ETG

EXPORT TRADING CO (U) LTD
2000/44122/05

P.O BOX 33336, PLOT 26/27, NAMANVE INDUSTRIAL PARK, KAMPALA, UGANDA.
TIN NO: 1000073711

20th Dec 2024

The Executive Director
National Environment Management Authority "NEMA"
P.O Box 22255
Kampala

Dear Sir,

RE: SUBMISSION OF AN ENVIRONMENT AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED AGRO PROCESSING PLANT AND WAREHOUSES TO BE LOCATED IN NAMANVE INDUSTRIAL AREA IN KOLO VILLAGE, NANTABULIRWA WARD, GOMA DIVISION, MUKONO MUNICIPALITY, IN MUKONO DISTRICT.

We refer to the above matter,

The developer recognizes that it is Government policy and legal requirement for an Environmental and Social Impact Assessment (ESIA) to be carried out for developments that are likely to have a significant impact on the environment, so as to minimize and/ or eliminate any negative impacts, as stated in Part X: Environmental and Social Assessment of the National Environment Act 2019 S.113 (1).

We do hereby submit for your kind consideration this environment and social impact assessment (ESIA) for the proposed Agro Processing Plant and Warehouses to be located in Namanve Industrial Area in Kolo Village, Nantabulirwa Ward, Goma Division, Mukono Municipality, in Mukono District that can be geographically referenced at (WGS 84 UTM Zone 36M) coordinate 465678.40mE 38610.94mN within 465578.88mE 38735.94mN, 465809.11mE 38643.39mN, 465792.28mE 38503.85mN, 465545.12mE 38577.89mN.

The project cost is Ugshs 22,687,000,000 (twenty two billion, six hundred eighty seven million shillings only) **Our TIN is 1000073711**

The developer intends to embark on the above project as part of his achievements in 2024 and as such, all assistance and cooperation rendered will be highly appreciated.

In case you have any questions relating to any of the above, feel free to contact **+256 775 250813 or e-mail at *smaran.bheemaiah @etgworld.com***

We look forward to your expeditious response in relation to this matter.

Yours faithfully,

EXPORT TRADING COMPANY (U) LTD P.O.BOX 33336, KAMPALA UGANDA

Mr. Smaran Bheemaiah

Coffee Business Manager

EXPORT TRADING GROUP

PLOT 26, 27 NAMANVE, P.O. BOX 33336, KAMPALA, UGANDA

PROPERTY COMPRISED IN LRV 4139 FOLIO 1 PLOT 26 AND LRV 4138 FOLIO 25 PLOT 27 KYAGGWE BLOCK 112 LAND AT KOLO, MUKONO

REPORT AND VALUATION

AS AT

13th February, 2023

Prepared by:

Our Ref: V/___/2023 **13th February, 2023**

MARKET VALUATION

PROPERTY COMPRISED IN LRV 4139 FOLIO 1 PLOT 26 AND LRV 4138 FOLIO 25 PLOT 27 KYAGGWE BLOCK 112 LAND AT KOLO, MUKONO

Open Market Value	**UGX.22,687,000,000/=**
Insurance value	**UGX.22,587,200,000/=**
Date of Valuation	**10th February, 2023**
Contact person	MR. JATIN PATEL
Contact Telephone	0759250833 OR 0756282200
Prepared for	EXPORT TRADING GROUP
Valuation requested by	FINANCE CONTROLLER
Valuer	NICHOLAS K. SSALI
Registration Category	Registered Surveyor
Registration Number	067
Telephone Number	0414 250741, 0414 669128
E-Mail	ssali54@yahoo.com

1. INSTRUCTIONS

Further to your instructions, we have carried out a survey and inspection of the above-mentioned property for purposes of giving you our opinion on its Open Market Value to date for accounting purposes.

We have the pleasure to report as hereunder:

2. DATE OF VALUATION

We duly inspected the property on 10th February, 2023 by LWANGA MARTIN contact 0772606726 (Valuer). The effective date of valuation is taken to be 10th February, 2023

3. LIMITING CONDITIONS

a) Neither the whole nor any part of the report and valuation or any reference to it may be included in any published document, circular or statement nor published without the Valuer's prior written approval of the form or context in which it may appear.

b) Where it is stated in the report that another party has supplied information to the company, this information is believed to be reliable.

The company can accept no responsibility if this should prove not to be so, where information is given without being attributed direct to another party, this information has been obtained by our own search of records and examination of the documents or by inquiry from government or other appropriate departments. The Valuer did not 'open' boundaries of the plot.

c) While due care is taken to note significant structural defects in the course of inspection, this Report is not a structural survey and no guarantee is given in respect of rot, termite OR pest infestation or other defects whether exposed or unexposed

d) The responsibility of the company in connection with this report is limited to the client to whom the report is addressed.

e) The values addressed in this report should not be used in conjunction with any other assessment, as they may prove incorrect if so used without consultation and approval of the Valuer.

f) Our valuation is based on the condition of the property as inspected on 10th February, 2023. Any change subsequent to these dates is not the responsibility of the Valuer.

g) Rate of exchange as date of valuation: **1USD=UGX.3,670**

4. SCOPE OF SERVICES

The tasks which have been accomplished by the consultant in order to achieve the project objectives mainly consist of the following:

a) Field investigations and collection of technical relevant comparative data on the specified fixed assets.
b) Descriptive narration of the property as indicated at the date of inspection including photographs.
c) Assessment and valuation of the Asset in accordance with acceptable valuation principles.

The Report presents the results of the property valuation dated 31st March, 2020. It also provides an overview of the methodology and parameters used.

5. METHODS OF VALUATION

a) Definition of market value

International valuation standard committee [IVSC] defines market value as "the estimated amount for which a property should exchange hands on the date of valuation between a willing buyer and a willing seller in an arm's-length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently, and without compulsion".

b) Methods of valuation

In accordance with valuation principles, there are 3 generally recognized methods of valuation: viz

i. The sales comparison method
ii. The replacement cost method and
iii. The Income Analysis approach.

i. Sales comparison Method

This approach compares a subject property's characteristics with those of comparable properties which have recently sold in similar transactions. The process uses one of several techniques to adjust the prices of the comparable transactions according to the presence, absence, or degree of characteristics which influence value.

ii. Replacement cost Approach

Replacement costs approach is defined as the present-day cost of acquiring a substantially similar present-day asset that could provide a similar level of service to the asset in question. Replacement market is based on current market values and technology of the day.

In most instances when the cost approach is involved, the overall methodology is a hybrid of the construction cost and sales comparison approach.

For example, while the replacement cost to construct a building can be determined by adding the labour, materials, and other costs, land values and depreciation must be derived from an analysis of comparable data.

iii. Income Analysis approach

The income capitalization approach [often referred to simply as the "income approach] is used to value commercial and investment properties. Because it is intended to directly reflect or represent the expectations and behaviours of typical market participants, this approach is generally considered the most applicable valuation technique for income-producing properties, where sufficient market data exists to supply the necessary inputs and parameters for this approach.

In this valuation we have considered all 3 methods in line with information available from the subject property, the market information for similar properties as well as replacement cost values of the subject and similar properties in line with considered representation of the highest and best use of the subject property.

6. CERTIFICATE OF OCCUPANCY

<table>
<tr><td>Country</td><td>UGANDA</td></tr>
<tr><td>District</td><td>MUKONO</td></tr>
<tr><td>Local Authority</td><td>GOMA DIVISION</td></tr>
<tr><td>GPS Readings</td><td>Latitude: 0.349360, Longitude: 32.692104</td></tr>
<tr><td>Registered Owner</td><td>Please refer to copies of the title deed</td></tr>
<tr><td>Tenure</td><td>Lease tenure for 99 years commencing on 21st September, 2010. The lease has about 86 years to expire to date</td></tr>
<tr><td>Property Description</td><td>The piece of land is developed with a series of industrial houses and a three 4-storey office and administration block all of which enclosed in a wall fence.</td></tr>
<tr><td>Acreage</td><td>
<table>
<tr><td></td><td>Kyaggwe Block 112 Land At Kolo, Mukono</td><td colspan="2">Plot area</td></tr>
<tr><td></td><td></td><td>Hectares</td><td>Acres</td></tr>
<tr><td>a</td><td>Plot 26</td><td>2.028</td><td>5.0114</td></tr>
<tr><td>b</td><td>Plot 27</td><td>1.890</td><td>4.6704</td></tr>
<tr><td></td><td>Total</td><td>3.918</td><td>9.6818</td></tr>
</table>
</td></tr>
<tr><td>Encumbrances</td><td>Presence of any registered encumbrances on the certificate of titles could not be established by the time of writing this report.</td></tr>
<tr><td>Comments</td><td>The property is located in the midst of an upcoming industrial park organise by the Government of Uganda under the Uganda Investment Authority.</td></tr>
</table>

7. TOWN PLANNING CONDITIONS

The pieces of land are gazetted for Industrial purposes within an industrial park organise by the Government of Uganda under the Uganda Investment Authority.

8. PROPERTY RATES AND TAXES

Property rates and other taxes on the premises could not be verified by the time of writing this report.

9. LOCATION

The property is located within the Industrial Park at Namanve, Misindye Ward, Goma Division, Mukono District.

The industrial park may be accessed from Kampala City centre along the highway to Jinja heading eastwards up to Namanve about 13.5Km away. The subject property lies on the right-hand side of the highway about 1.3Km after M/s Century Bottling Company firm, a.k.a Coca – Cola plant, but on the opposite side of the highway.

10. DEVELOPMENTS

The property is enclosed in a masonry wall fence superimposed with galvanised barbed wire coiling on top. The wall fence is rendered both inside and outside having entrance through a lockable double leaf steel panel gates onto a driveway and parking with murrum surfaces.

The property is developed with an industrial facility trading as **EXPORT TRADING GROUP**. The facility comprises of the following developments:

a. Four storey office and administration building
b. Gate house
c. Weigh bridge Control house
d. Warehouse behind offices
e. Warehouse in the middle
f. Warehouse on plot 26

Construction of the building is constructed to a brief description below:

a) Four story office and administration building

Roof Pitched pre painted profile iron sheets fixed on steel trusses.

Ceiling cement plastered below the suspended floor slabs and Nil for the third floor

Walls Reinforced concrete columns and beams with masonry walls in fill. The internal wall surfaces are plastered and painted while the external is rendered and painted. The walls in the sanitary rooms are laid with glazed ceramic wall tiles.

