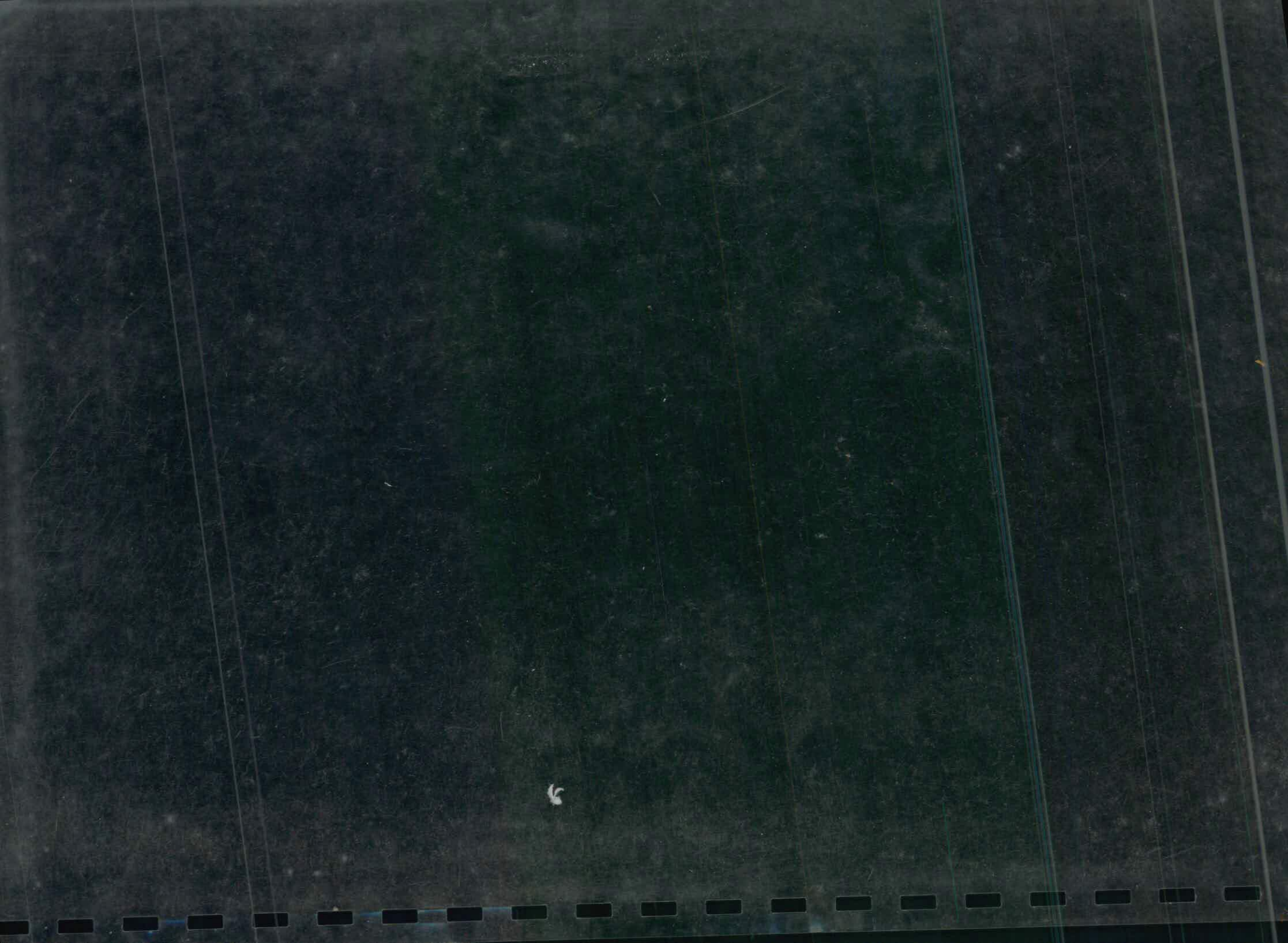
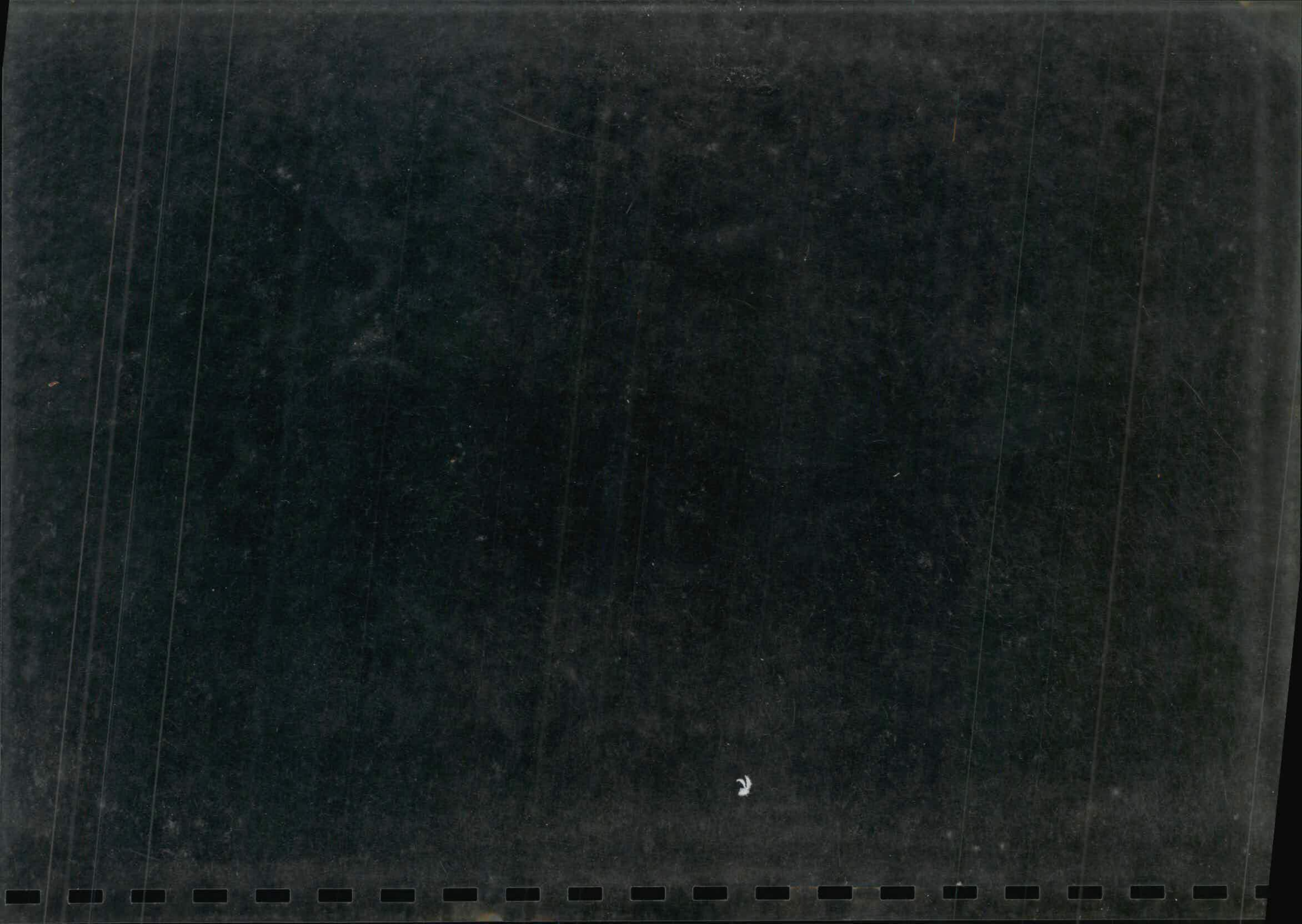




