance Tester

3. Fineness Gauge: Fineness Gauge

4. PH Acidimeter: pH Acidimeter

5. Hiding Power Tester: Hiding Power Tester

6. UV Infrared Light Aging Chamber: UV Ultraviolet Light Aging Chamber

7. Constant Temperature Overflow Pot: Constant Temperature Overflow Pot

8. Water Permeability Tester: Water Permeability Tester

9. Black and white paper: Black and White Paper

10. Film Preparation: Film Applicator

11. Leveling Tester: Leveling Tester

12. Colorimeter: Colorimeter

VIII. Auxiliary equipment

1. Hair Motor: Generator

2. Color Mixing Machine: Color-mixing Machine (with stainless steel mixing unit)

3. Packaging Buckets: Packaging Buckets (for finished latex paint packaging)

4. Capping Machine: Capping Machine (for sealing drums)

PROPOSED SITE

6.01 Site Location

The Paint Plant will be situated at Plot No. 1656502/31079, Block Y, Pangani, Kibaha CBD, Pwani.

06.02 SERVICES, UTILITIES & MANPOWER REQUIREMENT

General

Besides raw material, other major requirements of the plant are water & power.

06.02.01 Water System

Make-up water for the proposed water based paint plant is about 530 KLD which will be drawn from the existing network.

Water is required for process needs, cooling needs, fire-fighting,

drinking needs, horticulture

etc. of the plant.

06.02.02 Electrical Services

The total estimated power requirement of the proposed plant is about 5.5 MW and will be met from the nearby Sub-station.

The plant envisages the electric power supply & distribution for a Decorative Paint Plant along with auxiliary drives, composite grid

earthing, illumination system for in plant and outdoor area, road lighting.

The consumption of major utilities is as per the table below for full capacity at 200,000 KLPA

S.N.	Item	Total
1.	Power	5.5 MW
2.	Water	530 KLD

6.02.03 Cooling Water Pump House

A cooling water pump house shall be considered. The industrial water pump, emergency pump, hot & cold water pump, Fire fighting pumps, necessary electrics and instrumentation will be installed inside this pump house.

06.02.04 Fire Fighting

A covered fire water sump has been considered for storing water for fire fighting. Make up water will be added to fire water sump by gravity from makeup water storage tank. This water will be for external as well as internal hydrants. A ring main is considered for the plant.

06.02.05 Plant Automation

It has been envisaged that Level-1 and Level-2 automation systems will come along with the various equipment/facilities to provide process and equipment level control including supervisory automation functions. In addition, higher-level computer system will be provided

to cater to the needs for Production Planning & Control (PPC) as well as Management Information System (MIS) for the whole plant.

06.02.06 Communication System

Telephone system will be provided for communication inside as well as outside the plant. Telephone system shall comprise one Electronics Private Automation Branch Exchange (EPABX) of required line capacity and associated cable network along with Press-to-talk system, CCTV, VHF wireless system as required.

06.02.07 Repair and Maintenance Facilities

In order to ensure continuous operation of various plant and equipment the works will be provided with adequate repair and maintenance facilities which will help to maintain the various equipment in smooth running condition.

06.02.89 Warehouse

A central warehouse will be provided to keep paint constituents and consumables and another ware house will be provided as product storage. For this purpose, a structural building has been envisaged. A Part of the building will be raised for easy manual loading and unloading of the materials from trucks. Forklifts will be used for movement of materials inside the stores building.

It is proposed to install an automated storage and retrieval system (ASRS) system. An ASRS consists of a variety of computer-controlled systems for automatically placing and retrieving loads from defined storage locations. Automated storage and retrieval systems are typically used in applications where there is a very high volume of loads being moved into and out of storage.

06.02.09 R & D Facility

It is proposed to set up a R&D facility in the proposed plant. This will help us to make new developments in paint products. A major R&D facility is proposed to simulate and test various aspects of paint performance/formulation.

