Business Plan

Establishment of
HDPE Pipes Manufacturing Plant

Mbarali, MBEYA

Tanzania

Presented By:

KANIOGA Plastics Industry Limited
P.O. Box 110,
Mbarali, MBEYA
TANZANIA

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Project Summary

HDPE Pipes Manufacturing Plant

Nature of Project	**:**	Manufacturing of Construction Materials
Project Concept	**:**	Plant establishment and manufacturing of HDPE Pipes
Products/Services	**:**	(i) 20 – 110 mm HDPE-Pipelines (ii) 125 – 450 mm HDPE-Pipelines
Target Market	**:**	local market …….60% Export market …….40%
Project Size	**:**	Plant Capacity – • 200 Kg/Hour HDPE materials feeding capacity, equivalents to 1,460 MT/year
Employment Created	**:**	138- Permanent Employment
Project Site	**:**	Mbarali, MBEYA Region
Country of Operation	**:**	TANZANIA
Implementing Agency	**:**	KANIOGA Plastics Industry Ltd
Legal Status	**:**	Tanzania's Private Limited Liability Company
Shareholders	:	Jafary Mussa Mussa ……. 67% shares Mussa Remigius Mussa ……33% shares
Contact Address	:	KANIOGA Plastics Industry Ltd P.O. Box 110, Mbarali, Mbeya, Tanzania
Contact Person	**:**	Jafary Mussa Mussa **Director**

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Introduction

1.1 Background

- HDPE pipes, also known as high-density polyethylene pipes, are plastic pipes made from a thermoplastic polymer called high-density polyethylene. HDPE pipes are characterized by their high strength, durability, flexibility, and resistance to chemicals, corrosion and impact. The are widely used in various applications including water supply systems, waste water and sewage systems, gas distribution networks, industrial fluid transportation, geothermal heating systems, and marine and subsea projects.
- The construction and development of infrastructure such as water supply networks, wastewater treatment systems, and transportation infrastructure drive the demand for HDPE pipes.
- The High-Density Polyethylene Market may be segmented End-User Industry which include the Packaging, Transportation, Electrical and Electronics, Building and Construction, Agriculture, Industry and Machinery, and Other End-user Industries.
- The global HDPE pipes market is projected to have a compound annual growth rate of 6.24%, growing from USD10.8 billion in 2019 to USD 15.5 billion in 2026.

1.2 The Project

- This project is being developed by KANIOGA PLASTICS INDUSTRY Ltd (shortly "KANIOGA PLASTICS"), a local private limited liability company registered for purposes of establishing HDPE pipes manufacturing plant in Mbaya, Tanzania.
- The Plant will produce around 1,000 tons of HDPE pipes per annum. The project will produce various pipes ranging from 20mm to 110mm, and from 125mm to 450mm.
- The project is estimated to cost TZS 2.8 billion in capital expenditure and TZS 1.4 billion in the initial working capital. The project, additional to creating wealth and employment, it will directly address issues of environmental management.

1.3 Project Status

- The project is at implementation stage where the machines have been ordered but not yet delivered in Tanzania. The shareholders are in the process to obtain the necessary permits and licenses to produce HDPE pipes in Mbarali, Mbeya, Tanzania to serve the domestic and export markets.

The Project Promoters

2.1 Background Information

- KANIOGA PLASTICS is a newly registered investment company in Tanzania. The founders of the company have been triggered by the business idea of producing pipes for the construction and water distribution sub-sectors.
- It is, therefore, that the company was founded in November, 2023 purposely to undertake the proposed HDPE Pipes manufacturing project.

2.2 The Company Legal Status

- The proposed project is being implemented by KANIOGA PLASTICS, a private limited liability Company registered under Tanzania's Company Laws. The company business objectives are, among other things, to carry on the business of industrial materials manufacturing and marketing as well as distribution of various goods.
- The company has been granted with the following certification:
    - Certificate of incorporation no. 170-070-488
    - Taxpayer Identification no. 170-070-488, and
    - Business License for distribution of construction materials.
- The company will, in due course, apply and obtain other relevant certifications.

2.3 The Company Ownership

- KANIOGA PLASTICS is a corporate company owned by two shareholders. The authorized share capital of the company is TZS 70,000,000 divided into 1,000-shares of TZS 70,000 each. The authorized share capital will be increased overtime to match with the level of investment of the company.
- The company shareholders and their shares distribution is presented below:

Shareholders' Name	Nationality	% Shareholding
Jafary Mussa Mussa	Tanzania	67**%**
Mussa Remigius Mussa	Tanzania	33**%**
Total		**100.00%**

- The shareholders have capacity to develop the project and their profiles are attached to this report.

The Project Concept

3.1 Introduction

- The project is set to produce HDPE Pipes. The global HDPE popularity and usage continues to increase. Plastic, particularly HDPE, is part of our everyday lives, from household products to industrial applications. Since its creation almost 70 years ago, HDPE piping and conduit has become a preferred material in the power, communications, and energy industries.
- HDPE conduit is a flexible and versatile product well-suited for numerous industrial settings. Specific applications include conduit for telecommunications and fiberoptic lines; flowlines for oil and gas; gas transmission and cross-country pipelines; and municipal water and sewer lines.

3.2 The Concept

- KANIOGA PLASTICS is intending to establish HDPE Pipes manufacturing plant for use in the construction, water supply systems and other uses. The plant will be established in Mbarali Mbaya, Tanzania.
- The project entails importation and installation of plant to manufacture HDPE pipes and it will have capacity materials feeding capacity of 200Kg/hour, equivalents to 1,460 tons per annum.

3.3 Project components

The project will entail the following investments:

a) Plant and Machinery

- The project will procure HDPE pipe extrusion line and HDPE shredder and crusher for the for manufacturing of various types of HDPE pipes. The project will install two lines:
  - 20mm – 110mm HDPE Pipeline, and
  - 125mm – 459mm HDPE pipeline
- The project will procure other machinery components to support the manufacturing operation.

b) Building and Civil Works

- The project will construct factory building for the project. The project will undertake civil works related to the factory building construction, installation of the plant and machineries.
- The building will accommodate the plant as well as storage of finished products and storage of raw materials, and the administration offices including selling office.

c) Motor vehicles

- The project will procure motor vehicles for distribution of the products to the clients. The motor vehicle component also refers to forklift to be used in the factory.

d) Office furniture and equipment

- These encompass office chairs, tables and other furniture and fittings; computers and computer accessories; security system and other equipment related to the project.

(e) Pre-operating costs which include finance costs (loan arrangement fees, legal fees, etc) and non-finance costs (staff recruitment and training, initial establishment costs, initial marketing costs, etc).

Investment and Financing Plan

4.1 Project Investment

- The project will invest in physical assets including buildings and civil works, machinery and equipment, technology, utilities, motor vehicles and other support facilities as summarized below.

KANIOGA Plastics Industry Ltd PROJECTED INVESTMENT AND FINANCING PLANS				
Investment Plan	**Amount in TZS '000'**			
	Additional Investment			**USD Equiv.**
	Year 1	**Year 2**	**Total Additional**	
Exchange Rate (USD/TZS)	2,750	2,750		
Land	220,000	-	**220,000**	**80,000**
Buildings & Civil works	350,000	-	**350,000**	**127,273**
Plant & Machinery	1,194,600	-	**1,194,600**	**434,400**
Equipment & Tools	146,000	-	**146,000**	**53,091**
Motor Vehicles	-	412,500	**412,500**	**150,000**
Office Furniture & equipment	58,000	-	**58,000**	**21,091**
Physical Assets	**1,968,600**	**412,500**	**2,381,100**	**865,855**
Pre-Operating Costs				
Pre-Operating costs (Finance)	330,000	-	330,000	**120,000**
Pre-Operating costs (Others)	150,000	-	150,000	**54,545**
Sub-total	**480,000**	**-**	**480,000**	**174,545**
Total Capital Expenditure	**2,448,600**	**412,500**	**2,861,100**	**1,040,400**
Working Capital	-	1,408,031	1,408,031	**512,011**
Total Investment	**2,448,600**	**1,820,531**	**4,269,131**	**1,552,411**

4.2 Project Financing

- The project will be financed through equity and external loans facilities as follows:

KANIOGA Plastics Industry Ltd PROJECTED INVESTMENT AND FINANCING PLANS				
Financing Plan	**Amount in TZS '000'**			
	Additional Financing			**USD Equiv.**
	Year 1	**Year 2**	**Total Additional**	
Equity Financing				
Ordinary Share capital	0	0	0	**0**
Shareholders funds (capex)	948,600	412,500	1,361,100	**494,945**
Shareholders funds (W/capital)	0	908,031	908,031	**330,193**
Total Equity	**948,600**	**1,320,531**	**2,269,131**	**825,138**
External Financing				
Medium-Term Loan	1,500,000	0	1,500,000	**545,455**
Short-term Loans	0	500,000	500,000	**181,818**
Total External Financing	**1,500,000**	**500,000**	**2,000,000**	**727,273**
Total Financing	**2,448,600**	**1,820,531**	**4,269,131**	**1,552,411**
Shareholders' Commitement	39%	73%	53%	53%
External financing	61%	27%	47%	47%

Status of the Project

5.1 Introduction

- The promoters have done some groundwork towards the implementation of the project. The status of the project in respect of the machinery identification and others are discussed herein below:

5.2 Statutory Documentation

- The company is a fully registered private limited liability company by shares. The company will in due course apply for licenses and permits for the establishment of the HDPE pipes manufacturing plant in Mbaya.