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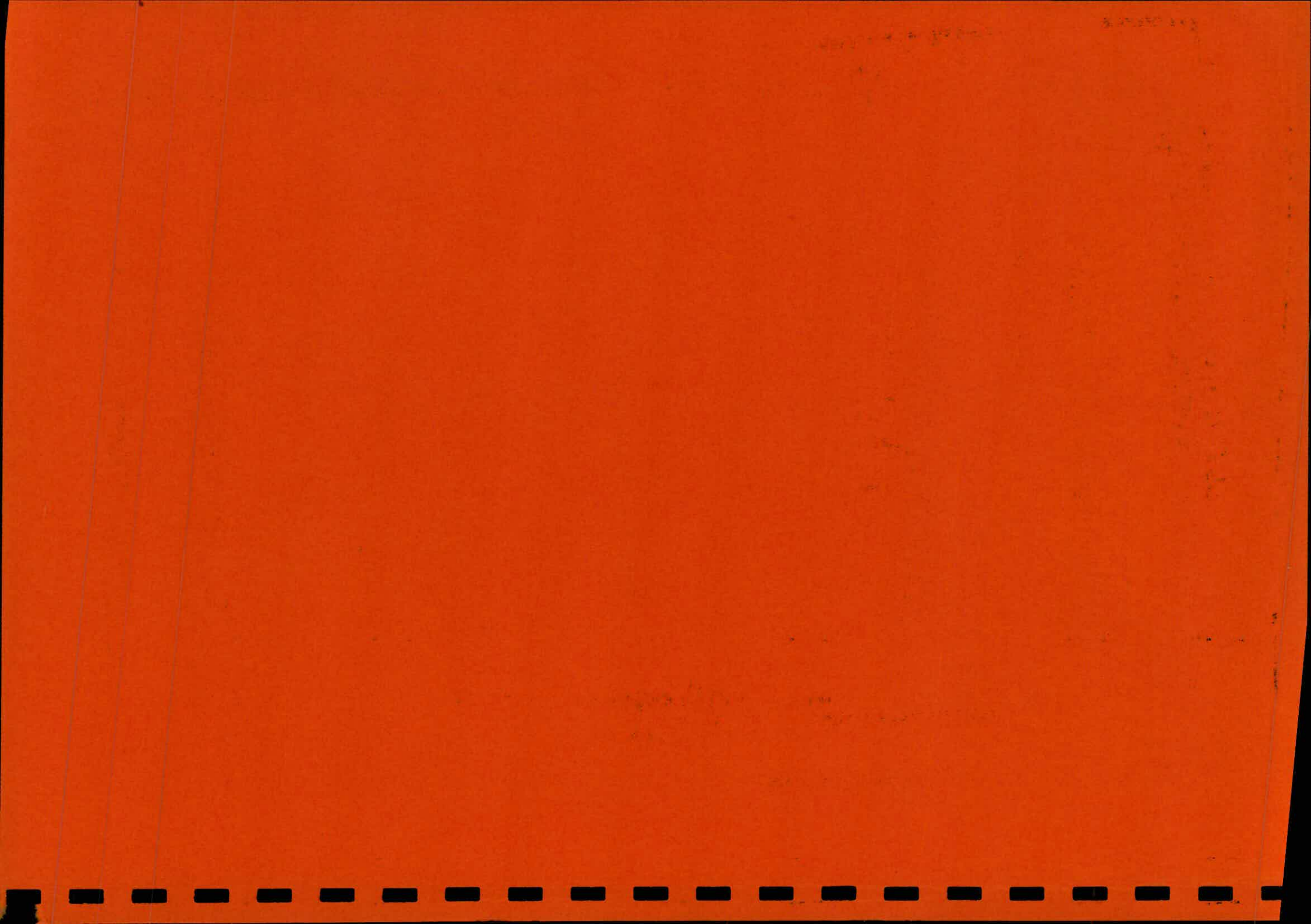
**MINI BREWERY PLANT**

**FEASIBILITY STUDY**

**FOR**

**QINGDAO SINO-TANZANIA  
BREWAGE CO. LTD**

**PREPARED BY:  
CENTRAL INVESTMENTS LIMITED**



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**MINI BREWERY PLANT**

**FEASIBILITY STUDY**

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**OCTOBER, 2005.**

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## 1.0 INTRODUCTION

### 1.1 BACKGROUND

This study covers the carrying out of an initiation / establishment / operation of a Mini Brewery Plant to be situated in a suitable industrial plot within Dar es Salaam municipal.

Essentially the ultimate purpose of the proposed venture is to undertake the production of beer of quality standard for both local and export markets particularly in the neighboring countries.

### 1.2 PROJECT SPONSORS

The project sponsors are M/S Qingdao Sinio – Tanzania Brewage Company Ltd (QSTBC) whose shareholder directors has vast experience in initiating multitude of projects / investments, the ones in question being inclusive.

### 1.3 LAYOUT OF THE STUDY

This report presents a full fledged financial, and techno-economic analysis status relevant to the an an initiation / establishment / operation of a Mini Brewery Plant to be situated in a suitable industrial plot within Dar es Salaam municipal.

The report is covered in 10 chapters. An introduction is as presented in this chapter 1. Thereafter follows the coverage on the summary / recommendations in chapter 2. Chapter 3 covers the aspects on the market, marketing and plant capacity.

Then follows raw materials/ inputs in chapter 4. A proposal on civil works and buildings in chapter 5.

An outline on the manpower requirements and organisation is covered in chapter 6 and thereafter follows the brief up on the implementation schedule in chapter 7. Then follows the coverage on investment and financing in chapter 8. The report ends up with the coverages on operational costs and financial / economic analysis in chapters 9 and 10 respectively.