06.02.10 Laboratory

To meet the analytical and testing needs of the proposed paint product, laboratories as mentioned below will be provided in the plant. The following are the major equipment for the proposed laboratory

Sl. No.	Description
1	Colour Computer & Matching Cabinet
2	Brooke Field Viscometer
3	Burst Strength Tester
4	Glossometer (Sheen)
5	Hand Pull Strength Tester
6	Sheen Heggmen Guage (0 To 8)
7	Ford Cup
8	Bar Coat Applicator(150 Micron)
9	Bar Coat Applicator(500 Micron)
10	Descicator
11	Digital Ph Meter

12	Hot Air Ovens
13	Mini H.S.D
14	Muffle Furnace
15	Penetrometer
16	Reflectance Meter
17	Scratch Hardness Tester
18	Spectrophotometer
19	Stormer Viscometer (Sheen)
20	Stop Watch
21	Various Seives
22	Thermometer (Mercury)
23	Water Bath
24	Vacuum Pump
25	W.P.L Cup (100 Cc)
26	IR Chamber

06.02.11 Ancillary Facilities

Necessary ancillary facilities such as administrative building, canteen, parking area, first-aid station and fire-station etc. shall be provided.

06.02.12 Drainage and Sewerage System

Open type drain has been envisaged for the plant storm water drainage. The storm water drain will be led to a rain water harvesting

tank. This water will be reutilized. The overflow from this tank in monsoon season will be suitably connected to a natural nallah, running nearby.

Sanitary faecal sewage will be collected from the ablution blocks through pipeline and the same will be connected to a sewage treatment plant. The effluent from the sewage treatment plant will be utilized for the development and maintenance of greenery.

06.02.13 Roads

Adequate plant road system will be provided considering the types of vehicles and traffic volume. Adequate vehicle parking facilities and road weighbridges will be provided.

06.02.14 Manpower Requirement

The proposed plant will not only require management and executive manpower but also, skilled, semi-skilled, unskilled and clerical manpower. However, a number of jobs like major repair and maintenance, cleaning, transportation and loading/unloading of bulk materials, etc. will be done by engaging outside agencies.

The total direct manpower required for the proposed plant will be about 55 (45 at site & 10 for marketing, warehousing, logistics, accounts, taxations etc. at multiple locations).

7.01 ENVIRONMENTAL MANAGEMENT

This chapter briefly outlines the nature and sources of pollution and also suggests broad environmental protection measures to be adopted for limiting pollution within permissible levels.

07.01 Nature of Pollution

The major wastes that the paint industry produces are empty paper cartons, gunny bags, dust from air pollution control equipment, off-specification paint, spills and sludge from treatment plants. The disposal methods for the wastes are given in subsequent sections.

07.02 Pollution Prevention and Control Measures

In consideration of the above stated pollution potential of the paint plant, suitable mitigation schemes are envisaged in order to control environmental pollution within the permissible norms and keep the environment fairly clean.

07.02.03 Industrial waste management

During paint manufacturing process, various effluent streams will be generated at various sources due to manufacturing activities. Effluent streams will be generated from paint manufacturing process during activities such as cleaning of mixers, equipment cleaning, calibration of vessels, cleaning of line flushings barrels and containers etc. In addition to above, the utility waste water streams viz. cooling tower blow down, backwash of soft water plant will also be generated. There will not be any effluent generated during reaction. The liquid effluent will be treated in Effluent treatment plant.

Other industrial wastes like process waste/ residue/ paint sludge will be stored in designated place in factory premises and disposed off through authorized TSDF as a land filling. In case the contents of the packages are hazardous, their disposal will be done carefully through TSDF or through authorized recycler.

07.03. Solid waste management

There are two types of solid wastes generated – process wastes and non process wastes, which may or may not be hazardous in nature. There is no solid waste generation during manufacturing process itself. The waste water from manufacturing process, washings, etc. will get treated in the effluent treatment plant and that will give rise to sludge. The other type of solid wastes generated will include the dust collected from dust collectors, empty barrels (metal and plastic), bags, sweepings and other biodegradable waste from canteen. Solid waste of organic nature such as canteen wastes, STP sludge, sweepings etc will be composted or vermin composted for use as manure in the greenbelt and lawns. Other non hazardous waste like empty container, bags, paper/cardboard, metal , wooden waste etc will be sold to external agency.

The hazardous waste will be disposed off through TSDF as a land filling.

07.04 Sewage Treatment Plant :

Sewage source : Sewage from factory

Sewage generation : 6 KLD

The sewage will be suitably treated to meet the statutory requirements.