5.3 Land Acquisition

- The plant will be built on own- industrial land. The project promoters have already identified and purchased industrial plot of land in Mabarali, Mbeya Region which is suitable for the establishment of the project.
- The main criteria for selection of the premises include the adequacy of the area of the land to accommodate the machinery and other logistics of the project; accessibility for raw materials transportation and other factors.

5.4 Machinery Procurement

- The choice of the technology becomes important when considering the costs of running the plant. The plant will be sourced from China.
- The promoter has identified and communicated with potential machinery and technology suppliers from China and India to understand the technology in use and the associated costs.
- The project will solicit other equipment from within the country.

5.5 Infrastructure Development

- Development of infrastructure and procurement of other project facilities are in progress while other facilities are awaiting project installation.

Tanzania's Business Environment

6.1 An Overview

- Tanzania is the largest country in East Africa in terms of land with 883,749km^2 (881,289km^2 mainland 2,460km^2 Zanzibar), plus lakes totalling to 59,100km^3**.** The country has about 1,400km of coastline along the Indian Ocean.
- It is well situated geographically bordering Burundi, Kenya, Malawi, Mozambique, Rwanda, Uganda, Zambia and the Democratic Republic of Congo (DRC).
- Tanzania has a tropical type of climate. In the highlands, temperatures range between 100c and 200c.during cold and hot seasons respectively. The rest of the country has temperatures never falling lower than 200c. The hottest period spreads between November and February (250c - 310c) while the coldest period occurs between May and August (150c - 200c).

6.2 Socio-Economic Development

[a] Population

- Tanzania population has increased more than four times from 12.3 million people in 1967 to 57.6 million people in 2020. The average annual intercensal growth rate according to the 2012 Population and Housing Census is 2.7 percent.
- Below table provides a summary of the country's population trend from 1967 to 2020:

Year	1967	1978	1988	2002	2012	2020
Population	12.3	17.5	23.1	34.4	44.9	57.6
Source: National Economic Survey, 2020,						

[b] Urbanisation

- Tanzania cities and towns are rapidly urbanizing. This urbanization is a manifest of rural-to-urban migration as well as natural population increase. The four largest cities are Dar-es-salaam, Mwanza, Arusha and Mbeya.

Tanzania (Mainland): Urban Population (1967 – 2018)

Year	1967	1978	1988	2002	2012	2018
Urban						
Population	685,092	2,257,921	3,991,882	7,554,838	12,701,238	17,785,328
Growth Rate	-	11.50%	5.90%	4.70%	5.30%	
Dar-es-salaam						
Population	272,821	769,445	1,205,443	2,336,055	4,364,541	5,147,070
Growth rate	-	9.90%	4.60%	4.80%	6.50%	6.5%
Tanzania (Mainland)						
Population	11,975,757	17,036,499	22,507,047	33,461,849	43,625,354	52,619,314
Growth Rate	-	3.30%	2.80%	2.90%	2.70%	2.70%

- In 2018, Tanzania's urban population was 33.8% which is an increase from 7.3% in 1969 to 33.8% in 2018 growing at an average annual rate of 3.19%.

[c] Macro-economic Performance

- Tanzania maintains an economy highly dependent on agriculture, contributing an estimated 30% to the country's Gross Domestic Product (GDP) and employing nearly 70% of the working population.
- The economy continued to expand steadily in the aspects of GDP, inflation rate and exchange rate. The real GDP grew by 7.1% in 2017, maintaining the high growth momentum of the past 5-years.

Tanzania: Rate of Real GDP Growth, Inflation & USD Exchange

Year	2013	2014	2015	2016	2017	2018
GDP Growth	7.3%	7.0%	7.0%	7.0%	7.1%	7.0%
Inflation Rate	7.9%	6.1%	5.6%	5.2%	5.3%	3.5%
Exchange Rate (TZS/USD)	1,598	1,653	1,985	2,177	2,229	2,242

Source: Annual Report 2017/18, Bank of Tanzania; Tanzania in Figures, NBS June 2019

- In nominal terms, GDP increased to TZS 116.1 trillion from TZS 103.7 billion with per capita nominal income improving to TZS 2.27 million from TZS 2.13 million in 2016. During 2017/18, output growth was to a large extent driven by construction, transport and storage, and agriculture; altogether contributing almost half of the total growth.
- Real gross national disposable income (GNDI), which comprises compensation of employees, property income, current transfers, and operating surplus, grew by 6.3% in 2017 compared with 6.1% in the preceding year. Final consumption grew by 4.4% and accounted for 80.7% of the disposal income and 76.3% of nominal GDP.

Real Estate Sector

7.1 Introduction

- The project will target to produce HDPE pipes for use in the housing construction projects and others civil works.
- The present state of the Tanzania's real estate market leaves much to be desired. With 70 per cent of the urban population immersed in unplanned and un-serviced informal settlements, there lies immense opportunity for growth especially bearing in mind that the government's strategy is geared towards upgrading.
- Generally, the country's affordable housing is in short supply. With the current annual demand of 200,000 plots and a 3,000,000-housing gap, Tanzania faces a huge hurdle but equally presents immense opportunities for the prudent investor.

7.2 Main Players in Real Estate Sector

- The Ministry of Lands, Housing and Human Settlements Development has been mandated to administer land and human settlement in Tanzania on behalf of the President of Tanzania who serves as the trustee of all land. The Ministry currently has four major Departments: Land Administration, Survey and Mapping, Physical Planning and Housing.
- Within the Ministry of Lands also lie four core sector units namely the Registration of Titles Agency, Property Valuation, and the District Land and Housing Tribunal. The Ministry also has an agency dealing with Housing and Building materials research (the National Housing Building Research Agency), a commission dealing with Land Use Planning (National Land Use Planning Commission) and the National Housing Corporation.
- The limited amount of housing construction is largely done by the public sector either through the National Housing Cooperation (NHC), the Tanzania Building Agency (TBA), which caters specifically to the government employee market or through the parastatal pension and social security institutions.

- The private or "organized" developer/ builder market is virtually absent in Tanzania and there is no professional real estate developer associations. The little private development which does occur tends to be luxury developments aimed at the wealthy, expatriates or the Diaspora.

KEY ACTORS IN THE DEVELOPMENT OF SHELTER IN TANZANIA

	Actors	Contribution
1	Individual Un-surveyed Dwellings	70.0%
2	Individual Surveyed Dwellings	13.5%
3	National Housing Corporation	5.1%
4	Real Estate Developers	3.9%
5	Central Government	3.0%
6	Pension Institutions	2.4%
7	Local Government	2.1%

7.3 Government Policy Support

The proposed project is supported by the government initiatives to remove the problems of poor and unplanned urban settlements. Most notable programs include the following:

- **Urban Housing Programme**

  In 1969, the Government of Tanzania adopted a "slum clearance" policy, which saw replacement of informally built housing with decent constructed by the National Housing Cooperation (NHC).

- **National Sites and Services and Squatter Up-grading Programme**

  Between 1972 and 1990 the government, with support from the World Bank, implemented the National Sites and Services and Squatter Up-grading Programme as an alternative to the slum clearance. The programme was implemented in three phases covering seven major regions.

- **Sustainable Cities Programme**

  In 1992, Sustainable Cities Programme was launched and became operational in 1993. The main objective of the programmewas to build capacity ofthe Dar es Salaam City Councilto plan, coordinate and manage urban development and

growth, with emphasis on improved multi-sectoral coordination and participation. Based on the successes of the programme, its implementation was rolled out to seven other regions countrywide.

- **Community Infrastructure Upgrading Programme**

  The programme aimed to improve living conditions of low income residents of unplanned settlements by upgrading the existing infrastructure and services, and facilitating their participation in the planning, provision and management of infrastructure services in their respective areas. The project was implemented in two phases. The first phase (2003 – 2008) was funded by Government and the second phase (2008-2012) by the World Bank.

- **Unplanned Urban Settlements Regularisation Program**

  The Unplanned Urban Settlement Regularisation Program was conceived in 2004. The program primarily focused on identifying and adjudicating properties in unplanned areas and issuing residential licences. The licences were accepted by financial institutions and helped some owners to access credit.

7.4 Government Houses

- The Tanzania Building Agency (TBA), established in 2002, is tasked with the building and maintenance of government buildings and construction and sale of houses to civil servants.
- By December 2008, the agency had constructed 955 houses worth TZS 37.7 billion. In total TBA has constructed over 2000 houses countrywide for other commercial and renting purposes. Government houses are usually sold below the market rate and are associated with very high competition.

The Products & Services

8.1 Overview

- HDPE pipes are designed to handle different levels of pressure, and this is indicated by their Pressure Nominal (PN) grades. These grades, following European standards, give a clear idea of the maximum pressure the pipe can withstand when carrying water at 68 degrees Fahrenheit.
- Below is the brief of the PN grades:
  - **PN 2.5:** Indicates pipes capable of handling a maximum pressure of 2.5 bar.
  - **PN 4:** Designed for applications where the maximum pressure does not exceed 4 bar.
  - **PN 6:** Suitable for applications requiring pressures up to 6 bar.
  - **PN 10:** Offers higher pressure capacity, supporting pressures up to 10 bar.
  - **PN 12.5:** Denotes pipes capable of withstanding pressures up to 12.5 bar.
  - **PN 16:** Designed for applications requiring pressures up to 16 bar.
  - **PN 20:** The highest grade, suitable for applications where pressures can reach up to 20 bar.