## **2.0 SUMMARY AND RECOMMENDATIONS**

### **2.1 INTRODUCTION**

The report accounts for the financial and techno-economic analysis on an Mini Brewery Plant to be situated in a suitable industrial plot within Dar es Salaam municipal.

### **2.2 MARKET**

The market analysis reveals that there is room for additional supply sources of beer for the local market. This estimated to the tune of 4.0 million litres per annum. The same products can also be disposed in the selected external markets.

### **2.3 ULTIMATE PLANT'S STATUS**

The machinery / equipment to opted for will be of modern status, with appropriate technological set up, fully provided with all the necessary accessories. The basic raw materials will be in the form of malt, water and hops.

The plant will have an envisaged installed processing capacity at 3500 crates per day. The attainable processing capacity levels will be at 75% 70% and 85% of the installed processing capacity of years 1,2-10 years respectively.

### **2.4 ORGANIZATION AND AMANPOWER REQUIREMENTS**

The roles of the plant will be executed through four departments. Administration, Finance, Production and Marketing. The Heads of these departments and the project Manager will form the central operation core of the project. Initially the plant will employ 65 people with the ultimate figure at 120 people.

### **2.5 PROJECT IMPLEMENTATION**

The envisaged period for total project implementation is 36 months.

## 2.6 INVESTMENT STRUCTURE

The total additional investment in fixed assets and working capital is estimated at US\$. 557,017. The breakdown of which is as follows.

**TABLE 2.1: INVESTMENTS STRUCTURE.**

ITEM	US\$
<b>Fixed Assets</b>	
Civil works	45,000
Machinery and Equipment	280,000
Vehicles	60,000
Furniture and Fittings	15,000
Pre-Operational expenses	35,000
<b>Sub total</b>	<b>435,000</b>
Working capital	<b>122,017</b>
<b>GRAND TOTAL</b>	<b>557,017</b>

## 2.7 FINANCING PATTERN

The total additional investment of US\$ 557,017 shall be financed as follows.

**TABLE 2.2: FINANCING PATTERN BREAKDOWN**

SOURCE	US\$
<b>Fixed Assets</b>	
Equity (40%)	174,000
Long term loan (60%)	261,000
<b>Sub total</b>	<b>435,000</b>
<b>Working Capital</b>	
Bank Overdraft (75%)	91,513
Equity (25%)	30,504
<b>Sub total</b>	<b>122,017</b>
<b>GRAND TOTAL</b>	<b>557,017</b>

## 2.8 OPERATIONAL COSTS

The structure of operating costs at full capacity is as given below.

**TABLE 2.3: OPERATIONAL COSTS BREAKDOWN**

ITEM	US\$
Raw materials	1,208,219
Salaries and wages	165,375
Vehicles running expenses	21,000
Electricity	52,920
Water	1,323
Packages	120,822
Insurance	20,000
Maintenance Machinery / equipment (2.0%)	5,600
Maintenance Civil works	1,125
Repairs of furniture and fittings (1.2%)	180
Advertisement	30,000
Administrative overheads	60,638

## 2.9 FINANCIAL INDICATORS

The financial indicators show that the project is viable as hereafter confirmed here below;

### 2.9.1 Internal Rate of Return (IRR) After Tax

The project's internal rate of return after tax is 49% well above the lending rate of 17% used for the study.

## 2.10 ECONOMIC ADVANTAGES

On the basis of the above account the analysis has overwhelmingly proved that the project is financial sound and techno-economically viable.

Furthermore the project has immense potential towards the earning of the badly needed forex earnings and substantial potential for job creation.

## 2.11 ECONOMIC BENEFITS OF THE PROJECT

The successful operation of this Project will contribute significant variety of benefits to Dar es Salaam region people and Tanzania as whole. In summary the benefits which will be realized are as follows:

- (i) The execution of this project will bring about increased supply of beer in the local market in terms of both types / categories and quality.
- (iii) Provision of income to other services providers, thus contributing to the reduction of poverty. The income to be earned will help in improving standard of living of the workers and other people residing in the region.
- (iv) The direct income for the workers, combined with other social benefits that the Management of M/S QSTBC will provide, will help in overall efforts that are geared towards provision of the service in question for the region.
- (v) Expanded tax base to the Treasury and local Government authorities and generation of income to the Government.

## 2.12 CONCLUSION

The investment and development of this undertaking onto: Mini Brewery Plant to be situated in a suitable industrial plot within Dar es Salaam municipal is in line with the Government objective of encouraging proper development of the manufacturing sector.

In addition, it will have a positive impact on the development of the region, as it would generate a number of benefits and more positive impact on the economy of the region. As noted above this undertaking will bring about the generation a number of benefits and reliable incomes for the employees of the project and providers of the services and goods demanded by the project's workforce / their families.

This document has provided a full analysis on the financial, Techno – economic viability on the of undertaking onto: Mini Brewery Plant to be situated in a suitable industrial plot within Dar es Salaam municipal undertaking along with the financing requirements / parameters have been considered and have established that the proposed project is technically sound, financially viable, and economically / socially beneficial.

In order to ensure prompt implementation of the project and achieving the anticipated impact a number of factors have to be taken into account this will include the level of the proposed investment in this project, manpower needs, machinery/equipment, anticipated significant roles in the food and beverage sector the overall status of the national economy, and the proposed project area.

In the context of the immense useful potential of this project, the management of M/S QSTBC Ltd anticipates that all interested parties in the region / and the Government of Tanzania will give their full support so as to ensure timely implementation of the project and apprehension of successful operation.

### 3.0 MARKET AND MARKETING

This chapter outlines the market and marketing aspects of alcoholic spirit beverages in Tanzania. The objective is to assess the present and future supply and demand for the products in the country. On these bases to recommend the market situation and marketing tools used in the market, the chapter recommends appropriate marketing strategies that can enable the company to enter, sustain and grow in the market.

#### 3.1 PRODUCTS

The factory is and will produce quite a variety of quality beer brands for the local and export market. The envisaged products will be of standard quality levels as per the anticipated customer needs.

#### 3.2 TARGET MARKET

The target market comprises all alcoholic drinkers in the country. Also exports to neighboring and other counties.

Studies of the alcoholic industry in the country indicate that people from all works of life consume beer and hard drinks like spirits. However, most of the consumers are men. The spirits used differ from one income bracket to another based on quality and prices. Spirits of medium quality are mostly consumed by medium-income people.

The majority of people in this income bracket live in urban and semi-urban areas. The larger proportion of the population of Tanzania, among the alcoholic consumers do drink beer. In the actual fact this group accounts for 95 – 96% of the consumers of the alcoholic drinks.

The population of Tanzania mainland is estimated at 35 million people. According to the country's Planning Commission, the salaried manpower is estimated at 13.9 million people. Unfortunately, only 87% or 12.1 million are employed. However, only 7% of the working population or 0.97 million people are employed in the formal (private and public) and informal non-agricultural employment. Among these, about 50% or 0.485 million are men.