Floor Plain concrete slab with terrazzo floor finish.

Doors Aluminium glazed casement doors match boarded timber shutters to the bathrooms

Windows Glazed aluminium casement reinforced with metal burglary.

Condition Generally good condition.

Accommodation

Ground floor

01 Staircase area

01 Waiting area

01 Office space partitioned with aluminium and MDF board panels

01 Toilet comprising of 04 WC stances and 02 Wash hand basins

First floor

01 Staircase area

01 Office space partitioned with aluminium and MDF board panels

01 Toilet comprising of 04 WC stances and 02 Wash hand basins

Second floor

01 Staircase area

01 Office space partitioned with aluminium and MDF board panels

01 Toilet comprising of 04 WC stances and 02 Wash hand basins

Third floor

01 Floor area comprising of dining area and archives

01 Kitchen space comprising of concrete worktops and a single drain

01 Toilet comprising of 04 WC stances and 02 Wash hand basins

Area

Ground floor	176 Sq. meters
First floor	176 Sq. meters
Second floor	176 Sq. meters

Third floor	176 Sq. meters
Total	704 Sq. meters

	***General view of the building***
	***General view of the building***
	***Typical view of the office space partitioning***

Four Story Office And Administration Building

	***General view of the staircase area***
	***General view of the kitchen on top floor***
	***General view of the dining area on top floor***

Four Story Office And Administration Building

b) Gate house

Roof Hipped pre painted profile iron sheets fixed on steel trusses.

Ceiling NIL

Walls Masonry walls plastered and painted inside while the external is rendered and painted.

Floor Plain concrete slab with cement screed floor finish.

Doors Aluminium glazed casement doors match boarded timber shutters to the bathrooms

Windows Glazed aluminium casement reinforced with metal burglary.

Condition Generally good condition but lacks general repair works arising from normal wear and tear.

Accommodation

01 NO Room

Area

The total built up floor area is 12 Sq. meters

General view of the gate house and main entrance gate

c) Gazebo

Roof Hipped pitched pre painted profile iron sheets fixed on steel trusses.

Ceiling NIL

Walls Dwarf masonry walls plastered and painted inside while the external is rendered and painted. The walls are

Floor Plain concrete slab with ceramic tile floor finish.

Condition Generally good condition

Accommodation

01 NO Room

Area

The total built up floor area is 16 Sq. meters

General view of the gazebo

d) Weigh bridge Control house

Roof Mono pitched pre painted profile iron sheets fixed on steel trusses.

Ceiling NIL

Walls Masonry walls plastered and painted inside while the external is rendered and painted.

Floor Plain concrete slab with cement screed floor finish.

Doors Aluminium glazed casement doors match boarded timber shutters to the bathrooms

Windows Glazed aluminium casement reinforced with metal burglary.

Condition Generally good condition but lacks general repair works arising from normal wear and tear.

Accommodation

01 NO Room

Area

The total built up floor area is 12 Sq. meters

General view of the weigh bridge house and one of the weigh bridges

e) Warehouse behind office

Roof Pitched pre painted profile iron sheets on treated steel trusses

Walls Columns in steel I-beams with masonry walls in fill reinforced with reinforced concrete beams at intervals. The internal as well as external wall surfaces rendered and painted. The walls are superimposed with pre-painted profile iron sheets

Floor Precast concrete paving bricks

Doors Steel sheet panel industrial doors

Vents Precast concrete

Services The warehousing house is installed with surveillance cameras inside and outside

Condition Generally good condition

Accommodation

01 Warehousing space partitioned with welder's wire mesh on metal framework

Area

The total plinth area of the warehouse is 1,460 Sq. meters

	***General view of the warehouse***
	***General view inside the warehouse***
	***General view of the facility***

Warehouse behind office

f) Warehouse in the middle

Construction and condition of the warehousing unit is generally similar to the "Warehouse behind office" described prior in 10(d) of this report

Accommodation

01 NO Expansive warehousing space with 02 NO Offices.

01 NO Attachment with 10 NO Toilet / Shower rooms and 1NO Generator Room.

Area

The total built up floor area is 10,197 Sq. meters made up as follows

Main ware housing space	10,000 Sq. meters
Attachments	197 Sq. meters
	10,197 Sq. meters

	***General external view of the warehouse***
	***General external view of the warehouse***

General view of the warehousing facility

	***General external view of the warehouse***
	***Typical view inside the warehouse***
	***General view of the toilets in attachment***

General view of the warehousing facility

g) Warehouse on plot 26

Construction and condition of the warehousing unit is generally similar to the "Warehouse behind office" described prior in 10(d) of this report

Accommodation

01 NO Expansive warehousing space with 02 NO Offices.

01 NO Attachment with 10 NO Toilet / Shower rooms and 1NO Generator Room.

Area

The total built up floor area is 9773 Sq. meters

	*General external view of the warehouse*
	*General external view of the warehouse*

General view of the warehousing facility

	***General view of the machine installations within the warehousing***
	***General view inside the warehousing unit***
	***General view inside the warehousing unit***

General view of the warehousing facility

11. SERVICES

The main water supply and electricity are all connected to the property. Telephone and internet services are available on the premises via wireless connection.

Communal services like road maintenance, street lighting, garbage collection and others are carried out by the Local Authorities in Mukono District.

12. REMARKS

The property is located within an upcoming industrial park at Namanve. The park is organised by the Uganda Investment Authority, a body which was setup by an Act of Parliament with the aim of promoting and facilitating private sector investment in the Country. It is easily accessible via an all-weather tarmac Kampala – Jinja highway, a major trade corridor connecting the country with major business hubs in and around the country.

Of late, there has been a high influx of factories in the park which has led to an increase in the economies of scale for the factories in and around the area. These include good road which are being maintained on a regular basis, electricity supply with reduced load shedding, piped water supply and many others.

13. VALUATION FOR LAND AND DEVELOPMENTS

I, **NICHOLAS K. SSALI**, on behalf of Katuramu and Company declare that we have inspected the above property, that I have verified the particulars set out in this valuation, and that I value the herein described property for the purposes of this Valuation to the best of my knowledge and skills as at 03rd February, 2023 as follows:

SCHEDULE OF INDIVIDUAL VALUES: LAND AND BUILDING.

	DESCRIPTION.	**Valuation (UGX.)**
1	Four storey office and administration building	676,000,000
2	Gate house	9,000,000
3	Gazebo	8,000,000
4	Weigh bridge control house	9,000,000
5	Warehouse behind offices	1,051,000,000
6	Warehouse in the middle	7,318,000,000
7	Warehouse on plot 26	7,037,000,000
8	Wall fence	163,000,000
9	Paved parking yard	1,575,000,000
	Sub Total for Developments	***17,846,000,000***

7	Land Value.	4,841,000,000
	TOTAL	**22,687,000,000**

Summary of Market Values	
Land	4,841,000,000 (Four Billion, Eight Hundred Forty One Million, Only)
Developments	17,846,000,000 (Seventeen Billion, Eight Hundred Forty Six Million, Only)
Total	**22,687,000,000 (Twenty Two Billion, Six Hundred Eighty Seven Million, Only)**

The signatories to this document hereby confirm that they have no present or contemplated interest in this or any other properties or any other interest, which would affect the statement or value contained in this valuation report. The valuation enclosed herewith was therefore undertaken on a completely independent basis.

Yours faithfully,

For **KATURAMU AND COMPANY**

N.K. SSALI, R.S.U., B.A. (Hons) Land Econ., F.I.S.U.

REGISTERED VALUATION SURVEYOR

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF A PROPOSED ESTABLISHMENT OF A GRAIN, COFFEE PROCESSING PLANT AND STORAGE WAREHOUSES IN KOLO CELL, NANTABULIRWA WARD, GOMA DIVISION, MUKONO MUNICIPALITY, MUKONO DISTRICT

Submitted by
EXPORT TRADING Co. (U) LTD
P.O Box 33336, Kampala Uganda
Tel: +256 (0) 775 250813
Email: smaran.bheemaiah@etgworld.com

DECEMBER 2024

EXECUTIVE SUMMARY

E.1 Introduction and project description

Introduction

Export Trading Company Uganda Limited (ETCUL) was incorporated in April 2000 as a private limited and growth-oriented agribusiness company. It is licensed to carry out among others to deal in processing of grains and coffee, import of agricultural inputs, and storage of materials in their warehouses. ETCUL's vision is to participate in and transform Uganda's food processing industry as key players in enhancing the national food basket. The company strives to become one of the leading private importer and exporter of agricultural products with space provision for imported polymers which are locally sold here in Uganda, with a mission to be among the premier processors of coffee and grains for export, with a quality storage space for imported polymers and agricultural in-puts whilst continually striving to achieve long-term sustainable growth and profitability.

Uganda is the second leading exporter of coffee beans in Africa after Ethiopia with almost $595 million in sales annually. In Uganda Coffee is the most important cash crop throughout all the years, making it the top export business earner since the 1980s. It has also specialized in the production of 2 types of Coffee that is Arabica and Robusta coffee. Whilst the economy as a whole has expanded and improved in recent years, coffee remains of vital importance, earning on average just short of 60% of annual export revenues during the period 1996 to 2000. It is estimated that as much as 20% of the entire population earn all or a large part of their cash income from coffee. Following decades of total state control of the sector, the coffee industry was fully liberalized between 1991 and 1992 and is currently entirely in private hands. However, export quality control remains the responsibility of the Uganda Coffee Development Authority (UCDA) that grades, liquors and classifies all export shipments. Production averaged almost 3.3 million bags in the six years from 1996 to 2001, with a peak of 4.2 million bags in 1996/7 (a total last seen in 1972) and a low of 2.0 million in 2005/6. The proportion of Arabica coffee fluctuates from around 8 to 10% of the total. Local consumption is limited at around 3% of production. ETCUL proposes to establish a coffee processing plant that will produce coffee beans for export.

Due to the trending demand for cereals internationally, Uganda has also ventured in export of cereals with an aim of boosting the country's GDP. The major cereals exported include but not limited to Maize, sim-sim, Millet, rice, beans, peas, sorghum among others. These agricultural products are processed before export with an aim of adding value. ETCUL as a private limited company proposes to deal in processing of cereals majorly in maize, millet, sim sim, beans, peas, among others.