8.2 20mm – 110mm Pipes

- The project will a line to produce 20 mm – 110mm HDPE pipes of the following PN:

20-110mmHDPEpipeline
Pipe Sizes
25mm: PN10
32mm: PN10, PN16, PN 12.5
40mm:PN10
50mm:PN10
63mm: PN10
75mm:PN10
90mm:PN10, PN12.5, PN20
110mm:PN10

8.3 125mm – 450mm Pipes

- The project will, also, manufacture 112mm – 450mm HDPE pipes of the following PN:

125-450mmHDPEpipeline
Pipe Sizes
125mm:PN10
140mm:PN10
160mm:PN10
180mm:PN10
250mm:PN10
315mm:PN10
355mm:PN10
400mm:PN10
450mm:PN10

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Marketing Strategy

9.1 Introduction

- KANIOGA PLASTICS already has customer base to serve for the HDPE pipes for the building construction. The company main strategy will be that of ensuring reliable and timely delivery services and product quality that meet the specified product parameter.
- The shareholders of KANIOGA PLASTICS will strive to build goodwill over the years to the extent that most of the major customers will be retained for the products of the company for years.
- The company will use the facilities of its close business associates in the sourcing of the minerals for supply to its customers.

9.2 Company Strategy

The project will focus on the following strategic issues for the business:

(i) **The Product:**

- The Company is positioned to offer the market with high quality HDPE pipes of required standards for the supply to mega projects and other small projects.

(ii) Market Segmentation

- The project will focus on high-end customers to small and medium level customers for its products.
- The company will open distribution centre in Mbeya city, and it will market its products in other regions within Tanzania and outside the country.

(iii) **Capital Investment**

- At minimum, producing higher quality HDPE pipes involves pre-qualifying feedstock and introducing and re-introducing the products to multiple types of equipment.
- The project will undertake to invest in high technology machinery to produce the right products in the market.

(iv) **Distribution network**

- The company strength will be establishment of market channels especially in the export market that will ensure fast moving of the company's products.
- The company will have a central warehouse from where the products will be distributed to customers.

(v) **Promotion and advertisement**

- All the company products will be branded to differentiate them with products of other manufacturers. The company will use direct marketing and advertise in the media.

(vi) **Pricing and prices**

- The company will initially use penetration strategy in pricing its products in which lower prices will be offered to entice customers.
- The lower prices will be offered to wholesale buyers.

Technical Aspects

10.1 Project Location

- The project shareholders have secured the factory premises. The project will be located in the following area: Plot no. 616, Block E, Lugelele (Nyanyanjo) area, Mbarali District, Mbeya Region.

10.2 Land Ownership

- The land for the factory development has Right of Occupancy with title no. 64763, land Office number (L.O): 1372666 measuring 8,415 square meters. The Right of Occupancy covers 99-years commencing October, 2023.
- The land is in the names of KANIOGA PLASTICS INDUSTRY LTD, the project promoter.

10.3 Buildings and Civil Works

- The project will build an industrial building for the project. The total land requirement of the project is estimated to be about 4,000 m^2.
- The built- up area is estimated to be about 3,000 m^2, of which 2,000 m^2 would be for factory hall; 800 m^2 for storage purposes; AND 200 m^2 for office logistics; and the balance 1,000 m^2 would be open space.
- The building will be developed in the following sections:

(i) Production Unit which will house the following Units:

- HDPE pipes Extrusion Line,
- Shredder and crusher machine.
- Printing machine
- Finished product cutting and packing machines
- Materials handling equipment,
- Warehouse for raw materials including HDPE resin and others,
- Warehouse for storing the finished products – HDPE pipes.
- Electric generator unit
- Pre-Delivery Inspection and delivery section

(ii) Storage unit

- The property will have storage area which will be used as storage facilities for the raw materials, spare parts and finished products.

(iii) Administration block

- The property will have space to provide for administration purposes.

(iv) Other facilities

- The property will have the following additional facilities:
  - ✓ Power House
  - ✓ kitchen and dining unit
  - ✓ Gate house

(v) External works:

- This includes motor vehicles parking lots, pavements, drainage and other external works.

10.4 Plant and Machinery

General Information

- The project will procure and install plant to manufacture one product: HDPE pipes.
- The plant will have HDPE resin feeding capacity of 200Kg/Hour.
- The project will import and install a 200kg/hour plant composed of the following line machineries:
  - Automatic HDPE resin filling machine
  - HDPE pipe Extrusion Line
  - Plastic Shredder and Crusher
  - Laboratory for quality control,
  - Printing machine
  - Cutting and packing machine

- The Extrusion line has two types of injection molds:
  - Injection mold for 20mm to 110mm HDPE pipes
  - Injection mold for 125mm to 450mm HDPE pipes

10.5 Support Facilities

(a) Office Furniture and equipment

- The project will procure office furniture and equipment. This will entail procurement of office chairs, office tables, office cabinets, carpets and other office furniture.
- The procurement of office equipment entails purchase of computers and computer accessories, computer software and other office equipment.

(b) Motor Vehicles

- The project will procure motor vehicles which include trucks for use in the operation of the project. The project will procure office motor vehicles and vehicles for transporting products to the market.
- The trucks will comprise of the following:
    - Trucks of 15 tons carrying capacity each
    - Trucks of 2 tons carrying capacity each

(c) Utilities

- The cost of electric power has been estimated based on installed load and its utilization. Additional to electricity, the plant will require fuel and water for its operations.
- All utilities requirements have been worked out to installed capacity. The plant will consume 40kw per hour.

(d) Pre-Operational Expenses

- The pre-operational expenses of the project have been incorporated which include finance costs, statutory expenses, consultancy costs and initial administration costs.

10.6 Plant Capacity

- Based on the projected demand and technology recommended, it is envisaged that the plant will have the following capacity:

			Year-1	Year-2	Year-3	Year-4	Year-5
Plant Working Days							
Total days in a year	365	Days/Year	-	365	365	365	365
Sundays	48	Days/Year	-	48	48	48	48
Public Holidays	16	Days/Year	-	16	16	16	16
Downtime 10%	37	Days/Year	-	37	37	37	37
Scheduled Maintenance	12	Days/Year	-	12	12	12	12
Total Non-working Days	**113**	**Days/Year**	**-**	**113**	**113**	**113**	**113**
Total operating days	**253**	**Days/Year**	**-**	**253**	**253**	**253**	**253**
Plant Working Hours							
No. of shifts/Day	2	Shifts/Day	-	2	2	2	2
No. hours/Shift	10	Hours/Shift	-	10	10	10	10
No. of hours per Day	20	Hours/Day	-	20	20	20	20
Products Capacity							
HDPE Materials feeding Capacity		Kg/Hour	-	200	200	200	200
		MT/Year	-	1,010	1,010	1,010	1,010
Plant Capacity Utilisation		%	-	50%	55%	60%	65%
HDPE Consumed		MT/Year	-	505	556	606	657
Product Lines							
20-110mmHDPEpipeline		%	-	35%	35%	35%	35%
		MT/Year	-	177	194	212	230
		KG/Year	-	176,750	194,425	212,100	229,775
125-450mmHDPEpipeline		%	-	65%	65%	65%	65%
		MT/Year	-	328	361	394	427
		KG/Year	-	328,250	361,075	393,900	426,725

10.7 Products Produced

- The plant is envisaged to start operation in the 2nd year and it will manufacture two product lines as summarized below.

					Year-1	Year-2	Year-3	Year-4	Year-5
Products Produced									
20-110mmHDPEpipeline									
Pipe Sizes	%	Kg/Meter							
25mm: PN10	5%	0.1	Meters/Year		-	88,375	97,213	106,050	114,888
32mm: PN10, PN16, PN 12.5	8%	0.1	Meters/Year		-	141,400	155,540	169,680	183,820
40mm:PN10	10%	0.21	Meters/Year		-	84,167	92,583	101,000	109,417
50mm:PN10	12%	0.29	Meters/Year		-	73,138	80,452	87,766	95,079
63mm: PN10	15%	0.71	Meters/Year		-	37,342	41,076	44,810	48,544
75mm:PN10	18%	1.01	Meters/Year		-	31,500	34,650	37,800	40,950
90mm:PN10, PN12.5, PN20	15%	1.45	Meters/Year		-	18,284	20,113	21,941	23,770
110mm:PN10	17%	2.15	Meters/Year		-	13,976	15,373	16,771	18,168
20-110mmHDPEpipeline	**100%**		**Meters/Year**		**-**	**488,181**	**536,999**	**585,817**	**634,636**
125-450mmHDPEpipeline									
Pipe Sizes	%	Kg/Meter							
125mm:PN10	10%	2.75	Meters/Year		-	11,936	13,130	14,324	15,517
140mm:PN10	14%	3.44	Meters/Year		-	13,359	14,695	16,031	17,367
160mm:PN10	18%	4.50	Meters/Year		-	13,130	14,443	15,756	17,069
180mm:PN10	15%	5.00	Meters/Year		-	9,848	10,832	11,817	12,802
250mm:PN10	12%	10.91	Meters/Year		-	3,610	3,971	4,333	4,694
315mm:PN10	8%	13.35	Meters/Year		-	1,967	2,164	2,360	2,557
355mm:PN10	9%	22.09	Meters/Year		-	1,337	1,471	1,605	1,739
400mm:PN10	8%	27.91	Meters/Year		-	941	1,035	1,129	1,223
450mm:PN10	6%	35.35	Meters/Year		-	557	613	669	724
125-450mmHDPEpipeline	**100%**		**Meters/Year**		**-**	**56,686**	**62,354**	**68,023**	**73,691**
Total Pileline			**Meters/Year**		**-**	**544,867**	**599,354**	**653,840**	**708,327**

HDPE Pipes Manufacturing Process

11.1 Introduction

- HDPE pipe is manufactured from resin, which is made from natural gas feedstock. Resin will be imported and transported from Dar-es-salaam to the factory in Mbarali, Mbeya via rail/trucks and is stored in tanks onsite until the manufacturing process begins.