As regards to product preference, it has been found that most customers prefer locally produced alcoholic to imported alcoholic. Brand loyalty is very high. Therefore, it is very difficult to penetrate

the market with a complete different offering. In this regard, the project should continue with products that are currently well accepted by the various customers in the country. Further proper care towards maintaining quality products through adherence of aspects such as colour, taste, packaging, labeling, etc.

### 3.3 DEMAND

The demand for beer as estimated in this section based on the market study on the beer industry done by Tanzania in Industrial Studies and Consulting Organization (TISCO) in 1996. In that study, it was found that:

- About 40% of the non-agricultural working population (about 0.97 million people at the moment) drink alcohol (non traditional). Most of these are men. Women constitute only about 30% of drinkers.
- About 15% of alcohol drinkers drink spirits
- The majority drinks between 2 – 3 times a week, taking either 1 – 2 bottles of Konyagi or 3 – 5 bottles of beer.

Therefore, based on the market characteristics given in section 3.2, the level of demand for hard drinks like Konyagi is estimated at 6.05 million bottles of 0.5 litre each. This is equivalent to 3.03 million litres per annum.

Since the majority of the customers for the product are in salaried employment, the demand is expected to grow at the rate of growth of employment, 2.4% per annum.

In view of the above, the level of demand for the next five years is projected as follows:

Year	000 Litres
2005	4,103
2006	4,177
2007	4,253
2008	4,331
2009	4,411

### **3.4 SEASONALITY OF DEMAND**

Tanzania is an agricultural country. About 80 percent of Tanzanians depend on agriculture. It contributes about 50 percent of GDP and 55 percent of foreign exchange. The study of TISCO on the beer industry showed that the seasons of demand for most alcoholic products run parallel to agricultural seasons. Interview with some bar owners has confirmed the same pattern for spirits.

### **3.5 SUPPLY OF BEER**

The main supplier of beer in Tanzania is Tanzania Breweries Limited. Their main products include Safari, Kilimanjaro, Pilsiner Ice and Castle. However in recent years a number of imported brands are being handled by several firms.

The trend of supply of the main industrially produced alcoholic in Tanzania is shown in **Appendix 3:A**. It is evident from this appendix that the production of Konyagi and beer have been increasing – both at the then and fixed 1988 prices.

Production of Konyagi has almost doubled in a fifteen years period from 962,000 litres in 1988 to approximately 2,000,000 litres in 2003. However, it can be observed from the said appendix that the growth of supply during the past five years has almost stagnated at a very low rate of 1% per annum.

### **3.6 DEMAND SUPPLY GAP**

Comparison of the level of demand and supply in the above sections reveal a demand – supply gap of about 20,000,000 litres of beer. Therefore, the existing production capacity satisfies a portion of the existing demand. The balance is partly met by a few imports leaving a substantial unsatisfied market.

### **3.7 RECOMMENDED CAPACITY OF THE FACTORY**

Based on the above demand-supply gap, it is recommended to put a factory of capacity not exceeding 750,000 crates per annum. Given the brands loyalty that is existing in the market as observed in section 3.2 the market entry risk can be minimized if a plant of lower capacity, say 700,000 crates will be installed. The capacity can be expanded after successful market penetration.

The market entry strategies are recommended below based on the review of relevant marketing aspects in the following sections.

### 3.8 PRICE

The ex-factory price charge by the main supplier, Tanzania Breweries Limited, is as follows:-

Product	Unit	Price
Safari	500 ml	550
Kilimanjaro	500 ml	550
Castle	500 ml	550
Pilsner Ice	500 ml	550

Therefore, based on the above information and as a market penetration strategy, the project should aim at selling 500 ml of their product at Tshs 500 only (ex-factory).

### 3.9 DISTRIBUTION

Our field observations and previous studies reveals that the main distribution system used by the existing supplier is through agents who buy on their own account. the main distribution point of Tanzania Breweries Limited factory premises in Dar es Salaam. They have found this to be a convenient point to wholesalers because they come to buy beer at the same premise.

The consultants have found that agents used do also handle products of competitors. In this regard, the envisaged project can use the same agents. About there medium size (3 toner) distribution vehicles are also recommended.

### 3.10 PROMOTION

The main promotion effort used is advertising. Personal selling is also used. The promotion budget of Tanzania Breweries Limited could not be obtained. It is estimated above several millions.

In view of the above, the new supplier should also aim at advertising their product offers vigorously. Personal selling should aim at

convincing retailers that the product are good and fast mov  
bigger margins than competing products.

### 3.11 **COMPETITION**

The review of marketing aspects in the above sections show that market for beer in Tanzania is almost monopolized by Tanza Breweries Limited. However, the estimated promotion budget of t company indicate that they are prepared for competition. Therefore any promotion efforts such as product design and adverting should expect retaliation from this company.

## 4.0 RAW MATERIALS / INPUTS

### 4.1 GENERAL

The raw materials for beer processing are malt of barley, water hops sugar, and flavour. All of these categories of material/inputs have to be of the set standards so as to ensure the ultimate processed products meet the anticipated standard.

### 4.2 MATERIALS BREAKDOWN

The whole of range of the envisaged materials along with the respective requirements are as here after presented in Table 4.1 here below.

**TABLE 4.1: MATERIAL NEEDS**

S.NO	CATEGORY	QUANTITY (Per year)	UNIT
1.	Water	12,000,000	litres
2.	Barley Malt	40,000	tones
3.	Flavours	Lot	
4.	Packages	Lot	

## **5.0 CIVIL WORK AND BUILDINGS**

### **5.1 GENERAL**

The facility is to be located in a suitable Plot, within Dar es Salaam Municipal which will be of convenient size.

### **5.2 ACCESSIBILITY OF THE SITE:**

The project site is assumed to be accessible and easily be reached. It has full provision of all the basic necessities: Electricity and water.

### **5.3 DESIGN CONCEPT**

The factory building is built of concrete blocks and properly designed with ample to cover all the functional spaces such as: Processing hall. Offices, raw materials storage, and other social amenities space requirements.

### **5.4 AUXILIARY SERVICE REQUIREMENTS**

#### **5.4.1 Power Supply System**

- **Main Power Supply**

It is assumed that the power supply will be from the national grid prevailing in the Dar es Salaam Municipal.

- **Emergency Power Supply**

A standby generator is to be provided to supply all the essential loads in and event of power failure.

For this reason M/S QSTBC Ltd will be forced to use its standby generator during times of national power break down.

- **Power Distribution**

Power distribution in the Yard will be via underground cables installed with the national electrical requirements.

- **Fire Protection**

It is proposed to provide fire detection and fire fighting systems. Fire detection system with consist of automatic and manual detection devises, alarm and communication systems whereas fire fighting system will feature portable extinguishers, hose reels, wet and dry rises and automatic sprinkler system.