ETCUL facility will also be designed with warehouses for storage of imported agricultural inputs (fertilizers, pesticides, and hand pumps), polymers (pet resins), and industrial chemicals (already package Nitric acid, Hydrochloric acid, sulphuric acid, white lime, titanium dioxide, sodium tri-phosphate, Styrene, aluminum sulphate) which are sold locally to the farmers, industries, and other factories that use these products as input or raw material, here in Uganda.

In this regard, ETCUL (the proponent) has identified an investment gap that calls for the development of its facility to contain a Coffee Processing section, grain process section, and a section with warehouses for storage of imported agricultural inputs, polymers, and industrial chemicals that would stem the shortage of coffee beans and grains demand globally as well facilitating local production process through availing industrial chemicals. Most of the Coffee, grains will be sourced from local farmers within Kampala metropolitan area, and other districts within Uganda, the polymers, agricultural inputs, and the industrial chemicals will be imported.

Project Description

The proposed project will involve earthworks and excavations to enable construction of the facility with potential implications on the vegetation, landscape, visual and amenity value and carbon sequestration. This environmental assessment was conducted as part of the technical design and feasibility study of the proposed project. A detailed description of all elements of the project during the pre-construction, construction and operational phases have been prepared. The elements analyzed include inter alia the infrastructure of the project including: drainage features; access points; waste collection, disposal, and management; and utility requirements.

The proposed Export trading facility will contain an administration block, grain processing unit (for processing maize, sim sim, beans, peas, sorghum, and green gram), a coffee processing unit (specifically for processing coffee to coffee beans) and warehouses (for storage of imported agricultural inputs).

E2. Site Location

The proposed Export trading company facility is located within in Kolo village, Nantabulirwa Ward, Goma Division, Mukono Municipality, Mukono District and can be geographically referenced at (WGS 84 UTM Zone 36N) coordinate 465678.40mE 38610.94mN within 465578.88mE 38735.94mN, 465809.11mE 38643.39mN, 465792.28mE 38503.85mN, 465545.12mE 38577.89mN.

The proposed facility neighborhoods contain Liberty ICD to the West, Warehouses to the North, Kansai Plascon Uganda Limited to the East, and other warehouses to the South. The area is built with industries, factories, warehouses, and offices. This is purely an industrial zone.

E3 project justification

Coffee continues to thrive as one of the most consumed beverages globally. The demand for coffee beans in Africa and worldwide is expected to increase over the coming decade. In the coffee market, volume is expected to amount to 6.8bn kg by 2028 with a volume growth rate of 2.4% by 2024. This is because consumers are seeking unique and high-quality coffee experiences while exploring various flavor profiles. Also, coffee brewing methods continue to evolve, offering consumers diverse and personalized coffee experiences. Alternative brewing methods like capsule coffee, AeroPress, and cold brew have also gained popularity in the market. The coffee market is expected to continue its upward trend, driven by factors such as expanding coffee consumption in emerging markets, premiumization, and the rising demand of organic and fairly traded products.

Grain processing will help streamline the processing of grains, reducing manual labor and increasing productivity, improve the quality of grains, ensure value addition, job creation, food security, reduced post-harvest Losses, improve export potential, create crop diversification thus reducing dependence on a single crop, supports local farmers by providing a market for local grains, the plant will also support local farmers and contribute to the growth of the agricultural sector, and contribution to GDP thus stimulating economic growth and development.

The warehouses will provide a centralized location for storing and managing inventory (imported agricultural inputs, polymers, and industrial chemicals); enabling efficient tracking and control for goods; offering ample space to store large quantities of exports; reducing stockouts and overstocking risks; protect goods from environmental factors like rain, sunlight, and extreme temperatures, provide a secure environment for storing valuable goods; reducing the risk of theft and damage; enabling efficient order fulfillment by allowing for quick picking, packing of orders, and adapting to changing business needs; providing flexibility to expand or contract storage space as required; playing a critical role in the supply chain thus enabling the efficient movement of goods to the customers; maintaining specific temperature

and humidity levels; support business growth by providing the necessary infrastructure to manage increased inventory and order volumes.

Establishment of the ETCUL facility within Goma Division-Mukono municipality will also boost the coffee, grain, and agricultural business and industrialization in the area and also the surrounding communities as it will help them to provide market for their produces and development. Additionally, the proposed project will create more job opportunities for the locals as many will be employed in the business and also provide revenues to the Mukono municipality.

E.4 ESIA study objectives

The objective of the EIA study was to carry out a systematic examination of the present environmental situation within the project area to determine whether the proposed project will have adverse environmental impacts to the surrounding area. The study ensures that the proposed project incorporates fully environmental considerations during its development, observes continuous improvement on environmental, health and safety management and; takes appropriate measures to mitigate any adverse impacts to the environment and the surrounding communities. It will also ensure that the related operations of the proposed project are always in full compliance with the Environmental Impact Assessment Guidelines (1997) and Regulations (2020) for Uganda.

E.5 Legal and Policy requirements

The legal and policy requirements are covered in the scope of the study as a major concern for the development of proposed project. It should conform to the existing National and International Laws, Policies and Regulations. This section has been included in this report for comprehensive discussion.

E.6 Study methodology

A team of environmental professionals conducted the assessment, determined the potential impacts and formulated recommendations and mitigation measures. The methodology used consisted of desktop studies which reviewed literature on environmental impacts relevant to the proposed project. Field investigations were undertaken to establish baseline physical, biological and socio-economic environmental aspects.

Baseline data for the study area was collected using a combination of surveys, site reconnaissance, desktop research, analysis of plans, review of reports and background documents, public consultations and field studies inter alia.

E.7 Baseline conditions

This chapter discusses the physical, biological and socio-economic conditions within the project site/area. The baseline conditions were based on a review of available secondary information and site visits during the assessment.

Physical Environment:
In this section, the assessment team described the Topography, Geology, soils, Climate and Hydrology of the project area.

Biological environment:
The Fauna (mammals and avifauna) and flora including the main habitat types of the project area and site were discussed.

Socio-economic Environment:

The assessment team gathered socio-economic information that included project area population, Health facilities, Education, Land use and tenure system, economy, water facilities, health facilities, energy supply, transport and communication, markets, and settlement.

E.8 Analysis of alternatives

A number of alternatives were considered and analyzed to ensure that the best options were chosen. This was to ensure that the project's intended objectives are achieved without compromising the environment to any extent. The analysis was based on the three options that included; Do nothing (Status Quo) alternative, project as proposed and development in a different location alternative.

E.9 Stakeholder consultation

Stakeholder consultations undertaken were led by the consultant team, which provided support to address issues relevant to the ESIA process. In order to facilitate effective consultations, background information was produced and circulated at stakeholder meetings. The ESIA team continued and widened the consultation process to obtain information and concerns to inform the process through a series of face-to-face meetings with individual stakeholders, lead agencies from concerned sectors and stakeholder groups within the affected areas.

E10 Summary of Environmental Impacts

This section presents a summary of environmental and social impacts that are likely to accrue with implementation of the proposed project.

Positive impacts

1) Opportunity for revenue generation
2) Employment opportunities
3) Development of the area

Negative impacts

1. Creation of borrow pits
2. Traffic disruption
3. Noise generation
4. Waste generation
5. Health and safety hazards
6. Fire accident risks
7. Air emissions

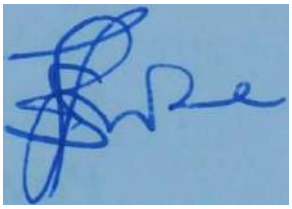
E.11 Environmental and Social Management Plan (ESMP)

To ensure effective management of all impacts likely to be generated during the construction and operation phases of the project, an Environment and Social Management Plan (ESMP) is provided in this report. It includes potential impacts identified, mitigation/enhancement measures proposed, timing, desired outcomes, indicators, persons responsible and any capacity building requirement. Continued monitoring should be implemented as recommended in the ESMP to quickly identify budding impacts and stem them from developing into severe adverse socio-economic or environmental effects.

E.12 Conclusion

The final recommendation of the assessment is that when the mitigation actions and the environmental and social management plan proposed are implemented, the adverse environmental impacts of the project will be minimized to acceptable levels. It is our recommendation that this ESIA should be approved to allow this project to proceed.

REPORT AUTHORS

Name	Role
Isaac TUNYWAANE 	NEMA Registered EIA Practitioner Member International Association of Impact Assessment Member of Uganda Association of Impact Assessment Biodiversity Inventory, Analysis and Mapping; Wetlands Management and Conservation; Waste and Pollution Assessment
Edwine Muwonge 	NEMA Registered EIA Practitioner Member of Uganda Association of Impact Assessment Environment Engineer Waste Management Waste Water Management

Contributing Persons

Jimmy Labali

Regulatory Compliance, Social Relations, Community health and Safety

Mark INYARIO

Environment Management Systems, Impact Identification and Mitigation Measures

Gasyowere Godfrey

Environment Engineer
MSc. Natural Resources Management (Cand)
Environment Management Systems, process flow analysis, Impact Identification and Mitigation Measures

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EIA:	Environmental Impact Assessment
EMP:	Environmental Management Plan
ESIA:	Environmental and Social Impact Assessment
ESMP:	Environmental and Social Management Plan
IFC:	International Finance Corporation
NEMA:	National Environment Management Authority
NWSC:	National Water and Sewerage Corporation
OSHA:	Occupational Safety and Health Act
PPE:	Personal Protective Equipment
ETCUL:	Export Trading Company Uganda Limited
UIA:	Uganda Investment Authority

1.0 INTRODUCTION

1.1 Project Overview

Export Trading Company Uganda Limited (ETCUL) was incorporated in April 2000 as a private limited and growth-oriented agribusiness company. It is licensed to carry out among others to deal in processing of grains and coffee, import of agricultural inputs, and storage of materials in their warehouses. ETCUL's vision is to participate in and transform Uganda's food processing industry as key players in enhancing the national food basket. The company strives to become one of the leading private importer and exporter of agricultural products with space provision for imported polymers which are locally sold here in Uganda, with a mission to be among the premier processors of coffee and grains for export, with a quality storage space for imported polymers and agricultural in-puts whilst continually striving to achieve long-term sustainable growth and profitability.