End use of treated sewage – Gardening

07.05 Rain Water Harvesting :

The recharge structures will be constructed as per the site requirement. Necessary connecting drains shall be provided for the runoff to be diverted to the recharge structures from roof top/ sheds; paved area and green belt separately to recharge structures. Necessary provision of storm water drains and settling chambers shall be made to ensure that the rainfall runoff generated from the plot area is suitably diverted to the proposed recharge structures. Necessary provision of bye-pass and sluice arrangements shall be made to ensure that the contaminated water is being avoided to be diverted to these recharge structures. The designs & the work will be undertaken by the specialized agencies so that the objective of the rain water harvesting is implemented in true spirit & due benefits are accrued. Besides this, the following points will be also being taken care of after commissioning of the plant:

- All the storm water drains/ catchment area will be cleaned prior to monsoon. Necessary repair/maintenance will be carried out wherever required.
- Before the onset of the monsoon all the catchment area considered for recharge will be cleaned. The recharge structures will be kept in operation during the monsoon season only so as to avoid any contamination.
- A mesh will be provided on the mouth of the inlet to discard the debris entering into the recharge trenches. A sluice/ shutter will be

provided to ensure that no water other than rainwater is diverted to the recharge structures.

- After the first rain the de-silting pit will be cleaned and subsequently this will be repeated on the onset of next monsoon.
- Prior to monsoon season the top most layers in the pit will be scrapped and replaced with the fresh & cleaned one, if necessary.

07.06 Solid and Hazardous Waste Management :

Method of Disposal of Hazardous Waste

The hazardous waste will be sent for disposal into hazardous waste landfill site authorized by the State Government.

07.07 Mitigation Measures to be adopted

- Hazardous waste will be sent to an authorized site
- All hazardous wastes shall be securely stored, under a shed for eventual transportation to the authorized.
- The solid domestic waste shall be stored within the premises temporarily and then sent to common solid waste disposal facility.

07.08 Plant safety

Plant safety measures would form an integral part of the environment protection plan of the proposed plant. Workers' safety would be of highest degree of concern so as to avoid any form of personal injury or untoward accident. In-build safety features of the plant and machinery would be made adequate in order to avoid hazardous events causing damage to the life and property.

07.09 Greenbelt

About 33 % of green belt would be created for gardening and tree plantations. This would prevent the fugitive dust emissions. Unpaved areas, if any, within the plant boundary would be provided with grass cover.

This would not only act as 'lung space' but would also improve the plant aesthetics.

PROJECT IMPLEMENTATION

8. 01General

Implementation of the Waterborne Paint in phases is a challenging task and calls for meticulous planning, scheduling and monitoring to realize the project goals in budgeted time frame. A highly experienced team is available with GOLDEN BRICK ORCA TANZANIA CO., LIMITED to implement the project.

8.1 BLOCK CAPITAL COST

The estimated block capital cost outlay for the paint plant is estimated as **USD.2,000,000**

8.2 Staffing & Training

Efficient (and knowledgeable) staff are essential to our operations at Golden Brick Orca Tanzania Co., Limited; we employ a diverse team of chemists, production technicians, quality control specialists and logistics managers.

Recruitment : Our hiring process targets individuals with strong backgrounds (in) chemical engineering, industrial manufacturing and environmental safety. However, this process can be challenging (because) we seek candidates who not only meet technical qualifications but also possess the ability to adapt. Although we face obstacles, we remain committed to finding the right talent; thus, our focus on comprehensive evaluations (is crucial).

Training :

Onboarding program: New employees (1) undergo a comprehensive onboarding process that includes safety training, equipment handling and introductory courses on industrial paint manufacturing processes.

Continuous education: Staff receive ongoing training through workshops, seminars and certifications in the latest manufacturing technologies and environmental regulations.

Leadership development: We offer courses and mentoring for employees aiming to transition into leadership roles; however, this can be challenging for some. Although the program is well-structured, some individuals may struggle with certain aspects because they lack prior experience.

8.03 Operational Process

Golden Brick Orca Tanzania Co., Limited' operational process is streamlined (to ensure) high-quality production and minimal environmental impact.

Raw Material Procurement : We source raw materials from reputable suppliers who ensure consistency and compliance with environmental standards.

Mixing and Formulation : Our chemists design formulations tailored to specific (industry applications). Ingredients are carefully mixed in industrial-grade mixers under controlled conditions.

Quality Control : Each batch undergoes rigorous quality testing, including viscosity, adhesion and chemical resistance tests, to meet the client's requirements and regulatory standards.