5.4.2 **Access entrance**

Wide inlet /entrance is provided so as to facilitate smooth passage of the workers and vehicles.

5.4.3 **A Parking Space for the plant**

The complex has ample parking space adequate to accommodate several vehicles at any given time.

5.4.4 **Water Supply**

- **Source of Water**

The source of potable water for the plant will be the self made bore hole.

5.4.5 **Storm Water Drainage and Sewerage System**

- **Storm Water Drainage**

Storm water – run – off will be collected from the buildings by means of spouts and full boras through down pipes and will be discharge into the open channel and deposited into the road side drains.

- **Sewerage System**

Waste and foul water is collected from building by means of UPVCP pipes of different sizes e.g 75 mm and 150 mm to the municipal sewer lines.

## 6.0 MANPOWER REQUIRMENTS AND ORGANIZATION

### 6.1 MANAGEMENT

The success of a venture of this kind depends on the competence of the personnel recruited to manage. It is assumed that relevant personnel with requisite skills shall be available within the country. There will be a need of recruiting expatriates in some key positions.

The overall in charge, responsible for the day to day operations will be the Project Manager who will in turn be answerable to the Board of Directors.

### 6.2 ORGANIZATION SET UP

Initially the operations will broadly be divided into the following:-

- Finance/Administration Department
- Production Department
- Marketing and Sales Department
- Engineering Department.

## 63 MANPOWER REQUIREMENTS

### 63.1 Total Manpower Requirements

Based on the proposed organization structure the project will initially employ a total of 80 persons. However when the project is fully established the total number of employees is envisaged to be in the region of 100 people.

The breakdown of the initial work force in terms of its categories is as after presented in table 6.1

**TABLE 6.1 PERSONNEL REQUIREMENTS:**

S/No:	CATEGORY:	STRENGTH
1.	<b>PROJECT MANAGERS OFFICE</b>	1
1.1	Project Manager	1
1.2	Deputy Project Manager	1
1.3	Personal Secretary	1
1.4	Internal Auditor	1
1.5	Secretary	1

	<b>Sub Total (i)</b>	<b>5</b>
<b>S/No:</b>	<b>CATEGORY</b>	<b>STRENGTH</b>
<b>2.</b>	<b>FINANCE/ADMINISTRATION DEPARTMENT</b>	
2.1	Manager	1
2.2	Personnel Officer	1
2.3	Project Accountant	1
2.4	Accountant	1
2.5	Account Assistants	2
2.6	Cashier	1
2.7	Stores Officer	1
2.8	Purchase Assistants	2
2.9	Secretary	1
2.10	Telephone Operation	1
2.11	Driver	2
2.12	Office Attendant	2
2.13	Security Guard	3
	<b>Sub Total (ii)</b>	<b>19</b>
<b>3.</b>	<b>PRODUCTION DEPARTMENT:</b>	
3.1	Production Manager	2
3.2	Production Supervisor	4
3.3	Foreman	3
3.4	Operators	2
3.5	Mechanic/Electrician	2
3.6	Quality Controller	1
3.7	Laboratory Technician	3
3.8	Lab Attendants	3
3.9	General Hand	6
	<b>Sub Total (iii)</b>	<b>26</b>
<b>4.</b>	<b>MARKETING AND SALES DEPARTMENT</b>	
4.1	Manager	1
4.2	Deputy Manager	1
4.3	Marketing/Sales Assistant	2
4.4	Sales Clerk	2
4.5	Advert Assistants	8
	<b>Sub Total (iv)</b>	<b>14</b>
<b>5.</b>	<b>ENGINEERING DEPARTMENT</b>	
5.1	Engineering Manager	1
5.2	Project Mechanic	1

5.3	Plant Electrician	1
5.4	Project Vehicle Mechanic	1
5.5	Mechanics	4
5.6	Electricians	3
5.7	Transport Officer	1
5.8	Boiler Expert	1
5.9	Boiler Attendants	3
5.10	General	10
5.11	Drivers	5
5.12	Spanner boys	5
	<b>Sub Total (v)</b>	<b>36</b>
	<b>TOTAL</b>	<b>100</b>

### 6.3.2 Salaries and Wages

Total wage bill for the proposed resort has been computed at USD\$ 165,375

## 64 RECRUITMENT AND TRAINING

### 6.4.1 Recruitment

All new staff would be recruited at least one month before the plant operations are commenced.

### 6.4.2 Training

The Management of the plant would strive to employ competent and qualified personnel in the potable spirits business. To reduce cost few senior staff will be trained at the selected locally available institutions.

All other supporting staff will be trained on the job. However, it is expected that most of them will have some basic knowledge and experience in potable spirits business.

## **7.0 IMPLEMENTATION SCHEDULE**

### **7.1 GENERAL**

Both local and external factors have been taken into account when implementing this project. Factors such as finalization of, acquisition of the rentable premises, machinery and equipment, recruitment of qualified personnel and other factors have been looked into. Total trend of the implementation is as presented in **Appendix 8:A** along with the investment costs so far made.

### **7.2 PRELIMINARY FORMALITIES**

On the finalization of the study a duration of about 2 weeks was needed for execution of the preliminary formalities of the project. These include submission of the application on incentives to investors certificate from TIC.

### **7.3 PROJECT STAGE**

#### **7.3.1 Finalization of Rentable premises Acquisition in Dar es Salaam**

M/S QSTBC Limited has to finalise the acquisition of the premises to house the project. This will take the form of discussions and coming into amicably agreed understanding with potential premise owners for leasing requirements for the initial housing of the project operations it is expected that after a period of one year the project will be placed in its own premises.

#### **7.3.2 Premises Renovation**

The building in question was examined to ascertain improvement measures. Several of these were identified / quantified and subsequently the renovation / improvement measures were undertaken.

#### **7.3.3 Ordering of Machinery / Equipment / Vehicles / Furniture**

Timely ordering of the various machinery / equipment was executed to match the rate of implementing the plant. Time used was several weeks.

#### **7.3.4 Installation of Machinery / Equipment / Furniture**

Once the building had been properly renovated then followed the installation of machinery / equipment / furniture and fittings upon their arrival at the project site.

#### **7.3.5 Trial Runs**

Upon completion of the installation of machinery and equipment then followed trial runs. This took about 2 weeks.

#### **7.3.6 Commercial Production**

On completion of the trial runs then will follow commercial production.