Uganda is the second leading exporter of coffee beans in Africa after Ethiopia with almost $595 million in sales annually. In Uganda Coffee is the most important cash crop throughout all the years, making it the top export business earner since the 1980s. It has also specialized in the production of 2 types of Coffee that is Arabica and Robusta coffee. Whilst the economy as a whole has expanded and improved in recent years, coffee remains of vital importance, earning on average just short of 60% of annual export revenues during the period 1996 to 2000. It is estimated that as much as 20% of the entire population earn all or a large part of their cash income from coffee. Following decades of total state control of the sector, the coffee industry was fully liberalized between 1991 and 1992 and is currently entirely in private hands. However, export quality control remains the responsibility of the Uganda Coffee Development Authority (UCDA) that grades, liquors and classifies all export shipments. Production averaged almost 3.3 million bags in the six years from 1996 to 2001, with a peak of 4.2 million bags in 1996/7 (a total last seen in 1972) and a low of 2.0 million in 2005/6. The proportion of Arabica coffee fluctuates from around 8 to 10% of the total. Local consumption is limited at around 3% of production. ETCUL proposes to establish a coffee processing plant that will produce coffee beans for export.

Due to the trending demand for cereals internationally, Uganda has also ventured in export of cereals with an aim of boosting the country's GDP. The major cereals exported include but not limited to Maize, sim-sim, Millet, rice, beans, peas, sorghum among others. These agricultural products are processed before export with an aim of adding value. ETCUL as a private limited company proposes to deal in processing of cereals majorly in maize, millet, sim sim, beans, peas, among others.

ETCUL facility will also be designed with warehouses for storage of imported agricultural inputs (fertilizers, pesticides, and hand pumps), polymers (pet resins), and industrial chemicals (already package Nitric acid, Hydrochloric acid, sulphuric acid, white lime, titanium dioxide, sodium tri-phosphate, Styrene, aluminum sulphate) which are sold locally to the farmers, industries, and other factories that use these products as input or raw material, here in Uganda.

In this regard, ETCUL (the proponent) has identified an investment gap that calls for the development of its facility to contain a Coffee Processing section, grain process section, and a section with warehouses for storage of imported agricultural inputs, polymers, and industrial chemicals that would stem the shortage of coffee beans and grains demand globally as well facilitating local production process through availing industrial chemicals. Most of the Coffee, grains will be sourced from local farmers within Kampala

metropolitan area, and other districts within Uganda, the polymers, agricultural inputs, and the industrial chemicals will be imported.
Sustainable development requires that all growth activities consider environmental conservation. This balance between human development and the natural ecosystem is essential and can be achieved through careful planning and effective management systems. Modern development processes integrate environmental planning with physical, economic, and development planning. Environmental Impact Assessments (EIAs) are a critical component of this process, evaluating proposed activities that might significantly impact the environment. In Uganda, such assessments are required under the National Environment Act (NEA, 2019) and the National Environmental (Environment and Social Assessment - NEESA) Regulations, 2020, and must be approved by NEMA.

To facilitate this process, ETCUL has engaged Fulcrum Environmental Engineers Limited to conduct the required Environmental and Social Impact Assessment (ESIA). This report provides a detailed description of the proposed project, including its components and activities. It outlines the approach taken in the assessment, identifies necessary mitigation measures, and sets the regulatory and institutional framework guiding the project's development. The report includes a baseline assessment of the site, analyzes alternative project locations and technologies, details stakeholder consultations, and evaluates the environmental impacts of the project. It also offers comprehensive mitigation, management, and monitoring plans to address the identified significant environmental impacts.

The proposed project will involve earthworks and excavations to enable construction of the facility with potential implications on the vegetation, landscape, visual and amenity value and carbon sequestration. This environmental and social impact assessment was conducted as part of the technical design and feasibility study of the proposed project. A detailed description of all elements of the project during the pre-construction, construction and operational phases have been prepared. The elements analysed include inter alia the infrastructure of the project including: drainage features; access points; waste collection, disposal, and management; and utility requirements.

1.2 Requirement for Conduct of the Environmental Impact Assessment Process

Under the provisions of the National Environment Act (2019), the proposed project (i.e., the establishment of facility that will contain coffee Processing unit, grain process unit and warehouses for storage of imported agricultural inputs, polymers, and industrial chemicals is identified among the listed activities / projects under the Fifth Schedule of the NEA in ***Category 5 (f) "Construction of warehouses", (g) support facilities (a) to (f)", and under the fourth schedule, Part 2: Category 5 (a) construction of agro-processing facilities, (g) support facilities to (a) to (f).*** In terms of Part X Section 110 of the NEA, the potential impacts on the environment associated with the project must be considered, investigated, assessed and reported on to the regulatory authority in charge of environment matters - NEMA - for authorization prior to implementation.

The need to comply with the requirements of the EIA Regulations ensures that decision makers are provided with the opportunity to consider the potential environmental impacts of the project early in the project development process, and assess if environmental impacts can be avoided, minimized or mitigated to acceptable levels. By this report the relevant government authorities are able to monitor impact within the life span of the project on the immediate environment, so as to enable major stakeholders of the project including the Government to manage the environment for the well-being of the community.

1.3 Justification for project development

Coffee continues to thrive as one of the most consumed beverages globally. The demand for coffee beans in Africa and worldwide is expected to increase over the coming decade. In the coffee market, volume is expected to amount to 6.8bn kg by 2028 with a volume growth rate of 2.4% by 2024. This is because consumers are seeking unique and high-quality coffee experiences while exploring various flavor profiles. Also, coffee brewing methods continue to evolve, offering consumers diverse and personalized coffee experiences. Alternative brewing methods like capsule coffee, AeroPress, and cold brew have also gained popularity in the market. The coffee market is expected to continue its upward trend, driven by factors such as expanding coffee consumption in emerging markets, premiumization, and the rising demand of organic and fairly traded products.

Grain processing will help streamline the processing of grains, reducing manual labor and increasing productivity, improve the quality of grains, ensure value addition, job creation, food security, reduced post-harvest Losses, improve export potential, create crop diversification thus reducing dependence on a single crop, supports local farmers by providing a market for local grains, the plant will also support local farmers and contribute to the growth of the agricultural sector, and contribution to GDP thus stimulating economic growth and development.

The warehouses will provide a centralized location for storing and managing inventory (imported agricultural inputs, polymers, and industrial chemicals); enabling efficient tracking and control for goods; offering ample space to store large quantities of exports; reducing stockouts and overstocking risks; protect goods from environmental factors like rain, sunlight, and extreme temperatures, provide a secure environment for storing valuable goods; reducing the risk of theft and damage; enabling efficient order fulfillment by allowing for quick picking, packing of orders, and adapting to changing business needs; providing flexibility to expand or contract storage space as required; playing a critical role in the supply chain thus enabling the efficient movement of goods to the customers; maintaining specific temperature and humidity levels; support business growth by providing the necessary infrastructure to manage increased inventory and order volumes.

Establishment of the ETCUL facility within Goma Division-Mukono municipality will also boost the coffee, grain, and agricultural business and industrialization in the area and also the surrounding communities as it will help them to provide market for their produces and development. Additionally, the proposed project will create more job opportunities for the locals as many will be employed in the business and also the revenue of the Mukono municipality. This initiative will contribute to industrialization, and enhance local and national development.

1.4 Environmental and Social Impact Assessment

ESIA is a process used to predict the environmental consequences of proposed project, activities or actions of development. ESIA should be conducted before the commencement of a project to study the possible impact that a proposed project or activity may have on the environment and hence eliminate, reduce or avoid adverse impacts and costs that would be met after damage is inflicted by either redesigning the project or instituting mitigation measures.

It enables environmental factors to be given due weight, along with economic or social factors, when planning applications are being considered. ESIA also helps developers to prevent, reduce and offset adverse effects and ensures that environmental issues can be taken into account during the design of the project.

ESIA is a requirement highlighted in the NEA, 2019, and the Environment Impact Assessment Regulations, 2020. The Constitution of the Republic of Uganda of 1995 also provides among its National Objectives, (Objective No. XXVII) Sustainable utilization of environmental resources.

The minimal content of an Environment Impact Assessment Report is set out in ESIA regulations and reproduced in Annex 3 of a guide to the environment impact assessment process in Uganda, 2001.

The ESIA will not be a stand-alone document; it will be supported and supplemented by comprehensive engineering design.

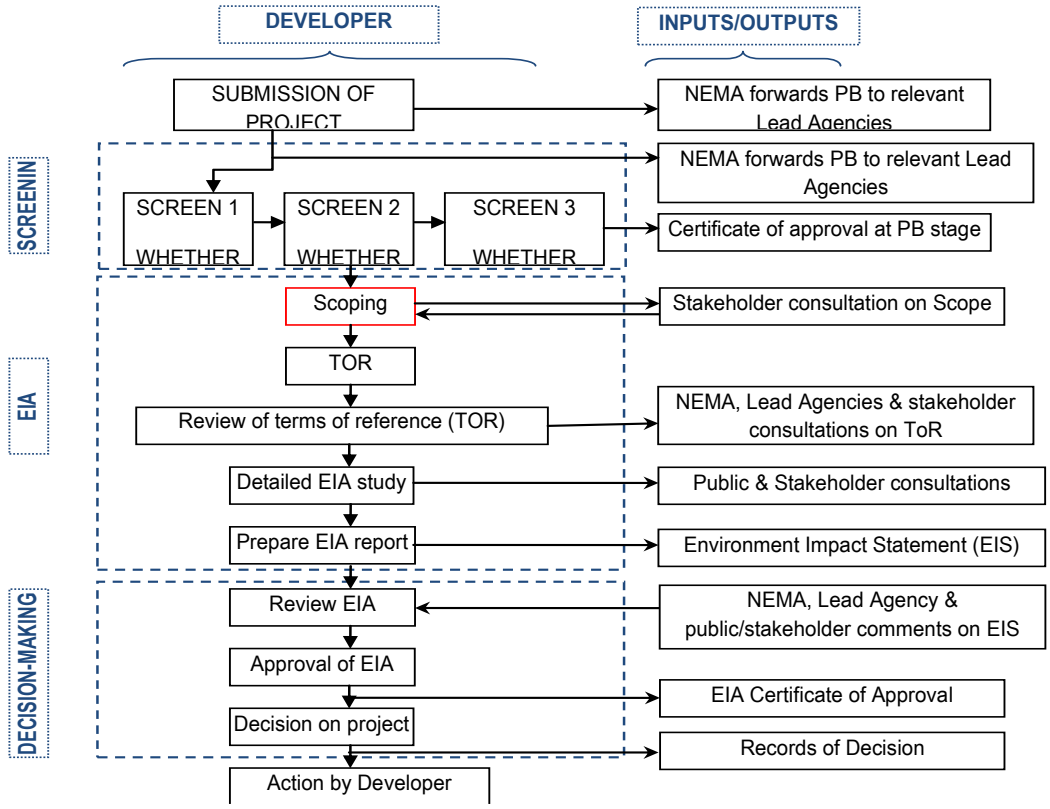

Figure 1.1: Summary of ESIA process in Uganda

1.5 Objectives of the study

The objective of the ESIA study was to carry out a systematic examination of the present environmental situation within the project area to determine whether the proposed project will have adverse environmental impacts to the surrounding area. The study included collection and analysis of environmental baseline data, identification of impacts (both positive and negative) analyses and evaluation of impacts, formulation of mitigation measures for significant negative impacts, analysis of project alternatives and development of environmental management and monitoring plans. This was achieved through an evaluation of the proposed project, involving the project proponent and design team, specialists with experience in EIAs for similar

projects, and a public consultation process with key stakeholders that includes both government authorities and interested and affected parties (I&APs).