11.2 The Process

(i) Receive And Test Raw Materials

- The first step in the manufacturing process is receiving the raw material: HDPE resin. Resin is shipped by rail in the form of small, colorless pellets and is inspected upon receipt.
- Resin is typically stored onsite in silos for easy distribution to the production lines. Before the manufacturing process can begin, the resin must be carbon black tested. Carbon black testing is an ash test that measures the carbon content of the HDPE resin. Carbon black is a UV stabilizer that prevents HDPE pipes from degrading when exposed to sunlight and each type of pipe requires a specific carbon black content.

(ii) Batching, Heating, Blending & Extrusion

- The first step of manufacturing is batching. This involves drawing the resin through pneumatic tubes to the production line. At this point, color additives and/or striping are introduced.
- Next, the resin is added to a heating element and blended with a tapered screw. After the resin heats and mixes, it is pulled out through a die head. The desired pipe dimensions are input to the system and the resin mix is added to the extruder.

- The amount of material allowed into the extruder is closely monitored; the system automatically controls the material allowed to flow into the extruder, based on how much material should be in each foot of pipe.

(iii) Sizing & Cooling

- After the material leaves the die head, it enters a vacuum tank where it is held at the correct diameter. It is sprayed with water, causing the material to cool and harden, setting the dimensions.
- The cooling process involves several rounds of exposure to water tanks and open areas to ensure that the pipe dimensions set correctly.

(iv) Quality Control

- Pipe is inspected for quality at all steps in the manufacturing process. Throughout extrusion, the operator centers the pipe to ensure the wall thickness is uniform and confirms that every dimensional aspect is accurate.
- Samples of extruded pipe are taken before and during each production run to confirm specifications such as tensile strength, burst rating and dimensions.

(v) Printing

- As the finished pipe exits the extrusion machine, additional striping can be added to the pipe for further identification.
- A print line is hot-indent stamped into the surface at the end of the manufacturing process. Information like date, location, material code, footage and manufacturer name is also stamped onto the HDPE pipe at this stage.

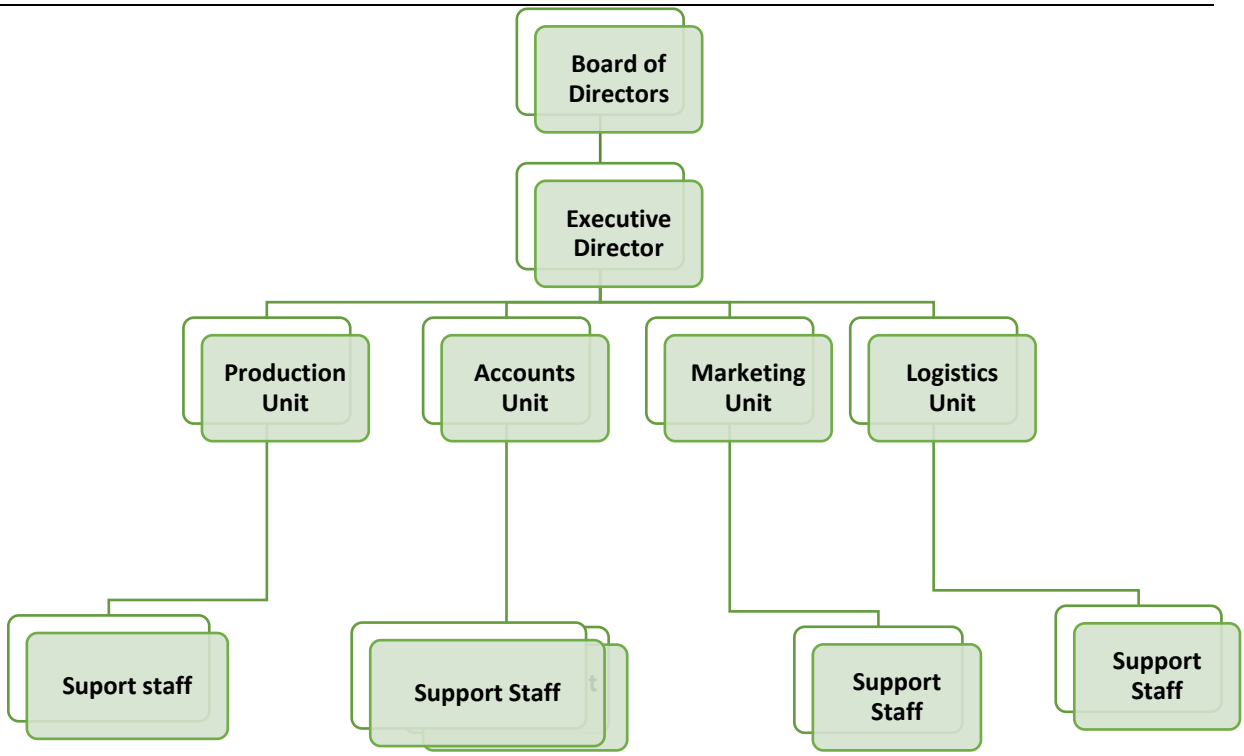
(vi) Cutting, Packaging & Shipping

- Once a length of pipe is complete, it is cut with a rotary automated cutter. The rotatory cutters radiate at high speed and slowly cut into the wall of the pipe, so the cut is smooth and uniform.
- The extruded, inspected and cut pipe is then prepared for distribution on either coils, reels or straight-line sticks.

Management And Organisation

12.1 Organisation Structure

- The project will be under the general management of KANIOGA PLASTICS. The company will have a Board of Directors responsible for the major policy and strategic issues of the business. The Board is comprised of members representing the shareholders and other non-shareholders.
- The project will have a flat organization structure to reduce the communication barriers. The daily management issues will be under the Executive Director who will be in-charge of all matters of the project. The Executive Director will report to the Board of Directors.
- The Executive Director will be assisted by different functional staff in Production, Finance and Marketing, and Logistics.
- The company's Organisation Chart is presented below:



12.2 Staffing

- The company is projecting to employ a total of 138-staff contingent excluding casual labourers and indirect employment that will be created from the operations.
- The staff contingent will comprise of the following:

Staff Composition	No. of Staff
Administration Section	26
Operations Section	102
Accounts and Finance Section	10
Total Number of Staff	**138**

12.3 Remuneration

- The project will pay salaries and wages to the workers at competitive rates as shown in the attached Annex 13.
- Additionally, the project will provide the workers with other benefits including lunch at work place, transport services and other benefits.

12.4 Manpower Training on Factory Operation

- The management will mostly employ experienced workers so that they can easily adopt the system and good practices involved in efficient running of the plants.
- The management will identify the training needs of all the technical staff and will install systematic and focused training programs and refresher courses.

12.5 Human Resources Development

- KANIOGA PLASTICS in collaboration with other relevant stakeholders will provide training programs to workers on issues such as:
    - Production and quality control
    - Plant maintenance
    - Warehouse management
    - Marketing and logistics
    - And other training courses

Implementation And Operational Plan

13.1 Implementing Agency

- The project will be implemented by KANIOGA PLASTICS. The management of the company will undertake to organize all the aspects of the project including the following:
  - Undertake to supervise the construction of the buildings and civil works
  - Ordering and procurement of plant, machinery and equipment.
  - Procurement of office equipment, furniture and fittings, utilities and motor vehicles.
  - Pre-operating expenses and initial working capital for the proposed project.
  - Provide working capital for the variable and fixed costs of the project.
  - Finance all cost over-runs resulting from the project.

13.2 Implementation Plan

- The company has already obtained the Proforma Invoices from suppliers of the main plant and machinery.
- The buildings and civil works are subject to delivery of the machinery on site from China.
- The ordering, delivery, installation and commissioning of the plants is estimated to take period of not more than 12-months.
- Except for the plants, the rest of the physical assets will be procured locally.

13.3 Operational Plan

- Upon completion of the implementation, KANIOGA PLASTICS will undertake to manage and operate the project.
- The shareholders of the company will provide strategic and policy directives to the project.