Packaging and Distribution : Finished products are packaged using automated systems and prepared for distribution. Our logistics team ensures timely delivery to clients, optimizing routes and minimizing carbon footprint.

Environmental Waste Management : Adhering to strict environmental practices; we manage waste through recycling programs and waste treatment systems, minimizing landfill contributions. However, this process is not without challenges. Although we strive for excellence, maintaining compliance can be difficult because of changing regulations.

8.04 Equipment & Software

To achieve operational excellence (1), Golden Brick Orca Tanzania Co., Limited employs advanced equipment (such as cutting-edge technology) and software systems that ensure precision. Efficiency is crucial; however, this approach also allows for adaptability in various circumstances. Although the company prioritizes quality, it must also consider cost-effectiveness, because innovation is essential for sustained growth.

Essential Equipment :

Industrial Mixers (for precision blending of paint and coating formulations) are essential; however, they must be maintained properly.

Automated Filling and Packaging Systems ensure efficient and consistent packaging. This is crucial, because a lack of efficiency can lead to waste.

Quality Control Instruments, including spectrophotometers and viscometers (which are vital for rigorous testing), play a significant role in the production process.

Waste Treatment Systems are also important, although they often go overlooked, as they provide environmental control for managing waste byproducts effectively.

Software :

ERP Software (integrates various operational aspects) such as inventory management, supply chain logistics and financial reporting.

Quality Management Software: it is for tracking product specifications and ensuring compliance with industry standards.

Design and Formulation Software assists in developing new products; optimizing formulations is crucial.

CRM Software manages customer interactions and feedback—this enables continuous improvement.

In conclusion, Golden Brick Orca Tanzania Co., Limited operates (with a deep commitment) to quality, safety and sustainability. Our dedicated staff, efficient processes and advanced technology enable us to deliver exceptional products to the industrial coatings market; however, achieving excellence requires ongoing effort.

FINANCIAL PLAN FOR GOLDEN BRICK ORCA TANZANIA CO., LIMITED (Waterborne Coating Paint)

9.01 Introduction

Golden Brick Orca Tanzania Co., Limited (headquartered in the bustling hub of Dar es Salaam, Tanzania) operates in the Industrial Coatings and Paint Manufacturing sector. As a starter in providing high-quality coatings solutions, our financial plan aims to sustain profitable growth, manage cash efficiently, and ensure robust financial health. This plan outlines our approach through a detailed examination of the profit and loss statement (cash flow statement, balance sheet) and financing needs. However, challenges may arise because of market fluctuations. Although we remain optimistic, there are factors to consider that could affect our trajectory. This plan is central to our Industrial Coatings and Paint Manufacturing Business Plan, which is designed to align with market demands and company objectives.

9.02 Profit and Loss Statement

Profit & Loss *(in $)*	2025	2026	2027
Revenue	$ 6,926,340	$ 11,424,120	$ 13,056,585
Revenue Growth	-	*64.94 %*	*14.29 %*
Cost of Goods Sold	$ 650,382	$ 1,136,779	$ 1,304,478
Gross Profit	**$ 6,275,958**	**$ 10,287,341**	**$ 11,752,107**
Gross Profit Margin	*90.61 %*	*90.05 %*	*90.01 %*
Operating Expenses	$ 4,299,734	$ 6,929,591	$ 8,048,872
EBITDA	**$ 1,976,224**	**$ 3,357,750**	**$ 3,703,236**
EBITDA Margin	*28.53 %*	*29.39 %*	*28.36 %*
Depreciation	$ 8,000	$ 16,000	$ 29,000
Operating Profit	**$ 1,968,224**	**$ 3,341,750**	**$ 3,674,236**
Operating Profit Margin	*28.42 %*	*29.25 %*	*28.14 %*
Sale of Property, Plant & Equipment	$ 0	$ 0	$ 0
Interest Expense	$ 25,624	$ 30,368	$ 19,100
Profit Before Tax	**$ 1,942,600**	**$ 3,311,382**	**$ 3,655,136**
Profit Before Tax Margin	*28.05 %*	*28.99 %*	*27.99 %*
Income Tax	$ 446,798	$ 761,618	$ 840,681
Net Income	**$ 1,495,802**	**$ 2,549,764**	**$ 2,814,455**

The profit and loss (P&L) statement is crucial for assessing the financial performance of Golden Brick Orca Tanzania Co., Limited over specific accounting periods. It reveals the company's ability to generate profit by increasing revenue, reducing costs, or both. For the upcoming fiscal year, Golden Brick Orca Tanzania Co., Limited projects a double-digit revenue growth driven by an expanding product portfolio and entry into new markets.