Specifically, the study aimed at achieving the following specific objectives:

1. To determine the compatibility of the proposed development with the neighbouring land uses.
2. To identify and evaluate the significant environmental impacts of the proposed project.
3. To access and analyze the environmental costs and benefits associated with the proposed project.
4. To evaluate and select the best project alternative from the various options available as indicated in chapter 6.
5. To incorporate environmental management plans and monitoring mechanisms during implementation, and operation phases of the project.
6. To incorporate stakeholder consultations into the environmental management process and project implementation.

The purpose of this report is to provide NEMA and other Lead Agencies with sufficient and relevant information on the proposed development that can allow them establish whether or not the development is likely to have significant impact on the environment, and thus determine the basis for approval.

1.6 Declaration

The proponent in his capacity as the promoter and proprietor of the proposed facility hereby declares his intention to abide by the existing international and national laws and regulations regarding environmental protection during the construction and operation of the facility. The proponent is committed to the implementation of the Environment Management Plan (EMP) proposed in this ESIA report. He vows that he has prepared this ESIA report using the best available expertise in personnel, equipment and internationally acceptable methods.

1.7 Details of Developer and Investment Cost

The proposed development by ETCUL is estimated to cost approximately Ugshs 22,687,000,000 (Twenty two Billion, Six Hundred Eighty Seven Million, Only). The details of the proponent are given in table 1.1 below.

Table 1.1: Details of the proponent

Name	**Export Trading Company Uganda Limited**
Current registered address	P.O.BOX 33336, Plot 2627, Namanve Industrial Park, Kampala Uganda
Email	Smaran.bheemaiah@etgworld.com
Telephone	+256775250813
Contact	Mr. Smaran Bheemaiah
Estimated project cost	Ugshs 22,687,000,000 (Twenty two Billion, Six Hundred Eighty Seven Million, Only)

1.8 Structure of the Report

The entire EIA report is prepared based on the generic structure of the EIA document given under Regulation 17 of the National Environment (Environmental and Social Assessment) Regulations, 2020. The report has been divided into 12 chapters as described below:

Chapter 2: Study Methodology presents the assessment methodology and approach to the ESIA study.

Chapter 3: Policy, Legal and Institutional gives an overview of the regulatory and policy framework applicable to the project

Chapter 4: This chapter describes the proposed development proposal in relation to its location, the key project components and an overview of the proposed activities that are to take place during the various project phases.

Chapter 5: Description of baseline presents the environmental and social baseline conditions within the project site and its surroundings.

Chapter 6: Analysis of alternatives investigates several alternatives to the project development in relation to the project site, chosen technology, project design, and finally investigates the 'no action' alternative which assumes that the development proposal does not take place.

Chapter 7: Public participation process and disclosure discusses the stakeholder consultation and engagement plans which were undertaken as part of the ESIA process for the project and provides an overview of the findings.

Chapter 8: Analysis of Potential Impacts and Mitigation measures identifies and assesses the potential impacts from the project on the various environmental and social receptors. In addition, for each impact a set of mitigation measures have been identified to eliminate or reduce the impacts to acceptable levels. Cumulative and residual impacts are also discussed under this chapter.

Chapter 9: Environmental Management Plan and Compliance Program presents the Environmental Management Plan (EMP) for the project; which summarises the impacts identified as well as the mitigation measures and monitoring requirements to be implemented throughout the various project phases. In addition, this chapter describes institutional framework and procedural arrangement for the EMP implementation.

Chapter 10: This chapter provides the Environmental and Social Risk Assessment which is a systematic process for identifying and estimating the likelihood or probability of an adverse or hazardous outcome or event and its consequence on human health or the environment.

Chapter 11: Gives the study conclusion and recommendations.

Section 12: Contains references and appendices

1.9 Compliance with the approved Terms of Reference

Table 1.2: Terms of reference

	Condition	Section
i	Provide a detailed description of the activities of the project, capacity of the proposed processing facility, design and production processes of the project. In addition, provide an elaborate description of the source, types and management of the raw materials to be used at the facility and the size of the work force.	Section 4
ii	Make reference to the current legal framework for environment management particularly, the National Environment Act, 2019, and the attendant Regulations and detail measures that will be implemented to ensure compliance with the provisions therein.	Section 3
iii	Carry out comprehensive consultations with all relevant key stakeholders including Mukono Municipal Council, Uganda Warehouse Receipt System Authority, the local communities in the neighborhood of the proposed project among others. Ensure that the views/ concerns of stakeholders are well documented and included in the ESIA report	Section 7 and appendix E
iv	Document measures for cleaner production in the ESIA, including waste minimization, pollution control, energy and water conservation at the facility.	Section 8 and section 9
V	Provide comprehensive baseline information/data relating to the proposed project area, and a set of clear coloured photographs showing the current state of the project site and the neighboring environs in each of eastern, northern, western and southern surroundings of the Project area.	Section 5
Vi	Provide well labelled site location images and site lay out plans and maps (preferably each covering A-3 size paper) accurate set of GPS	Section 4 and appendix F

	Coordinates clearly indicating the site boundaries.	
Vii	Carryout soil, water, air and noise analyses relating to the project area for purposes of future reference and ensure that results are appended to the ESIA report.	Section 4 , appendix C and D
Viii	Provide a clear sustainable source of supply for the raw materials to feed into the facility operation processes.	Section 4
Ix	Include in the ESIA report, comprehensive analysis of alternatives/options to the selected project location, design and any technology applications among other aspects.	Section 6
x	Ensure that all possible waste streams from the construction and operation of the proposed processing facility are documented and assessed in terms of characteristics and estimated quantities of each category of waste. Clearly describe the measures that will be implemented to manage such waste, particularly wastewater from the facility, among others.	Section 4, section 8
xi	Carry out a comprehensive evaluation of the negative environmental impacts associated with the proposed project activities, and provide comprehensive narratives on proposed relevant mitigation measures to minimize the identified potential negative impacts.	Section 8 and section 9
xii	Provide a comprehensive evaluation of potential environmental impacts and risks associated with the project components and activities, including any other aspects/ concerns which may have not been initially foreseen during the preparation of the scoping Report and TORs.	Section 8 and section 9
xiii	Append to the ESIA report proof of land ownership/ acquisition	Appendix A

xiv	Indicate the capital cost of the project and append a certificate of valuation issued by a qualified and registered valuer in accordance with the provisions of Regulation 18(1) of the National Environment (Environmental and Social Assessment) Regulations, 2020.	Section 1
xv	Provide evidence of payments of the 30% ESIA fees as required under regulation 49 (2) of the National Environment (Environmental and Social Assessment) Regulations, 2020.	
xvi	Note that only registered EIA Practitioners (Consultants) including the team leader should be contracted to carry out the ESIA for the proposed project.	Page ii

2.0 APPROACH AND METHODOLOGY

The methodologies adopted for conducting this ESIA are as follows:

2.1 Document review

A number of documents were reviewed to gain a clear understanding of the proposed project activities. Others were reviewed to obtain information on the existing physical environment (particularly topography, geology, climate, drainage and hydrology), the biological environment (particularly flora and fauna) and the socio-economic environment (particularly demography, social services, utilities and economy) of the area before implementation of the project. The documents included drawings provided by the proponent and previous environmental studies in the project area. Others included satellite imagery and other published maps of the project area.

A review of the country's legislation was also undertaken in order to identify policy and legal requirements deemed applicable to the proposed project.

2.2 Field surveys

One-seasoned fieldwork activities have been carried to verify and complement information gathered from desktop studies. The fieldwork covered all relevant components of ecological, socio-economic and health components of the environments as described below;

- To determine the ecological status of the project area, an inventory of flora and fauna species was carried out. Dominant facility species and their life forms were identified from the area whereas fauna species were obtained from observations in the area and reports from the community.

- To determine the socio-economic status of the project area, a combination of focused group discussions, informal discussions and key informants' interviews was used to obtain information on the socio-economic conditions of the area.

2.3 Consultation with Stakeholders

Consultations were done with various project stakeholders. These were conducted through meetings with representatives from relevant ministries, government agencies, local authorities, affected individuals and the surrounding communities. Government agencies and ministries consulted include National Environment Management Authority (NEMA), and Occupational Safety and Health Department in the Ministry of Gender, Labor and Social Development. Mukono Municipal Council, Mukono District Local Government and Local authority consulted includes Kolo LCI leaders. Affected individuals consulted include Kolo residents and business operators.

2.4 Review of Policy, Legal and Institutional Framework

Part of the study included the determination of policy, legal and administrative framework and requirements for the development.

2.5 Analysis of Alternatives

An analysis of alternative options regarding project development was made including the "no project" option, construction at a different location and project development. A comparison of environmental consequences associated with each was also made.

2.6 Mitigation and Environmental Monitoring Plan

Where impacts can be reduced to acceptable levels through the incorporation of practical and cost-effective measures, these have been identified. A mitigation plan of such measures has been prepared. An environmental monitoring plan was developed outlining the nature, frequency, location and methodology of monitoring that should take place during establishment and operation of various components under consideration.

2.7 Assessment of Environmental Impacts

A rating criterion was used to evaluate the significance of the impacts so that relative comparisons between the impacts are undertaken. Each impact was ranked according to extent, duration, magnitude and probability of occurrence. From this criterion, a significance rating was obtained. The method and formula is described here below.