13.4 Project Schedule

The project implementation plan is as presented below:

KANIOGA Plastics Industry Ltd

Project Implementation Schedule

		Implementation Period	Year 0	Year 1			
				1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Stage 1	**Preliminary Preparation**						
	Company Registration						
	Identification and Procurement of Land						
	Identification of machinery suppliers						
	Feasibility Study Preparation						
Stage 2	**Funds Mobilisation**						
	Loan Application and Processing						
	Internal Resources Mobilisation						
	Loans Approval						
Stage 3	**Procurement of Plant & Machinery**						
	Selection of Machinery Supplier						
	Application for TIC Incentives	30 Days					
	Plant Design	90 Days					
	Plant Manufacturing	180 Days					
	Plant Delivery on Site	60 Days					
Stage 4	**Buildings & Civil Works**						
	Environmental Impact Assessment (EIA) Study	90 Days					
	Buildings Design						
	Application for building permit						
	Application for Ground water drilling permit						
	Selecting and Contracting Contractors						
	Construction works - Buildings & civil works						
	Ground water extraction works						
Stage 5	**Plant Installation & Commissioning**						
	Plant Installation works						
	Procurement of support facilities						
	Staff Recruitment & Training						
	Application for Manufacturing Licence						
	Production of the First Batch						
	Plant Commissioning						

Risks And Uncertainties

14.1 Delays in Project Implementation

- A number of factors may lead to delays in project commissioning including statutory documentations, funds mobilisation and timely ordering of the machinery as well as machinery delivery and installation works.
- The shareholders will follow closely with the government technocrats to reduce delays in the project implementation.
- On the machinery procurement and installations, the risks are minimised by the choice of the turnkey structure.

14.2 Products Quality

- The project will invest in high quality plant technology that will produce HDPE pipes that meet the market demand.

14.3 Political risks

- The government may from time-to-time issue new directives which may negatively impact on the project implementation and operations.
- This risk is strongly addressed by the fact that the Tanzania government has maintained long-term commitment of involving the private sector in policy decisions.
- The factory will adhere to international standards on emissions and other environmental issues.

14.4 Managerial risks

- The management of HDPE pipes manufacturing industry requires close supervision and expertise in production and marketing.
- The company will employ personnel with experience in the manufacturing industry in the fields of production and marketing.
- Additionally, the shareholders of KANIOGA PLASTICS will be part of the management team to drive the finance and marketing department.

Financial And Economic Evaluation

15.1 Introduction

- This section presents the financial plan.
- The main objective of the financial analysis is to examine both commercial profitability and economic viability of the proposed project.
- The financial projections are divided into the following sections:
  - (i) Financial Results Section - presents the financial outcomes of the project including the project profitability, cashflows and balance sheets statements
  - (ii) Investment and Financing Assumptions – shows the initial capital expenditure and working capital costs and the corresponding sources of finance including external financing assumptions.
  - (iii) Operations Assumptions – presents the production, revenues and operating
  - (iv) costs assumptions as well as the working capital projections.

15.2 Financial Goals

The immediate financial goals of the company are as follows**:**

- Finance the investment costs through equity financing and external financing. The shareholders are seeking for working capital loan for the proposed investment.
- Obtain funds from lending institutions to part-finance additional working capital.

15.3 Financial Assumptions

(i) General Financial Assumptions

- The currency of accounting is Tanzania Shilling (TZS)
- The exchange rate of TZS to USD is assumed at TZS 2,750 to 1 USD.
- Financial projections for the first 10-years of operation have been worked out.
- Project Commissioning is within 12-month of project implementation.
- The project entails investment in HDPE pipes manufacturing plant.

(ii) Investment Plan

- Projected Investment costs and financing plan are presented in Annex 5
- The investment will be on the fixed assets, pre-operating costs and initial working capital as summarized below:

Annex 5

KANIOGA Plastics Industry Ltd

PROJECTED INVESTMENT AND FINANCING PLANS

Investment Plan	**Amount in TZS '000'**			
	Additional Investment			**USD Equiv.**
	Year 1	**Year 2**	**Total Additional**	
Exchange Rate (USD/TZS)	2,750	2,750		
Land	220,000	-	**220,000**	**80,000**
Buildings & Civil works	350,000	-	**350,000**	**127,273**
Plant & Machinery	1,194,600	-	**1,194,600**	**434,400**
Equipment & Tools	146,000	-	**146,000**	**53,091**
Motor Vehicles	-	412,500	**412,500**	**150,000**
Office Furniture & equipment	58,000	-	**58,000**	**21,091**
Physical Assets	**1,968,600**	**412,500**	**2,381,100**	**865,855**
Pre-Operating Costs				
Pre-Operating costs (Finance)	330,000	-	330,000	**120,000**
Pre-Operating costs (Others)	150,000	-	150,000	**54,545**
Sub-total	**480,000**	**-**	**480,000**	**174,545**
Total Capital Expenditure	**2,448,600**	**412,500**	**2,861,100**	**1,040,400**
Working Capital	-	1,408,031	1,408,031	**512,011**
Total Investment	**2,448,600**	**1,820,531**	**4,269,131**	**1,552,411**

(iii) Financing Plan

- The proposed financing structure of the project include shareholders' equity and external financing.
- The proposed financing structure is as follows:

Annex 6

KANIOGA Plastics Industry Ltd

PROJECTED INVESTMENT AND FINANCING PLANS

Financing Plan	**Amount in TZS '000'**			
	Additional Financing			**USD Equiv.**
	Year 1	**Year 2**	**Total Additional**	
Equity Financing				
Ordinary Share capital	0	0	0	**0**
Shareholders funds (capex)	948,600	412,500	1,361,100	**494,945**
Shareholders funds (W/capital)	0	908,031	908,031	**330,193**
Total Equity	**948,600**	**1,320,531**	**2,269,131**	**825,138**
External Financing				
Medium-Term Loan	1,500,000	0	1,500,000	**545,455**
Short-term Loans	0	500,000	500,000	**181,818**
Total External Financing	**1,500,000**	**500,000**	**2,000,000**	**727,273**
Total Financing	**2,448,600**	**1,820,531**	**4,269,131**	**1,552,411**
Shareholders' Commitement	39%	73%	53%	53%
External financing	61%	27%	47%	47%

15.4 Operating Assumptions

(i) Depreciation Assumptions

- The Depreciation Schedules are presented in Annex 8.
- The depreciation and amortization rates are as indicated in the schedule.

(ii) Production Assumptions

- The Production Assumptions are presented in Annex97. The plant is assumed to operate for 20-hours per day and 253-days in a year it will produce HDPE pipes.
- The plant will have capacity to process about 200Kg/hour of HDPE resin and it is assumed that 20mm to 110mm HDPE pipes will be 35%; and 125mm to 450mm HDPE pipes will be 65% of the total production.
- In the first year, the plant will operate for 9-months after the first 3-month of project implementation.
- The plant capacity utilization is assumed to increase from 50% in the first year increasing to 80% in the 8th year.

(iii) Prices Assumptions

- The product selling prices are presented in Annex 10. The selling prices are first presented in TZS currency.
- The prices are assumed to increase at a rate of 2% annually. The projected products prices are as follows:

			Year-1	Year-2	Year-3	Year-4	Year-5
Products Prices							
Change in Prices	TZS/Meter	per annum	-	2%	2%	2%	2%
20-110mmHDPEpipeline							
25mm: PN10	765	TZS/Meter	765	780	796	812	828
32mm: PN10, PN16, PN 12.5	1,165	TZS/Meter	1,165	1,188	1,212	1,236	1,261
40mm:PN10	1,750	TZS/Meter	1,750	1,785	1,821	1,857	1,894
50mm:PN10	2,476	TZS/Meter	2,476	2,526	2,576	2,628	2,680
63mm: PN10	3,823	TZS/Meter	3,823	3,899	3,977	4,057	4,138
75mm:PN10	5,475	TZS/Meter	5,475	5,585	5,696	5,810	5,926
90mm:PN10, PN12.5, PN20	7,975	TZS/Meter	7,975	8,135	8,297	8,463	8,632
110mm:PN10	11,798	TZS/Meter	11,798	12,034	12,275	12,520	12,771
125-450mmHDPEpipeline							
125mm:PN10	15,021	TZS/Meter	15,021	15,321	15,628	15,940	16,259
140mm:PN10	22,557	TZS/Meter	22,557	23,008	23,468	23,938	24,416
160mm:PN10	54,620	TZS/Meter	54,620	55,712	56,827	57,963	59,122
180mm:PN10	72,622	TZS/Meter	72,622	74,074	75,556	77,067	78,608
250mm:PN10	98,242	TZS/Meter	98,242	100,207	102,211	104,255	106,340
315mm:PN10	114,360	TZS/Meter	114,360	116,647	118,980	121,360	123,787
355mm:PN10	264,000	TZS/Meter	264,000	269,280	274,666	280,159	285,762
400mm:PN10	318,000	TZS/Meter	318,000	324,360	330,847	337,464	344,213
450mm:PN10	354,000	TZS/Meter	354,000	361,080	368,302	375,668	383,181

(iv) Revenues Assumptions

- The projected revenues assumptions are presented in Annex 10.
- The projected revenues are a function of the products produced and the projected selling prices.
- About 26% of the project revenues will be generated from sale of 20mm to 110mm HDPE pipes, and 74% will come from 125mm to 450mm HDPE pipes.
- The summary of the project revenues are as follows:

ANNEX 10

KANIOGA Plastics Industry Ltd

Projected Production & Revenues Schedule

Amount in TZS '000'