## 8.0 INVESTMENT AND FINANCING

### 8.1 ASSUMPTIONS

- The project construction time is assumed to be one year.
- The economic life of the project is 10 years.
- The currency exchange rate of Tshs. 1150/= to one US\$ has been adopted.
- Re-investment in vehicles shall be done after every four years.
- Interest on OD is 17%

### 8.2 INVESTMENT STRUCTURE

The total initial investment in fixed assets is estimated at US\$. 557,0127 whose breakdown of which is as follows (also see **Appendix 8:A**)

**TABLE 8.1: INVESTMENT STRUCTURE**

ITEM	US\$
<b>Fixed Assets</b>	
Civil works	45,000
Machinery and Equipment	280,000
Vehicles	60,000
Furniture and Fittings	15,000
Pre-Operational expenses	35,000
<b>Sub total</b>	<b>435,000</b>
Working capital	122,017
<b>GRAND TOTAL</b>	<b>557,017</b>

#### 8.2.1 Civil Works

The proposed civil works are estimated at a cost of US\$ 45,000.

#### 8.2.2 Machinery and Equipment

The initial machinery / equipment needs for the undertaking are estimated at cost of US\$ 280,000.

### 8.2.3 Vehicles

These are estimated at US\$ 60,000

### 8.2.4 Pre - operational Expenses

These are estimated at US\$ 35,000

### 8.2.5 Furniture & Fittings

These are estimated at US\$ 15,000.

### 8.2.6 The initial Working Capital

The initial working capital is computed at US\$ 122,017. A further presentation of the same is indicated in **Appendix 8:A**. Whereas the Net Working Capital in subsequent years is as presented in **Appendix 8:B**

## 8.3 RE – INVESTMENT

There shall be need for re-investment in vehicles after every four years, i.e. in year 4 and year 8.

## 8.4 FINANCING PATTERN

The initial total investment of US\$ 557,017 shall be financed as here after presented in Table 8.2 and further outlined in **Appendix 8:A**

**TABLE 8.2: FINANCING PATTERN BREAK DOWN**

SOURCE	US\$
<b>Fixed Assets</b>	
Equity (40%)	174,000
Long term loan (60%)	261,000
<b>Sub total</b>	<b>435,000</b>
<b>Working Capital</b>	
Bank Overdraft (75%)	91,513
Equity (25%)	30,504
<b>Sub total</b>	<b>122,017</b>
<b>GRAND TOTAL</b>	<b>557,017</b>

As indicated above the financing of the fixed assets have been assumed through long term loan and equity at 60% and 40% respectively whereas the working capital will be financed through equity and bank overdraft at 25% and 75% respectively.

#### **8.5 BANK OVERDRAFT**

As noted above a short term of financing of US\$ 91,513 shall be sought to cover 75% of the initial working capital requirement. An interest rate of 14% has been assumed.

#### **8.6 OWNER'S EQUITY**

The owners shall finance 25% of the cost of working capital and 30% of the fixed assets costs

## 9.0 OPERATING COSTS

### 9.1 ASSUMPTIONS

The prices of inputs are assumed to remain constant over the ten years period because under rising inflation the prices and services will rise including those of outputs hence leaving the profit margin unchanged.

### 9.2 OPERATION COST STRUCTURE

The main items which will constitute the operating costs are as hereafter outlined, in Table 8.1 when unit will be in full operation. The main cost items will include raw materials, salaries / wages, packages vehicle running expenses, electricity, security, maintenance of civil works/machinery-equipment, water, Insurance, office/shed rents, advertising/marketing and administrative overheads.

**TABLE 9.1 OPERATING COSTS BREAKDOWN.**

ITEM	US\$
Raw materials	1,208,219
Salaries and wages	165,375
Vehicles running expenses	21,000
Electricity	52,920
Water	1,323
Packages	120,822
Insurance	20,000
Maintenance Machinery / equipment (2.0%)	5,600
Maintenance Civil works	1,125
Repairs of furniture and fittings (1.2%)	180
Advertisement	30,000
Administrative overheads	60,638

A brief mention of each of the above cost items is as hereafter presented.

#### 9.2.1 Salaries and Wages

These average at US\$ 165,375 per annum.

#### 9.2.2 Vehicle Running Expenses

This is one of the cost items will average at US\$ 21,000 per annum.

### **9.2.3 Electricity**

The total cost per year will be at US\$ 52,920 per annum

### **9.2.4 Packaging Materials**

The costs for this item will be at US\$ 120,822 per annum.

### **9.2.5 Water**

This is estimated at US\$ 1,323 per annum

### **9.2.6 Insurance**

This has been computed at USD 20,000 per annum

### **9.2.7 Maintenance: Civil works: (2.5% of cost)**

These have been computed at US\$ 1,125 per annum.

### **9.2.8 Maintenance: Machinery / equipment: (2.0%)**

Annually this will cost US\$ 5,600

### **9.2.9 Maintenance: Furniture and fittings: (1.2%)**

The annual amount will be US\$ 180

### **9.2.10 Marketing / Advertising**

This is estimated at US \$ 30,000 per annum

### **9.2.11 Administration Overheads**

The administrative expenses are estimated at US\$ 60,638 per annum. These will include items such as stationary, telephone, fax, uniforms and other adhoc services.

### 9.2.12 Depreciation

Depreciation rates have been calculated as follows:

Land, Building and civil works	4% Straight Line
Vehicle	25% Straight Line
Pre-operational Expenses	20% Straight Line
Equipment	12.5% Diminishing Value

Total depreciation charges in year one is US\$ 60,675 decreasing steadily to US\$ 12,887 in year 10 as illustrated in **Appendix 9:B**.

### 8.2.13 Tax

Corporation tax is charged at 30% on profits before tax. Tax in year 1 is estimated at US\$ 27,032 rising to US\$ 88,875 in year 10.

Details of financial costs and corporation tax are shown in **Appendix 9:C**.

## **10.0. FINANCIAL AND ECONOMIC ANALYSIS:**

### **10.1. ASSUMPTIONS:**

- The prices of inputs and outputs are assumed to remain constant over the life of the project i.e. 10 years.
- However, in case of changes in the costs of inputs, to maintain the desired profit margin, the prices of the outputs will be accordingly adjusted.

### **10.2 INCOME:**

The project's income at full capacity utilization is estimated to average at US\$ 2,001,038 as presented in **Appendix 9:C**.

### **10.3 EXPENDITURE:**

The expenditure items are as indicated in the operating costs chapter 9. They include all costs items plus depreciation and financial charges. These are listed in **Appendices 9:A and 9:B**.

### **10.4 PROJECTED CASH FLOWS:**

**Appendix 10:A** shows the projected cash flow statement. The project has a positive net cash flow from year 1 of operation to the tenth year when the long-term loan will have been paid in full. Loan repayment is shown as in **Appendix 10:B**.

### **10.5 PROJECTED BALANCE SHEET:**

The projected balance sheet of the project is shown in **Appendix 10:C**. Fixed assets net of depreciation decrease from US\$ 374,325 in the first year of operation to US\$ 104,607 in the tenth year. On the other hand, cash and bank balances increase from US\$ 2,672 in the 1<sup>st</sup> year of operation to US\$ 1,639,628 in the tenth year.