2.7.1 Status of the Impact

The impacts were assessed as either having a:

- Negative effect (i.e. at a 'cost' to the environment),
- Positive effect (i.e. a 'benefit' to the environment), or
- Neutral effect on the environment.

2.7.2 Extent of the Impact

The extent of each impact was rated as below;

- (1) Site (i.e. within the boundaries of the site),
- (2) Local (i.e. the area within a 5-km radius of the project site),
- (3) District (i.e. Mukono District),
- (4) Regional (i.e. Central Region),
- (5) National (i.e. Uganda), or
- (6) International (i.e. Eastern Africa).

2.8.3 Duration of Impact

The lifetime (duration) of each impact was rated as being one of the following:

- (1) Immediate (> 1 year)
- (2) Short term (1 – 5 years)
- (3) Medium term (6 – 15 years)
- (4) Long term (the impact will cease when the operation stops)
- (5) Permanent (no mitigation measure of natural process will reduce the impact after construction

2.8.4 Magnitude of the Impact

The intensity of severity of each impact was rated as below;

- (0) None (where the aspect will have no impact on the environment),
- (2) Minor where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected),

- (4) Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected,
- (6) Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way),
- (8) High (where natural, cultural or social functions or processes are altered to the extent that they will temporarily cease), or
- (10) Very high (where natural, cultural and social functions or processes are altered to the extent that they will permanently cease).

2.8.5 Probability of Occurrence

The likelihood of the impact actually occurring was indicated, probability is estimated on a scale and a score assigned as either:

- (0) None (the impact will not occur),
- (1) Improbable (the possibility of the impact materializing is very low as a result of design, historic experience, or implementation of adequate corrective actions),
- (2) Low probability (there is a possibility that the impact will occur),
- (3) Medium probability (the impact may occur),
- (4) High probability (it is most likely that the impact will occur), or
- (5) Definite (the impact will occur regardless of the implementation of any prevention or corrective actions).

2.8.6 Significance of the Impact

Based on the above, potential impacts were assigned a Significance weighting (S). This weighting was formulated by adding the sum of the numbers assigned to Extent (E), Duration (D) and Magnitude (M) and multiplying this sum by the Probability (P) of the impact as follows: S = (E+D+M) P. The significance weighting scale was as indicated below:

- (<30): Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- (30-60) : Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated.
- (>60): High (i.e. where the impact must have an influence on the decision process to develop in the area.

Residual and Cumulative impacts as well as reversibility (where applicable) was also identified and assessed. Table 2.1 provides a description of the colour coding adopted in impact analysis.

Table 2.1: Colour coding adopted in impact analysis.

SW	-ve Rating	Definition	+ve Rating
0	NO IMPACT LOW	A potential concern or impact, which, upon evaluation, is found to have no significant impact	NO IMPACT LOW
<30	VERY LOW-LOW	Impacts will be localized and temporary. Impacts result in minor alterations to the environment and can easily be	[+] VERY LOW -

		alleviated by the implementation of effective mitigation measures.	LOW
31-60	MODERATE	Impacts of moderate magnitude locally to regionally in the short term. The impact results in medium alterations to the environment and can be reduced or eliminated by the implementation of effective mitigation measures.	[+] MODERATE
>60	HIGH	Impacts of high magnitude locally for longer than 6 years and/or regionally and beyond. The impact results in major alterations to the environment even if effective mitigation measures are implemented and will have an influence on decision-making.	[+] HIGH

3.0 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

This chapter outlines the national policies, laws, regulations, standards, and guidelines that apply to the environmental, health, safety, human rights, and social aspects of the Project. The requirements stipulated within this framework encompass all phases of the Project including Project engineering, development of early infrastructure, temporary facilities, and development of the facility infrastructure.

National policies present the general principles that guide the Government in achieving its various strategic goals, and act as foundational instruments for the formulation of Acts of Parliament and Statutory instruments/regulations or subsidiary legislation under these Acts of Parliament. The national environmental standards are prescribed under some of these regulations which were passed under the Acts of Parliament.

The specific objectives of the review of the regulatory framework are:

- To identify policies, laws, and regulations applicable to the environmental, health, safety, human rights, and social aspects of the Project, and to the conduct of the ESIA.
- To identify environmental standards prescribed under national legislation that shall apply to the Project (waste management, wastewater discharge and air emissions, among others).
- To identify approvals, licenses and permits required for the Project as stipulated under the national legislation.
- To identify international conventions to which Uganda is a signatory that shall apply to the Project.
- To highlight the Project Proponent's internal rules and standards applicable to the Project.

3.1 National Policy Framework

Table 3.1 below presents a summary of the national policies applicable to the proposed Project and its environmental and social aspects.

Table 3.1: National policies

Policy	Requirement	Application to the Project
The National Environment Management Policy, 1994	Provides for sustainable economic and social development through a number of strategies that include environmental and social impact assessment.	An ESIA has been undertaken and it will be in compliance with the Policy.
The National Energy Policy, 2002 and the Energy Policy for Uganda, 2023	The key focus of the Energy Policy for Uganda 2023 is creating a conducive environment for; introducing nuclear power in the electricity generation mix, ensuring sustainable utilization of nuclear fuel resources, increasing utilization of nuclear energy for disease diagnosis and treatment, industrial applications, research and development, and improving radioactive waste management.	This project is aimed at carrying out research and development, particularly in energy, and material science, fostering scientific innovation and technological advancement. The proponent will ensure that the machines at the site, use cleaner fuels in their

Policy	Requirement	Application to the Project
	Specifically, the energy policy seeks to meet the following objectives: To establish the availability, potential and demand of various energy resources in the country. To increase access to modern affordable and reliable energy services as a contribution to poverty eradication. To improve energy governance and administration. To simulate economic development. To manage energy-related environmental impacts.	operations so as to reduce on air emissions.
Electronic Waste (E-Waste) Management Policy for Uganda, 2012	The electronic waste management policy – Approved by cabinet in 2012, emphasizes the need for Human life and environment protection to ensure safety of citizens and the environment from hazardous materials embodied in ICT and electric equipment.	The project will produce electronic waste, necessitating appropriate management of e-waste.
The National Water Policy, 1999	The policy was developed to promote the proper planning, development, and wise use of water resources. Its overall policy objective is to manage and develop the water resources of Uganda in an integrated and sustainable manner, with environmental impact assessment as one of the strategies and planning tools for water resources management.	Water is crucial for production, so it is essential not only to have sufficient quantity but also to ensure its quality and suitability for intended purposes. Consequently, all project activities that affect water quality must be carefully managed. Project operations must comply with pertinent legislation regarding water management.
The National Gender Policy, 2007	The overall policy goal is to achieve gender equality and women's empowerment as an integral part of social-economic development. One of the objectives of the policy is to reduce gender inequalities so that all women and men, girls and boys are able	Equal employment opportunities will be offered to both men and women on the project.

Policy	Requirement	Application to the Project
	to move out of poverty and to achieve improved and sustainable livelihoods.	
National Policy for Disaster Preparedness and Management, 2011	The National Policy for Disaster Preparedness and Management calls for strict and effective mechanisms and risk reduction strategies to avert disasters, transportation and use, including environmental degradation. Proposed measures include implementing environmental impact assessments and protecting local livelihoods.	Paragraph 4.15 of the policy stipulates that private sector organisations have a responsibility to ensure their operations do not pose a risk to their workers, the general public or the environment. The policy further states that the owners of installations are responsible for educating workers on safety measures and emergency response measures.
The Uganda National Culture Policy, 2006	The policy provides the framework for the promotion of culture. The core principle underlying this Policy is respect for all cultures. The policy is all inclusive and advocates the rights of indigenous groups in Uganda. The Culture Policy promotes social change and encourages new ideas and approaches within the laws of Uganda	The project area does not include any World Heritage Sites or sites on the tentative World Heritage list. Any further considerations regarding cultural heritage will be addressed during the preparation of this Environmental and Social Impact Assessment (ESIA). Respect for cultural norms will be essential during project implementation to minimize potential social tensions or conflicts.
The National Youth Policy, 2001	The Policy provides an operational framework to facilitate meaningful involvement of youth in national development efforts and to respond to their various needs. Section 8.8 highlights the significance of youth education and awareness in promoting the conservation of natural resources. The Policy aims to	The proposed project could affect youth positively and negatively through employment opportunities, skills and knowledge transfer, entrepreneurial ventures, and other factors. Therefore, project operations must

Policy	Requirement	Application to the Project
	enhance the participation of youth in the development process.	adhere to relevant legislation concerning youth.
The National Child Labour Policy, 2006	The Policy provides a framework for addressing child labour and actions that need to be taken to deal with child labour. The main goal of the policy is to influence public policy on child labor issues through an increased understanding of the impact of work on children's health, the quality of their lives, and their ability to produce effectively in jobs as adults, as well as increase recognition of how child labor exploitation reinforces and promotes poverty, adult unemployment, poor living standards, low literacy rates, and lax enforcement of labor regulations.	There is a potential risk of child labour during project implementation, which the project proponents must address in accordance with national policy. Therefore, the recruitment process must align with relevant legislation. The developer will ensure that there is no employment of children at the proposed project.
The National Equal Opportunities Policy, 2006	The policy provides the framework for promoting equal opportunities for all people in Uganda in all activities, programmes, plans and policies of Government, private sector, and Non-Governmental Organizations in all spheres of social, economic, political, and civil life.	The proposed project will provide employment opportunities. The Project Proponents shall undertake Project activities in compliance with supporting legislation.
The National Employment Policy, 2011.	The policy provides a framework for achieving the goal of decent and remunerative employment for all women and men seeking such work, in conditions of freedom, equity, security and human dignity.	Section 6.6 of the policy emphasises the need for employers to comply with Uganda's legal and regulatory framework to promote the rights of workers.
The National HIV/AIDS Policy, 2011	The policy provides a broad framework for delivering Human Immunodeficiency Virus (HIV) and acquired immunodeficiency syndrome (AIDS) services in the country. It stipulates policies and legal requirements that guide planning and action in social and economic sectors and at the various levels of the response to HIV and AIDS.	The developer will institute HIV/AIDS awareness programs through the operation of the project.