		Year-1	Year-2	Year-3	Year-4	Year-5	Year-6	Year-7	Year-8	Year-9	Year-10
Sales Revenues											
20-110mmHDPEpipeline											
25mm: PN10	TZS/Year	-	68,959	77,372	86,094	95,134	104,501	114,204	124,254	126,740	129,274
32mm: PN10, PN16, PN 12.5	TZS/Year	-	168,026	188,525	209,777	231,803	254,627	278,271	302,759	308,814	314,990
40mm:PN10	TZS/Year	-	150,238	168,566	187,569	207,263	227,671	248,812	270,707	276,121	281,643
50mm:PN10	TZS/Year	-	184,711	207,246	230,608	254,822	279,912	305,904	332,824	339,480	346,270
63mm: PN10	TZS/Year	-	145,612	163,377	181,794	200,882	220,661	241,151	262,372	267,620	272,972
75mm:PN10	TZS/Year	-	175,912	197,373	219,622	242,683	266,578	291,331	316,968	323,308	329,774
90mm:PN10, PN12.5, PN20	TZS/Year	-	148,735	166,881	185,693	205,191	225,394	246,323	268,000	273,360	278,827
110mm:PN10	TZS/Year	-	168,182	188,700	209,971	232,018	254,863	278,529	303,040	309,100	315,282
Sub-total	**TZS/Year**	**-**	**1,210,374**	**1,358,039**	**1,511,127**	**1,669,796**	**1,834,207**	**2,004,526**	**2,180,924**	**2,224,542**	**2,269,033**
% of Total Revenues	%		26%	26%	26%	26%	26%	26%	26%	26%	26%
	TZS/Meter		**2,479**	**2,529**	**2,580**	**2,631**	**2,684**	**2,737**	**2,792**	**2,848**	**2,905**
125-450mmHDPEpipeline											
125mm:PN10	TZS/Year	-	182,882	205,194	228,325	252,299	277,140	302,875	329,528	336,118	342,841
140mm:PN10	TZS/Year	-	307,366	344,865	383,740	424,033	465,784	509,035	553,830	564,907	576,205
160mm:PN10	TZS/Year	-	731,504	820,747	913,268	1,009,161	1,108,525	1,211,459	1,318,067	1,344,429	1,371,317
180mm:PN10	TZS/Year	-	729,448	818,441	910,701	1,006,325	1,105,409	1,208,054	1,314,363	1,340,650	1,367,463
250mm:PN10	TZS/Year	-	361,792	405,930	451,690	499,117	548,261	599,171	651,898	664,936	678,235
315mm:PN10	TZS/Year	-	229,450	257,443	286,464	316,542	347,709	379,997	413,436	421,705	430,139
355mm:PN10	TZS/Year	-	360,127	404,062	449,611	496,820	545,738	596,414	648,898	661,876	675,114
400mm:PN10	TZS/Year	-	305,184	342,417	381,016	421,023	462,478	505,422	549,899	560,897	572,115
450mm:PN10	TZS/Year	-	201,173	225,716	251,161	277,533	304,859	333,167	362,486	369,736	377,130
Sub-total	**TZS/Year**	**-**	**3,408,926**	**3,824,815**	**4,255,976**	**4,702,853**	**5,165,903**	**5,645,594**	**6,142,407**	**6,265,255**	**6,390,560**
% of Total Revenues	%		74%	74%	74%	74%	74%	74%	74%	74%	74%
	TZS/Meter		60,137	61,340	62,567	63,818	65,094	66,396	67,724	69,079	70,460
Gross Revenues	**TZS/Year**	**-**	**4,619,300**	**5,182,854**	**5,767,103**	**6,372,649**	**7,000,110**	**7,650,120**	**8,323,331**	**8,489,797**	**8,659,593**
Revenues/Meter	**TZS/Meter**	**-**	**8,478**	**8,647**	**8,820**	**8,997**	**9,177**	**9,360**	**9,547**	**9,738**	**9,933**
Revenues Growth	%	-	-	12%	11%	11%	10%	9%	9%	2%	2%

(v) Operating Costs Assumptions

- The projected operating costs assumptions include direct and indirect operating costs.
- The projected direct operating costs have presented in Annexes 11, and the projected indirect operating costs are presented in Annex 12.

(a) Production Costs –

- The production costs presented in Annex 11. The Direct Operating costs relate to raw materials (local and imported), electricity, fuel for generator,

maintenance and repair, oil and lubricants, consumables and other direct costs.

- The projected Direct Operating costs are as presented below:

ANNEX 11

KANIOGA Plastics Industry Ltd

Projected Operating Costs Schedule

Amount in TZS '000'

			Year-1	Year-2	Year-3	Year-4	Year-5	Year-6	Year-7	Year-8	Year-9	Year-10
Change in Costs	2%	per annum	-	2%	2%	2%	2%	2%	2%	2%	2%	2%
20-110mmHDPEpipeline												
Production cost per meter		TZS/meter	1,488	1,517	1,548	1,579	1,610	1,642	1,675	1,709	1,743	1,778
Cost Composition												
Local raw materials	14.3%	of costs	-	105,927	118,850	132,248	146,134	160,522	175,428	190,866	194,683	198,577
Imported raw materials	80.0%	of costs	-	592,599	664,896	739,848	817,532	898,028	981,416	1,067,780	1,089,136	1,110,919
Electricity	3.0%	of costs	-	22,222	24,934	27,744	30,657	33,676	36,803	40,042	40,843	41,659
Fuel - Generator	0.50%	of costs	-	3,704	4,156	4,624	5,110	5,613	6,134	6,674	6,807	6,943
Maintenance & repair	0.80%	of costs	-	5,926	6,649	7,398	8,175	8,980	9,814	10,678	10,891	11,109
Oil & Lubricants	0.12%	of costs	-	889	997	1,110	1,226	1,347	1,472	1,602	1,634	1,666
Consubables	0.80%	of costs	-	5,926	6,649	7,398	8,175	8,980	9,814	10,678	10,891	11,109
Other direct costs	0.48%	of costs	-	3,556	3,989	4,439	4,905	5,388	5,888	6,407	6,535	6,666
Sub-total	**100%**		**-**	**740,749**	**831,120**	**924,810**	**1,021,915**	**1,122,534**	**1,226,770**	**1,334,725**	**1,361,420**	**1,388,648**
% of Revenues			-	16%	16%	16%	16%	16%	16%	16%	16%	16%
125-450mmHDPEpipeline												
Production cost per meter		TZS/meter	33,075	33,737	34,412	35,100	35,802	36,518	37,248	37,993	38,753	39,528
Cost Composition												
Local raw materials	12.3%	of costs	-	235,226	263,924	293,675	324,511	356,463	389,563	423,844	432,321	440,968
Imported raw materials	82.0%	of costs	-	1,568,174	1,759,491	1,957,834	2,163,407	2,376,419	2,597,086	2,825,630	2,882,143	2,939,785
Electricity	3.0%	of costs	-	57,372	64,372	71,628	79,149	86,942	95,015	103,377	105,444	107,553
Fuel - Generator	0.50%	of costs	-	9,562	10,729	11,938	13,192	14,490	15,836	17,229	17,574	17,926
Maintenance & repair	0.80%	of costs	-	15,299	17,166	19,101	21,106	23,185	25,337	27,567	28,118	28,681
Oil & Lubricants	0.12%	of costs	-	2,295	2,575	2,865	3,166	3,478	3,801	4,135	4,218	4,302
Consubables	0.80%	of costs	-	15,299	17,166	19,101	21,106	23,185	25,337	27,567	28,118	28,681
Other direct costs	0.48%	of costs	-	9,180	10,299	11,460	12,664	13,911	15,202	16,540	16,871	17,208
Sub-total	**100%**		**-**	**1,912,407**	**2,145,721**	**2,387,602**	**2,638,301**	**2,898,072**	**3,167,178**	**3,445,890**	**3,514,808**	**3,585,104**
% of HDPE Revenues			-	41%	41%	41%	41%	41%	41%	41%	41%	41%
Direct Operating Costs												
Local raw materials		TZS/Year	-	341,153	382,774	425,923	470,645	516,985	564,991	614,710	627,004	639,545
Imported raw materials		TZS/Year	-	2,160,773	2,424,387	2,697,682	2,980,939	3,274,446	3,578,502	3,893,410	3,971,278	4,050,704
Electricity		TZS/Year	-	79,595	89,305	99,372	109,806	120,618	131,818	143,418	146,287	149,213
Fuel - Generator		TZS/Year	-	13,266	14,884	16,562	18,301	20,103	21,970	23,903	24,381	24,869
Maintenance & repair		TZS/Year	-	21,225	23,815	26,499	29,282	32,165	35,152	38,245	39,010	39,790
Oil & Lubricants		TZS/Year	-	3,184	3,572	3,975	4,392	4,825	5,273	5,737	5,851	5,969
Consubables		TZS/Year	-	21,225	23,815	26,499	29,282	32,165	35,152	38,245	39,010	39,790
Other direct costs		TZS/Year	-	12,735	14,289	15,900	17,569	19,299	21,091	22,947	23,406	23,874
Total Direct Operating Costs		TZS/Year	**-**	**2,653,156**	**2,976,841**	**3,312,412**	**3,660,216**	**4,020,606**	**4,393,948**	**4,780,616**	**4,876,228**	**4,973,752**
		TZS/Meter		4,869	4,967	5,066	5,167	5,271	5,376	5,484	5,593	5,705
% of total Revenues			-	57%	57%	57%	57%	57%	57%	57%	57%	57%

- The direct operating costs are projected to account for about 57% of the total revenues.

(b) Indirect Operating Costs

- The Indirect Operating costs are presented in Annex 12. The indirect operating costs include three cost components:
  - Staff salaries and benefits
  - Administration expenses.
- The projected indirect operating costs account for about 20% of the project revenues and the Total Operating Costs are projected to account for 77% of the revenues.