Key components include: Revenue Projections: Expected annual growth of 10%, fueled by increased industrial demand and strategic partnerships. Cost of Goods Sold (COGS): Anticipated to rise slightly, aligned with production scale but managed through efficient procurement and manufacturing practices. Gross Profit: Set to improve because revenue increases outpace COGS. Operating Expenses: Targeted reduction strategies in administrative and marketing costs to enhance operational efficiency; however, these efforts are not without challenges. Net Profit: Aiming for a net profit margin improvement to enhance shareholder value, although this requires careful management of resources and market conditions.

9.03 Cash Flow Statement

Cash Flow (in $)	2025	2026	2027
Net Cash From Operating Activities	**$ 2,034,921**	**$ 3,149,783**	**$ 3,157,526**
Net Income	$ 1,495,802	$ 2,549,764	$ 2,814,455
Depreciation	$ 8,000	$ 16,000	$ 29,000
Depreciation - Car	$ 8,000	$ 16,000	$ 29,000
Change in Unearned Revenue	$ 297,000	$ 261,360	$ 230,175
Change In Working Capital	$ 234,119	$ 322,659	$ 83,896
Net Cash From Investing Activities	**$ -30,000**	**$ -60,000**	**$ -90,000**
Asset Purchases	$ -30,000	$ -60,000	$ -90,000
Net Cash From Financing Activities	**$ 723,214**	**$ -137,900**	**$ -149,168**
Change In Debt	$ 451,214	$ -137,900	$ -149,168
Equity Investments	$ 272,000	$ 0	$ 0
Net increase (decrease) in cash	**$ 2,728,134**	**$ 2,951,884**	**$ 2,918,358**
Cash At Beginning Of The Period	**$ 0**	**$ 2,728,134**	**$ 5,680,018**
Cash Balance	**$ 2,728,134**	**$ 5,680,018**	**$ 8,598,376**

Golden Brick Orca Tanzania Co., Limited' cash flow statement emphasizes inflows and outflows of cash; it highlights operational, financing, and investing activities. Efficient cash management ensures the company remains solvent, capable of meeting obligations. However, operating activities focus on maintaining positive cash flow through improved inventory management and receivables collection. Investing activities involve allocation of funds towards upgrading production facilities and investing in technology to enhance product quality. Financing activities encompass management of debt levels, while also considering equity options to fund expansion activities, because preserving cash is critical.

9.03 Balance Sheet

Balance Sheet (in $)	2025	2026	2027
Total Assets	**$ 3,000,134**	**$ 5,992,730**	**$ 8,972,088**
Current Assets	$ 2,968,134	$ 5,916,730	$ 8,835,088
Cash Balance	$ 2,728,134	$ 5,680,018	$ 8,598,376
Accounts Receivable	$ 240,000	$ 236,712	$ 236,712
Long Term Assets	$ 32,000	$ 76,000	$ 137,000
Property Plant And Equipment	$ 32,000	$ 76,000	$ 137,000
Total Liabilities and Equity	**$ 3,000,134**	**$ 5,992,730**	**$ 8,972,088**
Total Liabilities	$ 1,223,332	$ 1,666,164	$ 1,831,067
Current Liabilities	$ 772,119	$ 1,352,850	$ 1,666,921
Unearned Revenue	$ 298,000	$ 559,360	$ 789,535
Income Tax Payable	$ 446,798	$ 761,618	$ 840,681
VAT Tax Payable	$ 27,321	$ 31,873	$ 36,705
Long Term Liabilities	$ 451,214	$ 313,314	$ 164,146
Bank loan	$ 169,040	$ 132,583	$ 93,099
Bank loan Erst bank	$ 254,848	$ 158,959	$ 55,112
Prokredit	$ 27,325	$ 21,772	$ 15,934
Equity	$ 1,776,802	$ 4,326,566	$ 7,141,021
Shareholder Equity	$ 277,800	$ 277,800	$ 277,800
Retained Earnings	$ 1,499,002	$ 4,048,766	$ 6,863,221