Policy	Requirement	Application to the Project
The National Social Protection Policy, 2015	The Policy seeks to promote effective coordination and implementation of relevant social protection interventions to complement the efforts of the poor and vulnerable to cope with socioeconomic risks and shocks.	The proponent will seek the views and concerns of the poor and vulnerable members of the affected communities as part of the stakeholder engagement process.
National Industrial Policy, 2020	The National Industrial Policy is designed as a framework for achieving industrialisation in Uganda to create employment, increase value addition to local raw materials, increase export of manufactured products, and increase sector contribution to GDP (Gross Domestic Product). The Policy sets out the strategic direction for industrial development in Uganda. The specific objectives of the Policy include promoting resource efficient and environmentally sustainable industrialisation, as well as developing and strengthening skilled human resource to increase productivity and efficiency in the sector.	The proponent will adopt technologies and cleaner production techniques that minimize emissions and generation of wastes into the environment.
The Uganda National Land Policy, 2013	The Uganda National Land Policy provides a framework for having an efficient and effective land delivery system. Among its other objectives, the policy seeks to harmonise and streamline the complex tenure regimes in Uganda for equitable access to land, and to clarify the complex constitutional and legal framework for sustainable management and stewardship of land resources. It also aims to ensure sustainable utilisation, protection, and management of environmental, natural, and cultural resources on land for socioeconomic development.	This ESIA will be conducted in line with the Policy's aim to ensure sustainable utilisation, protection, and management of environmental, natural, and cultural resources of the Project area for socioeconomic development.
The Land Use Policy 2004	In support of the national objectives on poverty eradication and economic growth, while at the same time ensuring sustainable	This assessment is aimed at ensuring sustainable operation of the proposed

Policy	Requirement	Application to the Project
	utilization of natural resources including land and water, the National Land Use Policy's main goal is 'to achieve sustainable and equitable social and economic development through land utilization in Uganda'. The specific objective of the policy is to promote land use activities that ensure sustainable utilization of natural resources for national socio-economic development; the policy emphases among others, environmentally friendly practices, community based participatory planning, gender and land ownership.	project activities through implementation of the proposed mitigation measures in order to conform to this policy.
The Uganda National Housing Policy, 2016	The policy seeks to provide a national framework for housing development that shall increase access to affordable housing and improve the quality of existing housing stock and security of land tenure, among other objectives.	The project developer will comply to the requirements of this policy
The National Coffee Policy 2013	Section 4.0: The goal of this National Coffee Policy is to guide and regulate activities of various stakeholders in the coffee industry so as to improve production, processing, marketing and roasting of coffee. Section 4.2: The mission of the coffee industry is "to increase coffee production, value addition and domestic coffee consumption". Section 5.0: In order to achieve the objectives and strategies of this policy, the following actions shall apply: Government shall enact new laws and regulations, and review the existing ones in the following areas - planting materials, nurseries, growing, harvest and post-harvest handling, marketing, roasting and certification.	The developer will ensure value addition to coffee through quality processing, and packaging it for export. The developer will also ensure that the activities of the proposed project comply with the demands of this policy.
The National grains trade Policy 2015	The vision of the National Grain Trade Policy is to have a globally competitive grain sub-sector for food security, income generation,	The developer will ensure value addition to grains through quality processing,

Policy	Requirement	Application to the Project
	and industrialization. The Mission of the Policy is to ensure consistent quantity and quality supply of grain and grain products to the market in order to improve incomes of the sub-sector actors through efficient post-harvest handling, value addition, and effective regulation.	and packaging it for export. The developer will also ensure that the activities of the proposed project comply with the demands of this policy.
The National Agriculture Policy 2013	The vision of the policy is "A Competitive, Profitable and Sustainable Agricultural Sector", the mission of the policy is to: "Transform subsistence farming to sustainable commercial agriculture", and the overall objective of the agriculture policy is to achieve food and nutrition security and improve household incomes through coordinated interventions that focus on enhancing sustainable agricultural productivity and value addition; providing employment opportunities, and promoting domestic and international trade.	This assessment is aimed at ensuring sustainable operation of the proposed project activities through implementation of the proposed mitigation measures in order to conform to this policy.

3.2 Legal framework

Table 3.2: Legal framework

Legislation	Requirement	Application to the Project
Constitution of the Republic of Uganda, 1995 (as amended)	Constitutional objectives and articles concerning the protection and management of natural resources and land are: ▪ Objective XIII: The state will protect important natural resources, including land, water, wetlands, minerals, oil, fauna and flora on behalf of the people of Uganda. ▪ Objective XXVII (i) obliges the state to promote sustainable development and public awareness of the need to manage land, air and water resources in a balanced and sustainable manner for present and future generations.	To sustainably use natural resources and protect human health and the environment, the developer proposes to undertake an ESIA. The ESIA will demonstrate the proponent's commitment to working within provisions of existing environmental and social legislation to safeguard worker and community health in project areas of operation.

Legislation	Requirement	Application to the Project
	▪ Objective XXVII (iii) stipulates that energy policies, implemented by the state, should ensure that people's basic needs and those for environmental preservation are met. ▪ Article 39 enshrines the right of every Ugandan to a clean and healthy environment. ▪ Article 237 (2b): the government holds in trust for the people, and is required to protect, natural lakes, rivers, wetlands, forest reserves, game reserves, national parks and any land to be reserved for ecological or tourism purposes for the common good of all citizens.	
The National Climate Change Act 2021	The Act provides a framework for monitoring, reporting, and verifying the impact of climate change from greenhouse gas emissions.	The facility will directly contribute to climate change; therefore, it is essential to consider energy use, waste management, and the broader societal implications of their applications when assessing their environmental impact.
The Local Governments Act, Cap 243, 1997 (as amended in 2020).	The Act: Establishes a decentralised form of government based on the district as the main unit of administration. Districts are given legislative and planning powers, including planning for the conservation of the environment within their boundaries. Requires District Environment Committees, established under Section 15 of the National Environment Act, to guide the district authorities in matters relating to conservation of the environment	Mukono Municipal Council were engaged during scoping and will further be engaged during detailed ESIA and they will still be engaged during monitoring of project implementation.
The National Environment Act Cap 181	The National Environment Act, 2019 is the principal environmental law of Uganda and it establishes the National Environment Management Authority	The requirement to undertake an ESIA for this project is stated in Schedule 5 Section 14 of the National Environment Act Cap 181, and the

Legislation	Requirement	Application to the Project
	(NEMA) as the principal agency in Uganda for the management of the environment. In February 2019, the new Uganda National Environment Act was passed to repeal, replace and reform the law relating to environmental management in Uganda. The Fifth Schedule of the Act lists projects requiring Environmental and Social Impact Assessment.	developer is currently carrying out this ESIA as a fulfilment to the demands of the act
The Occupational Safety and Health Act, 2006	Section 13(1) (a) states that 'it is the responsibility of an employer to take as far as is reasonably practical, all measures for protection of his or her workers and the general public from the dangerous aspects of the employer undertaking at his or her own cost.'	The Act lays out the general workplace safety, health, and environmental requirements to be applied during all phases of the project including obligations to inspect statutory equipment (such as lifts, hoists, and cranes) and register workplaces. The project will be implemented in line with the requirements of this Act.
	Section 40, Subsection (2): a person shall, not less than one month before he or she begins to occupy any premises as a workplace, serve on the Commissioner, a notice with the particulars prescribed in Schedule 3.	
	Where any process carried out at a workplace is likely to cause bodily injury, which cannot be prevented by other means, every worker involved in that process, who is liable to bodily injury, shall be provided with suitable and appropriate personal protective equipment and clothing to protect him or her from risk or injury.	
The Physical Planning Act, 2010 (as amended in 2020).	Section 33: (1) a person shall not carry out a development within a planning area without obtaining permission from the physical planning committee.	The Project will ensure that the Mukono Municipal Council planning and approval requirements are met prior to and during the proposed Project operations.
	Section 37 stipulates that where a development application relates to matters that require an environmental Impact assessment to be carried out, the approving authority or physical planning	The developer commissioned the ESIA in compliance with Act.

Legislation	Requirement	Application to the Project
	committee may grant preliminary approval of the application subject to the applicant obtaining an environmental impact certificate in accordance with the National Environment Act.	
The Water Act, Cap 152, 1997	The Act provides for the use, protection and management of water resources and supply, and facilitates the devolution of water supply and sewerage undertakings. Section 31: stipulates that a person commits an offence unless authorised under this part of the Act, causes or allows: a) waste to come into contact with any water; b) waste to be discharged directly into water; c) water to be polluted.	The project will be obliged to manage waste in line with the provisions of the National environment (waste management) regulations, 2020 and The National Environment (Standards for Discharge of Effluent into Water or Land) Regulations, 2020.
The Museums and Monuments Act, 2023	The Act makes provision for the declaration and protection of cultural, natural heritage resources and protection of the environment.	The law will apply in case there is a chance finds and the project will establish procedure to address cultural chance finds in case they are encountered
The Employment Act, 2006	The Employment Act spells out the general principles regarding forced labour, child labour discrimination in employment, sexual harassment and outlines provisions to settle grievances. The Act also lays out the provisions under which immigrants can obtain work in Uganda, the length of hours allowable per week per employee and outlines the requirement for periodical rest.	While establishing the proposed project, it will enhance job creation, skills development, regulatory compliance, and economic growth, the developer will implement measures to oversee and manage the project's implementation in accordance with the legislation.
The Traffic and Road Safety Act, 1998 (Amendment) Act, 2020	The Act outlines the principal laws pertaining to road safety in Uganda including permitting of drivers, licensing of vehicles, speed restrictions, and traffic signs.	Only licensed drivers with valid permits will operate project vehicles and mobile equipment. The developer will develop a Traffic Management

Legislation	Requirement	Application to the Project
		Plan for Project which will be continuously reviewed for any improvements.
Worker's compensation Act, Cap 225, 2000.	This law provides for compensation to workers for injuries suffered in the course of their employment. Under the Act, an employee is entitled to compensation for any personal injury from an accident or disease arising out of, and in the course of his or her employment even if the injury or disease resulted from the negligence of the employee. The employer is immediately required to report to the Labour Officer of the area the accident-causing injury or death of a worker. It is an offence to fail to report an accident. Employers are also obliged to insure and keep themselves insured against any liability, which they may incur or their employees under the Act. It is an offence to fail to insure against such liability. The compensation is to be paid by the employer whether the worker was injured as a result of his or her own negligence, mistake, omission or commission.	The project Proponent, contractor and sub-contractors will be required to obtain workman's compensation to ensure employer's liability is covered for any injuries suffered while on duty. The project employers will be required to provide PPE to all workers, and this will be captured in the ESIA.
Tobacco Control Act, 2015	An Act to control the demand for the consumption of tobacco and its products, to control the supply of tobacco and its products to the population; to protect the environment from the effects of tobacco production and consumption and exposure to tobacco smoke; to promote the health of persons and reduce tobacco related illnesses and deaths; to protect persons from the socioeconomic effects of tobacco production and consumption; to promote research, surveillance and exchange of information on tobacco control; to insulate tobacco control policies, laws and programs from interference by the tobacco industry; to strengthen coordination, partnerships and collaboration for tobacco control; to establish the Tobacco Control Committee;	The developer is charged with the responsibility to control smoking in public areas. Designated smoking sections will be identified and labelled.