(c) Staff Salaries and Benefits

- The projected Salaries Schedules are presented in Annex 13 for both the direct labour and the indirect labour costs.
- The project will employ 102-direct labour and 36-indirect labour whose salaries and benefits will account for about 15% of the project revenues.

(d) Working Capital Assumptions

- The projected working capital schedule is presented in Annex 14.
- The working capital schedule presents the current assets and current liabilities of the project.
- The schedule shows that the project will require about TZS 1.4 billion at the commissioning to cover for the initial operating costs of the project.

15.5 Financial Results

- The financial results are presented in the Profit and Loss Statements and Cash-flow Statements and Balance Sheets.

(i) Projected Profitability

- Profitability of the project has been carried out and presented in Annex 1.
- The analysis of the profitability of the overall project indicates that the project is a profitable undertaking with short-term returns to the investors.
- The project has assumed 30% corporate tax from the first year of operations and no dividends distributions.

- The overall gross margins are projected to average 43%; EBITDA Margins at 25%; and the net margins are projected to increase from negative 3% to 15% during the first 10-years of operation.
- The summary of the projected Profit and Loss Statements for the first 10-years of operation is as presented below.

ANNEX 1

KANIOGA Plastics Industry Ltd

Projected Profit &Loss Statements

Amount in TZS '000'

Year		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenues											
20-110mmHDPEpipeline		-	1,210,374	1,358,039	1,511,127	1,669,796	1,834,207	2,004,526	2,180,924	2,224,542	2,269,033
125-450mmHDPEpipeline		-	3,408,926	3,824,815	4,255,976	4,702,853	5,165,903	5,645,594	6,142,407	6,265,255	6,390,560
Net Revenues		-	**4,619,300**	**5,182,854**	**5,767,103**	**6,372,649**	**7,000,110**	**7,650,120**	**8,323,331**	**8,489,797**	**8,659,593**
Revenue Growth		-	-	12%	11%	11%	10%	9%	9%	2%	2%
Direct Operating Costs											
Local raw materials		-	341,153	382,774	425,923	470,645	516,985	564,991	614,710	627,004	639,545
Imported raw materials		-	2,160,773	2,424,387	2,697,682	2,980,939	3,274,446	3,578,502	3,893,410	3,971,278	4,050,704
Electricity		-	79,595	89,305	99,372	109,806	120,618	131,818	143,418	146,287	149,213
Fuel - Generator		-	13,266	14,884	16,562	18,301	20,103	21,970	23,903	24,381	24,869
Maintenance & repair		-	21,225	23,815	26,499	29,282	32,165	35,152	38,245	39,010	39,790
Oil & Lubricants		-	3,184	3,572	3,975	4,392	4,825	5,273	5,737	5,851	5,969
Consubables		-	21,225	23,815	26,499	29,282	32,165	35,152	38,245	39,010	39,790
Other direct costs		-	12,735	14,289	15,900	17,569	19,299	21,091	22,947	23,406	23,874
Direct Operating Costs		-	**2,653,156**	**2,976,841**	**3,312,412**	**3,660,216**	**4,020,606**	**4,393,948**	**4,780,616**	**4,876,228**	**4,973,752**
Gross Profits/(Loss)		-	**1,966,143**	**2,206,013**	**2,454,691**	**2,712,433**	**2,979,504**	**3,256,172**	**3,542,715**	**3,613,569**	**3,685,841**
Gross Margins		-	43%	43%	43%	43%	43%	43%	43%	43%	43%
Indirect Operating Costs											
Salaries & Staff Benefits		-	892,902	910,410	927,918	945,426	962,933	980,441	997,949	1,015,457	1,032,965
Administrative Costs		-	438,200	438,200	438,200	438,200	438,200	438,200	438,200	438,200	438,200
Exchange Loss		-	0	0	0	0	0	0	0	0	0
Indirect Operating Costs		-	**1,331,102**	**1,348,610**	**1,366,118**	**1,383,626**	**1,401,133**	**1,418,641**	**1,436,149**	**1,453,657**	**1,471,165**
EBITDA		-	**635,042**	**857,403**	**1,088,573**	**1,328,808**	**1,578,370**	**1,837,531**	**2,106,566**	**2,159,912**	**2,214,676**
EBITDA Margins		-	14%	17%	19%	21%	23%	24%	25%	25%	26%
Depreciation & Amortisation		-	**367,325**	**328,412**	**295,553**	**267,745**	**244,162**	**128,118**	**111,046**	**96,475**	**84,012**
Profit Before Interest + Tax		-	**267,717**	**528,991**	**793,020**	**1,061,062**	**1,334,208**	**1,709,412**	**1,995,520**	**2,063,437**	**2,130,664**
Loans Interest Expenses											
Medium-Term Loan		-	278,400	222,720	167,040	111,360	55,680	55,680	55,680	55,680	55,680
Short-term Loans	10%	-	140,803	158,562	176,978	196,072	215,862	236,369	257,614	262,748	267,988
Loans Interest Expenses		-	**419,203**	**381,282**	**344,018**	**307,432**	**271,542**	**292,049**	**313,294**	**318,428**	**323,668**
Profit/(Loss) Before Tax		-	**151,486**	**147,710**	**449,002**	**753,631**	**1,062,666**	**1,417,363**	**1,682,226**	**1,745,009**	**1,806,995**
Provision Corporate Tax	30%	-	-	44,313	134,701	226,089	318,800	425,209	504,668	523,503	542,099
Net Profit/(Loss)		-	**151,486**	**103,397**	**314,302**	**527,541**	**743,866**	**992,154**	**1,177,558**	**1,221,506**	**1,264,897**
Net Margins		-	-3%	2%	5%	8%	11%	13%	14%	14%	15%
Retained Earnings		-	**151,486**	**48,090**	**266,212**	**793,753**	**1,537,620**	**2,529,774**	**3,707,332**	**4,928,838**	**6,193,735**

(ii) Projected cash flow Statements

- The projected cash flows statements are presented in Annex 2. The sources of finance to the project include shareholders' equity, the company sales revenues and long and short-term loans.
- Funds applications include capital expenditure, working capital expenses, and project operating expenses, finance costs, loan repayment and corporate tax. Capital expenditure includes physical assets (i.e. buildings and civil works, machinery and equipment, office furniture and equipment and motor vehicles) and pre-operating costs.
- The company will have cashflow deficit of up to TZS 500 million in the first year of operations which will be financed by a proposed short-term loan facility. The projected cashflows statements are as flows:

ANNEX 2

KANIOGA Plastics Industry Ltd

Projected Cash Flow Statements

		Amount in TZS '000'									
	Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Cash Inflows											
Equity Financing											
Ordinary Share capital	TZS	0	0	0	0	0	0	0	0	0	0
Shareholders funds (capex)	TZS	948,600	412,500	0	0	0	0	0	0	0	0
Shareholders funds (W/capital)	TZS	0	908,031	0	0	0	0	0	0	0	0
Equity Financing	**TZS**	**948,600**	**1,320,531**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
External Financing											
Medium-Term Loan	TZS	1,500,000	-	0	0	0	0	0	0	0	0
Short-term Loans	TZS	-	-	0	0	0	0	0	0	0	0
External Financing	TZS	1,500,000	-	-	-	-	-	-	-	-	-
Sales Revenues											
20-110mmHDPEpipeline	TZS	0	1,210,374	1,358,039	1,511,127	1,669,796	1,834,207	2,004,526	2,180,924	2,224,542	2,269,033
125-450mmHDPEpipeline	TZS	0	3,408,926	3,824,815	4,255,976	4,702,853	5,165,903	5,645,594	6,142,407	6,265,255	6,390,560
Sales Revenues	TZS	**0**	**4,619,300**	**5,182,854**	**5,767,103**	**6,372,649**	**7,000,110**	**7,650,120**	**8,323,331**	**8,489,797**	**8,659,593**
Cash Inflows	**TZS**	**2,448,600**	**5,939,830**	**5,182,854**	**5,767,103**	**6,372,649**	**7,000,110**	**7,650,120**	**8,323,331**	**8,489,797**	**8,659,593**
Cash Outflows											
Capital Investment											
Land	TZS	220,000	0	0	0	0	0	0	0	0	0
Buildings & Civil works	TZS	350,000	0	0	0	0	0	0	0	0	0
Plant & Machinery	TZS	1,194,600	0	0	0	0	0	0	0	0	0
Equipment & Tools	TZS	146,000	0	0	0	0	0	0	0	0	0
Motor Vehicles	TZS	0	412,500	0	0	0	0	0	0	0	0
Office Furniture & equipment	TZS	58,000	0	0	0	0	0	0	0	0	0
Pre-Operating Expenses											
Administration Costs	TZS	150,000	0	0	0	0	0	0	0	0	0
Interest During Implementatio	TZS	0	0	0	0	0	0	0	0	0	0
Other Finance Costs	TZS	90,000	0	0	0	0	0	0	0	0	0
Capital Expenditure	TZS	**2,208,600**	**412,500**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Change in Working Capital	TZS	-	1,408,031	177,586	184,165	190,936	197,903	205,072	212,448	51,341	52,400
Direct Operating Costs	TZS	-	2,653,156	2,976,841	3,312,412	3,660,216	4,020,606	4,393,948	4,780,616	4,876,228	4,973,752
Indirect Operating Costs	TZS	-	1,331,102	1,348,610	1,366,118	1,383,626	1,401,133	1,418,641	1,436,149	1,453,657	1,471,165
Loans Interest Expenses											
Medium-Term Loan	TZS	-	278,400	222,720	167,040	111,360	55,680	55,680	55,680	55,680	55,680
Short-term Loans	TZS	-	140,803	158,562	176,978	196,072	215,862	236,369	257,614	262,748	267,988
Loans Principal Repayment	TZS	-	348,000	348,000	348,000	348,000	0	0	0	0	0
Corporate Tax	TZS	-	0	44,313	134,701	226,089	318,800	425,209	504,668	523,503	542,099
Dividends	TZS	-	0	0	0	0	0	0	0	0	0
Cash Outflows	**TZS**	**2,208,600**	**6,571,992**	**5,276,631**	**5,689,414**	**6,116,298**	**6,209,985**	**6,734,920**	**7,247,175**	**7,223,157**	**7,363,084**
Net Cash Flows	**TZS**	**240,000**	**-632,161**	**-93,777**	**77,689**	**256,351**	**790,125**	**915,200**	**1,076,156**	**1,266,640**	**1,296,509**
Opening Cash Balance	TZS	**0**	240,000	-392,161	-485,939	-408,249	-151,899	638,227	1,553,427	2,629,582	3,896,222
Closing Cash Balance	**TZS**	**240,000**	**-392,161**	**-485,939**	**-408,249**	**-151,899**	**638,227**	**1,553,427**	**2,629,582**	**3,896,222**	**5,192,732**