### **10.6 FINANCIAL INDICATORS:**

Financial indicators showing the financial viability of the project are summarized below:

### **10.6.1 Internal Rate of Return (IRR) After Tax:**

The project's internal rate of return after tax is given in **Appendix 10:D**. This is estimated at 49% well above the lending rate of 17% for the overdraft, used for the study.

### **10.6.2 Payback Period:**

This has been computed and found to be 3 years 3 month as indicated in **Appendix 10:E**

### **10.6.3 Break-even Analysis: 3<sup>rd</sup> Year:**

The break-even analysis in the 3<sup>rd</sup> year of operation shows breakeven sales at US\$ 2,001,038 and breakeven capacity of 25%. Details are given in **Appendix 10:F**.

### **10.7. SENSITIVITY ANALYSIS:**

A sensitivity analysis has been carried out on the project's IRR responsiveness to changes in either sales price, operating costs, or initial investment. And the result of the sensitivity analysis have shown that the IRR is more sensitive to changes in sales prices than changes in either operating costs or initial investment.

### **10.8 ECONOMIC BENEFITS OF THE QSTBC PLANT:**

The successful operation of this Mini Brewery Plant to be situated in a suitable industrial plot within Dar es Salaam municipal will contribute significant economic benefits to Dar es Salaam region people and Tanzania as whole. In summary the benefits which will be realized are as follows: -

- (i) The execution of this project will bring about employment opportunities for 80 people.
- (ii) Significant contribution to self-sufficiency in beer for the people in Dar es Salaam and the rest of country.

- (iii) Provision of income to other services providers, thus contributing to the reduction of poverty. The income to be earned will help in improving standard of living of the workers and other people residing in Dar es Salaam.
- (iv) The direct income for the workers, combined with other social benefits provided by the Management of M/S QSTBC will help in overall efforts of alleviation of poverty in the country.
- (v) Provision of a market for goods and services demanded by the plant's work force.
- (vi) Expanded tax base to the Treasury and local Government authorities and generation of substantial income to the Government.
- (vii) This project will facilitate opportunities to increase foreign exchange earnings through export of some of its valuable products.

#### **10.9 CONCLUSION:**

The investment and development of this Mini Brewery Plant to be situated in a suitable industrial plot within Dar es Salaam municipal Undertaking is in line with the Government objective of encouraging proper development of manufacturing sector of the country.

In addition, it will have a positive impact on the development of the region, as it would generate a number of benefits and more positive impact on the economy of the region. As noted above this undertaking will bring about the generation a number of benefits and reliable incomes for the employees of the project and providers of the services and goods demanded by the project's workforce / their families.

This document has provided a full analysis on the financial, Techno – economic viability on the establishment / operation of the Mini Brewery Plant to be situated in a suitable industrial plot within Dar es Salaam municipal along with the financing requirements / parameters have been considered and have established that the proposed project is

technically sound, financially viable, and economically / socially beneficial.

In order to ensure prompt implementation of the project and achieving the production targets a number of factors have to be taken into account this will include the level of the proposed investment in this project, anticipated significant roles in poverty eradication / alleviation, the overall status of the national economy, and the proposed project area.

In the context of the immense useful potential of this project, the management of M/S QSTBC Ltd anticipates that all interested parties in the region / and the Government of the Republic of Tanzania will give their full support so as to ensure timely implementation of the project and apprehension of successful operation.

<u>INITIAL INVESTMENT COSTS</u>		TShs. '000
SN.	Item Description	Initial Investment
A	Civil works	45,000
B	Machinery/equipment	280,000
C	Furniture and fittings	15,000
D	Vehicles	60,000
E	Pre-operational expenses	35,000
	<b>Total Fixed Costs</b>	<b>435,000</b>
	Initial Working Capital	122,017
	<b>TOTAL INVESTMENT</b>	<b>557,017</b>
	<u>FINANCING STRUCTURE</u>	
	<u>Fixed Costs</u>	
	Equity (40%)	174,000
	Long-term Loan (60%)	261,000
	<b>Subtotal</b>	<b>435,000</b>
	<u>Initial Working Capital</u>	
	Bank Overdraft (75%)	91,513
	Equity (25%)	30,504
	<b>Subtotal</b>	<b>122,017</b>
	<b>TOTAL FINANCING</b>	<b>557,017</b>

<u>WORKING CAPITAL REQUIREMENTS</u>										
										TShs. '000
ITEM DESCRIPTION/YEAR	1	2	3	4	5	6	7	8	9	10
Raw materials (1 month)	95,833	98,229	100,685	100,685	100,685	100,685	100,685	100,685	100,685	100,685
Packages (1 month)	9,583	9,823	10,068	10,068	10,068	10,068	10,068	10,068	10,068	10,068
Electricity (1 month)	4,000	4,200	4,410	4,410	4,410	4,410	4,410	4,410	4,410	4,410
Water (1 month)	100	105	110	110	110	110	110	110	110	110
Cash in hand (1 month salaries)	12,500	13,125	13,781	13,781	13,781	13,781	13,781	13,781	13,781	13,781
Total	122,017	125,482	129,055	129,055	129,055	129,055	129,055	129,055	129,055	129,055
Net working capital	122,017	125,482	129,055	129,055	129,055	129,055	129,055	129,055	129,055	129,055
Change in working capital	-	3,465	3,573	-	-	-	-	-	-	-



REPAYMENT OF LOANS AND BANK OVERDRAFT							
							TShs. '000
Year	Loan			Bank overdraft			Total Bank credit
	Inward Balance	Interest (18%)	Adds/reds	Inward Balance	Interest (22%)	Adds/reds	
0	-	-	261,000	-	-	91,513	
1	261,000	46,980	26,100	91,513	20,133	91,513	184,725
2	234,900	42,282	26,100	-	-	-	68,382
3	208,800	37,584	26,100	-	-	-	63,684
4	182,700	32,886	26,100	-	-	-	58,986
5	156,600	28,188	26,100	-	-	-	54,288
6	130,500	23,490	26,100	-	-	-	49,590
7	104,400	18,792	26,100	-	-	-	44,892
8	78,300	14,094	26,100	-	-	-	40,194
9	52,200	9,396	26,100	-	-	-	35,496
10	26,100	4,698	26,100	-	-	-	30,798



DEPRECIATION SCHEDULE

													TShs. '000	
Item Description	Value	Rate %	1	2	3	4	5	6	7	8	9	10	Total	Residual Value
Civil works	45,000	4.0	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	18,000	27,000
Machinery/equipment	280,000	12.5	35,000	30,625	26,797	23,447	20,516	17,952	15,708	13,744	12,026	10,523	206,339	73,661
Furniture and fittings	15,000	12.5	1,875	1,641	1,436	1,256	1,099	962	841	736	644	564	11,054	3,946
Vehicles	60,000	25.0	15,000	15,000	15,000	15,000	-	-	-	-	-	-	60,000	-
Pre-operational expenses	35,000	20.0	7,000	7,000	7,000	7,000	7,000	-	-	-	-	-	35,000	-
<b>Total</b>	<b>435,000</b>		<b>60,675</b>	<b>56,066</b>	<b>52,032</b>	<b>48,503</b>	<b>30,415</b>	<b>20,714</b>	<b>18,349</b>	<b>16,281</b>	<b>14,471</b>	<b>12,887</b>	<b>330,393</b>	<b>104,607</b>

PROJECTED INCOME AND EXPENDITURE STATEMENT										
										TShs. '000
YEAR	1	2	3	4	5	6	7	8	9	10
Income	1,815,000	1,905,750	2,001,038	2,001,038	2,001,038	2,001,038	2,001,038	2,001,038	2,001,038	2,001,038
Less Operating costs	1,597,105	1,641,440	1,687,201	1,687,201	1,687,201	1,687,201	1,687,201	1,687,201	1,687,201	1,687,201
Profit before interest and depreciation	217,895	264,310	313,836	313,836	313,836	313,836	313,836	313,836	313,836	313,836
Depreciation	60,675	56,066	52,032	48,503	30,415	20,714	18,349	16,281	14,471	12,887
Interest on long-term loan (18%)	46,980	42,282	37,584	32,886	28,188	23,490	18,792	14,094	9,396	4,698
Interest on bank overdraft (22%)	20,133	-	-	-	-	-	-	-	-	-
Subtotal	127,788	98,348	89,616	81,389	58,603	44,204	37,141	30,375	23,867	17,585
Profit before tax	90,107	165,962	224,220	232,447	255,233	269,633	276,695	283,462	289,970	296,252
Tax (30%)	27,032	49,789	67,266	69,734	76,570	80,890	83,009	85,039	86,991	88,875
Profit after tax	63,075	116,174	156,954	162,713	178,663	188,743	193,687	198,423	202,979	207,376
Accumulated Profit	63,075	179,249	336,203	498,916	677,579	866,322	1,060,008	1,258,431	1,461,410	1,668,786

PROJECTED BALANCE SHEET											
										TShs. '000	
YEAR	0	1	2	3	4	5	6	7	8	9	10
ITEM DESCRIPTION											
<b>Fixed Assets</b>											
Opening balance	-	435,000	374,325	318,259	266,227	217,724	187,308	166,595	148,245	131,965	117,494
Additions	435,000	-	-	-	-	-	-	-	-	-	-
	435,000	435,000	374,325	318,259	266,227	217,724	187,308	166,595	148,245	131,965	117,494
Less depreciation	-	60,675	56,066	52,032	48,503	30,415	20,714	18,349	16,281	14,471	12,887
Closing balance	435,000	374,325	318,259	266,227	217,724	187,308	166,595	148,245	131,965	117,494	104,607
Working capital	122,017	125,482	129,055	129,055	129,055	129,055	129,055	129,055	129,055	129,055	129,055
Accumulated cash	-	2,672	145,239	328,125	513,241	696,220	879,576	1,065,512	1,254,116	1,445,465	1,639,628
Total assets	557,017	502,479	592,553	723,407	860,020	1,012,583	1,175,226	1,342,812	1,515,136	1,692,014	1,873,291
<b>Financed by</b>											
Equity	204,504	204,504	204,504	204,504	204,504	204,504	204,504	204,504	204,504	204,504	204,504
Accumulated profit	-	63,075	179,249	336,203	498,916	677,579	866,322	1,060,008	1,258,431	1,461,410	1,668,786
Total equity	204,504	267,579	383,753	540,707	703,420	882,083	1,070,826	1,264,512	1,462,936	1,665,914	1,873,291
Long-term Loan	261,000	234,900	208,800	182,700	156,600	130,500	104,400	78,300	52,200	26,100	-
Bank overdraft	91,513	-	-	-	-	-	-	-	-	-	-
Total debts	352,513	234,900	208,800	182,700	156,600	130,500	104,400	78,300	52,200	26,100	-
Total equity and debt	557,017	502,479	592,553	723,407	860,020	1,012,583	1,175,226	1,342,812	1,515,136	1,692,014	1,873,291

INTERNAL RATE OF RETURN (IRR) AFTER TAX					
					TShs. '000
Year	Investment	Working Capital	Profit before depreciation and interest	Tax	Cashflow
0	- 435,000	-	-	-	- 435,000
1	-	- 3,465	217,895	27,032	187,397
2	-	- 3,573	264,310	49,789	210,948
3	-	-	313,836	67,266	246,570
4	-	-	313,836	69,734	244,102
5	-	-	313,836	76,570	237,266
6	-	-	313,836	80,890	232,947
7	-	-	313,836	83,009	230,828
8	-	-	313,836	85,039	228,798
9	-	-	313,836	86,991	226,845
10*	104,607	7,038	313,836	88,875	336,606
Internal Rate of Return (IRR) after tax =		49%			
* = Residual Value					

PAYBACK PERIOD						
					TShs. '000	
Year	Profit after tax	Depreciation	Total Cash Flow	Accumulated Cash Flow		
1	63,075	60,675	123,750	123,750		
2	116,174	56,066	172,239	295,989		
3	156,954	52,032	208,986	504,976		
4	162,713	48,503	211,216	716,192		
5	178,663	30,415	209,078	925,271		
6	188,743	20,714	209,457	1,134,727		
7	193,687	18,349	212,036	1,346,763		
8	198,423	16,281	214,704	1,561,467		
9	202,979	14,471	217,449	1,778,916		
10	207,376	12,887	220,263	1,999,179		
Initial fixed investment and working capital for expansion = TShs.'000			557,017			
From above table, payback period is calculated at 3 years				3 months		

BREAKEVEN ANALYSIS BASED ON YEAR THREE			
			TShs. '000
ITEM	FIXED COST	VARIABLE COST	TOTAL COST
Vehicle running expenses	-	21,000	21,000
Raw materials	-	1,208,219	1,208,219
Packages	-	120,822	120,822
Electricity	-	52,920	52,920
Water	-	1,323	1,323
Depreciation	52,032	-	52,032
Interest	37,584	-	37,584
Administrative overheads	60,638	-	60,638
Total	150,254	1,404,284	1,554,538
A: Sales Revenue			2,001,038
B: Variable Costs			1,404,284
C: Contribution Margin (A-B)			596,754
D: Fixed Costs			150,254
E: Contribution Margin Ratio (C/A*100)			30%
F: Breakeven Sales (D/E)			503,832
G: Breakeven Capacity			25%