(iii) Projected Balance Sheets

- The projected balance sheet is presented in Annex 3.
- The projected balance sheet shows that the net physical assets are decreasing overtime due to depreciation. The total net assets increase overtime due to increased net current assets over time.
- The project is projected to have positive net current assets throughout the project life-time.

ANNEX 3
KANIOGA Plastics Industry Ltd
Projected Balance Sheets

	Amount in TZS '000'									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Fixed Assets										
Land	220,000	220,000	220,000	220,000	220,000	220,000	220,000	220,000	220,000	220,000
Buildings & Civil works	350,000	350,000	336,000	322,560	309,658	297,271	285,380	273,965	263,007	252,486
Plant & Machinery	1,194,600	1,194,600	1,045,275	914,616	800,289	700,253	612,721	536,131	469,115	410,475
Equipment & Tools	146,000	146,000	127,750	111,781	97,809	85,583	74,885	65,524	57,334	50,167
Motor Vehicles	-	412,500	330,000	264,000	211,200	168,960	135,168	108,134	86,508	69,206
Office Furniture & equipment	58,000	58,000	50,750	44,406	38,855	33,999	29,749	26,030	22,776	19,929
Pre-Operating Expenses	480,000	480,000	384,000	288,000	192,000	96,000	-	-	-	-
Less: Depreciation & Amortisation	-	367,325	328,412	295,553	267,745	244,162	128,118	111,046	96,475	84,012
Net Capital Assets	**2,448,600**	**2,493,775**	**2,165,363**	**1,869,810**	**1,602,065**	**1,357,903**	**1,229,785**	**1,118,739**	**1,022,264**	**938,252**
Current Assets:										
Cash Balances	**240,000**	-	-	-	-	638,227	1,553,427	2,629,582	3,896,222	5,192,732
Trade Debtors	-	569,503	638,982	711,013	785,669	863,027	943,165	1,026,164	1,046,687	1,067,621
Advance Payments	-	218,068	244,672	272,253	300,840	330,461	361,146	392,927	400,786	408,802
Inventories	-	725,630	804,575	886,415	971,235	1,059,122	1,150,163	1,244,450	1,267,837	1,291,690
Other Current assets	-	72,689	81,557	90,751	100,280	110,154	120,382	130,976	133,595	136,267
Total Current Assets	**240,000**	**1,585,890**	**1,769,786**	**1,960,432**	**2,158,024**	**3,000,990**	**4,128,284**	**5,424,100**	**6,745,128**	**8,097,111**
Current Liabilities:										
Trade Creditors	-	25,311	28,399	31,601	34,919	38,357	41,918	45,607	46,519	47,450
Administrative Expenses	-	18,008	18,008	18,008	18,008	18,008	18,008	18,008	18,008	18,008
Marketing & selling costs	-	247	247	247	247	247	247	247	247	247
Accruals	-	12,656	14,200	15,800	17,459	19,178	20,959	22,804	23,260	23,725
Direct Labour	-	12,232	12,471	12,711	12,951	13,191	13,431	13,671	13,910	14,150
Other Current Liabilities	-	109,406	110,845	112,284	113,723	115,162	116,601	118,040	119,479	120,918
Current Liabilities:	-	**177,859**	**184,170**	**190,650**	**197,306**	**204,142**	**211,164**	**218,376**	**221,423**	**224,497**
Net Current Assets	**240,000**	**1,408,031**	**1,585,617**	**1,769,782**	**1,960,718**	**2,796,847**	**3,917,120**	**5,205,724**	**6,523,705**	**7,872,614**
Total Net Assets	**2,688,600**	**3,901,806**	**3,750,980**	**3,639,592**	**3,562,783**	**4,154,750**	**5,146,905**	**6,324,462**	**7,545,969**	**8,810,866**
Financed By:										
Equity Financing										
Ordinary Share capital	-	-	-	-	-	-	-	-	-	-
Shareholders funds (capex)	948,600	1,361,100	1,361,100	1,361,100	1,361,100	1,361,100	1,361,100	1,361,100	1,361,100	1,361,100
Shareholders funds (W/capital)	-	908,031	908,031	908,031	908,031	908,031	908,031	908,031	908,031	908,031
Profit/Loss Account	-	-151,486	-48,090	266,212	793,753	1,537,620	2,529,774	3,707,332	4,928,838	6,193,735
Equity Financing	**948,600**	**2,117,644**	**2,221,041**	**2,535,343**	**3,062,884**	**3,806,750**	**4,798,905**	**5,976,462**	**7,197,969**	**8,462,866**
External Financing										
Medium-Term Loan	1,740,000	1,392,000	1,044,000	696,000	348,000	348,000	348,000	348,000	348,000	348,000
Short-term facilities (O/D, etc.)	-	392,161	485,939	408,249	151,899	-	-	-	-	-
External Financing	**1,740,000**	**1,784,161**	**1,529,939**	**1,104,249**	**499,899**	**348,000**	**348,000**	**348,000**	**348,000**	**348,000**
Total Financing	**2,688,600**	**3,901,806**	**3,750,980**	**3,639,592**	**3,562,783**	**4,154,750**	**5,146,905**	**6,324,462**	**7,545,969**	**8,810,866**

(iv) Other Economic Benefits

- Tax Income – the project will pay income taxes, property taxes, corporate taxes and other taxes to the government.
- Dividends – the shareholders will receive dividends from the project.
- Jobs Creation – the project will create more than 138 direct jobs and over 200 indirect employments.
- Generation of foreign currency- the project will export HDPE pipes to the neighbouring countries.
- Industrial development - The project will add to the stock of industries to the economy. Tanzania is in a great need for industrial development, an important factor for the country's economic growth and development.

(v) General Comments

- The project financial and economic analysis suggests that the project is financially viable and economically feasible. The project will be able to meet its financial obligations from internally generated incomes.
- The project will be able to pay-back to the equity investors from the incomes generated from sale of its finished products.

Finance Requirements

16.1 Introduction

- KANIOGA PLASTICS is investing in the industrial project for manufacturing of HDPE pipes.
- The project requires capital expenditure worth TZS 2.8 billion and revolving working capital of up to TZS 1.4 billion for the purchase of raw materials and other associated operating expenses.
- KANIOGA PLASTICS will seek for working capital loan to the tune of TZS 500 million and long-term loan of TZS 1.5 billion to part-finance capital expenditure.

16.2 Proposed Loans

- The proposed working capital loan will part-finance operating expenses as well as the current assets of the project. The facility may be in the form of a revolving working capital loan.
- The long-term loan is proposed to have the following Terms and Conditions:

Type of facility	**Short-term Loan**
Loan Currency	➢ Tanzania Shillings Currency (TZS)
Loan Amount	➢ 1,500,000,000
Moratorium period	➢ 12- months
Mode of disbursement	➢ Direct disbursement to the account of the company/supplier/contractor
Loan tenure	➢ 6-years including 12-months of grace
Mode of repayment	➢ Payments from sale of the products
Interest rate	➢ None

16.3 Cost Overruns

- The shareholders of the company will undertake to finance any cost overruns of the project from own sources of finance.

Conclusion And Recommendations

- The project entails manufacturing of HDPE pipes. The project is geared to contribute the development of the construction industry in Tanzania. The construction sector is in an interesting phase of its evolution, not yet quite global in nature, but with some players active in more than one national market and the largest players becoming involved in multiple projects in Africa, Europe, North America, and Asia.

- The building materials sector, which is extremely diverse and constitutes a sizable chunk of the industrial base of developed countries, tends to produce materials to cater for the global market. The sector includes a highly diverse range of suppliers, from cement manufacturers to specialty glass and steel manufacturers, as well as providing a large market for white goods manufacturers, furniture manufacturers, paint and wiring manufacturers, and a host of other related industries.

- The project analysis suggests that the project is financially viable and technically feasible. The project will be in a position to meet its financial obligations from the project sales revenues. The preliminary assessment of the viability of the proposed project demonstrates the project is a medium-term investment and a profitable venture.

- It is recommended that implementation of the project should observe the timeframe to capture the window of opportunity for the increased working capital requirements for the HDPE pipes manufacturing project