Legislation	Requirement	Application to the Project
The Public Health Act, Cap 281	The main objective of the Public Health Act is to safeguard and promote public health. The Act provides for prevention of introduction of infectious diseases and employment of infected persons. Section 54 provides a general prohibition of nuisances or conditions liable to be injurious or dangerous to health.	The potential impacts of the Project will be assessed within the provisions of this Act.
The Investment Code Act 1999	The Investment Code Act, 1999 makes provision for local and foreign investments in Uganda by providing more favorable conditions for investment. Part III sets out procedures for obtaining an investment license. It also provides implied terms and conditions of an investment license (section 18). One of the terms and conditions is to take necessary steps to ensure that the operations of business enterprises do not cause injury to the ecology or environment.	The project designs have been developed with environmental considerations in mind.
The National Coffee Act No.17 of 2021	The purpose of this act is to facilitate the development of a competitive, participatory and sustainable coffee subsector in accordance with the National Coffee Policy 2013 and also to regulate all on-farm and off farm activities in the coffee value chain. Under section 34 (1) and (2) the authority shall register every coffee processing factory and also registers the particulars of every coffee factory respectively.	The proponent is responsible to register his/her own factory and also the factory activities should be in the line with the requirements of the act.
The Land Act 1998	The land Act in section 2 states that all land in Uganda shall vest in all citizens which is also in line with the Ugandan constitution article 237. Section 43" utilization of land according to various laws" states that a person who owns or occupies land shall manage and utilize in accordance to other laws such as; Forest Act, NEA, the Water Act, the Wild Life Act and any other law. Section 45 of the Act further stresses that land will be used in accordance with all other town and country planning Act and any other laws. Section 26 emphasizes the equal rights to all	The developer shall observe and abide by all requirements of the act during all phases of the project.

Legislation	Requirement	Application to the Project
	members of the community in sharing benefits accruing from the land owned communally.	

3.3 Regulations

Table 3.3: Regulations

Regulations	Requirements	Application to the project
The National Environment (Environmental and Social Assessment) Regulations, 2020	Regulation 12 provides that for projects that require ESIA, (listed in schedule 5). Regulation 15 provides for the Environmental and social impact study, and this will guide the detailed ESIA assessment survey and report development. Regulation 17 provides for preparation of an environmental impact statement. The regulations also stipulate the requirement for stakeholder consultation and lays the foundation for timelines when concerned parties should be engaged.	The Content of this ESIA report is in compliance with the provisions the National Environment (Environmental and Social Assessment) Regulations, 2020.
National Environment (Management of Hazardous Chemicals and Products Containing Hazardous Chemicals) Regulations, 2024	The regulations require a handler of any hazardous substance to; Obtain necessary permits and licenses before beginning operations. This often involves a detailed application process that includes demonstrating compliance with environmental and safety standards. Maintain a comprehensive inventory of all hazardous chemicals and materials used or produced, including their classification according to risk levels and ensure that all hazardous chemicals are properly labeled, and Safety Data Sheets are readily available for all substances. Provide comprehensive training for all staff involved in handling hazardous chemicals, including emergency response training and ensure that personnel handling hazardous chemicals are	The National Environment (Management of Hazardous Chemicals and Products Containing Hazardous Chemicals) Regulations, 2024 are designed to regulate and manage hazardous chemicals and products containing such chemicals in order to protect human health and the environment. The regulations would require the proponent to properly store, handle, and manage these chemicals to prevent spills, leaks, or releases that could harm the environment or human health.

Regulations	Requirements	Application to the project
	properly certified and trained according to regulations.	This ESIA has evaluated potential environmental impacts, including those related to hazardous chemicals, and propose mitigation measures.
Traffic and Road Safety (Motor Vehicle Inspection) Regulations, 2016	These provide for periodic inspection of road vehicles to ascertain their roadworthiness. All vehicles including goods vehicles shall be subject to periodic inspection at approved facilities.	The developer will develop a Traffic Management Plan for the for managing traffic during the project cycle.
The Traffic and Road Safety (Prohibited Drugs and Alcohol Limit) Regulations, 2023	The Act provides for both prescribed blood alcohol levels and prescribed breath alcohol levels; ▪ Regulation 3 provides that the prescribed blood alcohol level a driver of a vehicle other than a public service vehicle or ambulance is 50 milligrams of alcohol in 100 milliliters of blood while that of a driver of a public service vehicle or ambulance is 20 milligrams of alcohol in 100 millitres of blood. ▪ Regulation 4 provides that the prescribed breath alcohol level for a driver of a vehicle other than a PSV or ambulance is 25 milligrams of alcohol in 100 millitres of blood while that of a driver of a PSV or ambulance is 10 milligrams of alcohol in 100 millitres of breath.	The project involves ferrying of construction and operation material with use of road transport. This regulation ensures that drivers operating these vehicles are not under the influence of prohibited substances, thereby maintaining road safety.
National Environment (Management of Ozone Depleting Substances and Products) Regulations, 2020	Operationalize Uganda's commitment to the Montreal Protocol through restrictions on the trade of controlled substances and licensing of persons intending to import or export controlled substances. Resourcing of goods and materials should not be from a country that is not a signatory of the Montreal Protocol.	The developer shall ensure compliance with these regulations.

Regulations	Requirements	Application to the project
	Imports of controlled substances should be licensed by the relevant authority, and free of prohibited materials.	
The National Environment (Noise Standards and Control) Regulations, 2003	Regulation 6, sub-regulation (1): noise levels from a facility in the general environment to which a person may be exposed shall not exceed the level specified in the regulations.	Project noise will be monitored to avoid exceeding the recommended levels.
The National Environment (Waste Management) Regulations, 2020	Regulation 5 on Responsibility for waste management. (1) A person who generates waste, a waste handler or product steward has a duty of care and shall take measures to ensure that—(a) waste is managed appropriately and securely in accordance with the Act, these Regulations, any other applicable law, environmental standards and conditions of the licence; (b) waste is managed in a manner that does not cause harm to human health or the environment; (c) any leakage or spillage of waste is quickly detected and managed; and (d) spillages which may cause pollution are managed in accordance with regulation 95.	The project will have to abide by conditions stipulated in the regulations and recommendations from international industry best practice.
The National Environment (Air Quality Standards) Regulations S.I. No. 22 of 2024.	Section 11 of these regulations requires that no person shall generate, cause or allow the release or dispersion of visible emissions including dust, smoke, fly ash, mist, fumes, smog, vapour, cinders and other liquid droplets or solid particles of any kind contrary to the air quality standards set out in these Regulations.	Air emissions from project activities will be monitored and maintained within the specified standards, while also benchmarking on WHO and IFC recommendations.
The National Environment (Standards for Discharge of Effluent into Water or Land)	These Regulations prescribe the environmental standards and measures for the treatment of effluent before discharge from various sources into water or land. Regulation 4 provides the general obligation to prevent and mitigate pollution. (1) A person whose activities are likely to produce effluent shall put in place measures to prevent and mitigate pollution in	The project will generate waste water in both construction and operation phases. All waste water generated shall be subjected to the

Regulations	Requirements	Application to the project
Regulations, 2020	accordance with the Act, the National Environment (Waste Management) Regulations 2020, the Water (Waste Discharge) Regulations and environmental standards.	required treatment before discharge into the environment The developer shall ensure compliance to this regulation
The National Environment (minimum standards for management of soil quality) regulations, 2001	The main purpose of the legislation is to: • Establish and prescribe minimum soil quality standards to maintain, restore and enhance the inherent productivity of the soil in the long term. • Establish minimum standards for the management of the quality of soil for specified agricultural practices. • Establish criteria and procedures for the measurement and determination of soil quality; and • Issue measures and guidelines for soil management	Soil conservation measures will be required in spoil disposal and management.
The National Environment (Conduct and Certification of Environmental Practitioners) Regulations, 2003	The regulations establish the code of conduct for certification, registration of Environmental Practitioners and for the practice of environmental impact assessment in Uganda.	This ESIA will be conducted by a competent team of registered environmental practitioners as required by these regulations.
The National Environment (Wetlands, River Bank and Lakeshores Management) Regulations, 2000	Part III (19) provides for Management of river banks and lake shores, "To facilitate the sustainable utilization and conservation of resources on river banks and lake shores by and for the benefit of the people and community living in the area and to promote the integration of wise use of resources in river and lakes into the local and National management of natural resources for social economic development"	The proposed project activities will be carried out in a manner that does not harm wetlands and efforts will be rendered towards protecting the wetland ecological system.

3.4 Institutional Framework

This section analyses some of the relevant institutions responsible for the establishment and operation of a proposed Coffee Processing plant, grain processing plant, and storage warehouses. It describes mandates of different ministries, key government institutions and agencies that are either directly or indirectly concerned with the management of some aspect of agricultural sector in Uganda. These government agencies, institutions and ministries play a key role in enforcing laws, policies and regulations that promote sustainable development.

3.4.1 National Environment Management Authority (NEMA)

NEMA is the principal agency in Uganda for the management of the environment, mandated to coordinate, monitor and supervise all activities in the field of environment. In accordance with its functions stipulated National Environment Act Cap 181, the Authority ultimately is going to decide whether to approve the proposed project based on the assessment of project's potential environmental and social impacts.
Relevance to the project: It is also responsible for issuing of the following permits:

- EIA Certificate
- Approval of the Terms of Reference
- License for onsite waste storage
- License to transport waste

3.4.2 Ministry of Trade, Industry and Cooperatives

The ministry through the department of Industry and Technology is responsible for developing and promoting standardization, quality assurance, laboratory testing, metrology (the scientific study of measurement) and accreditation to enhance competitiveness of local industries, ensure consumer protection, and enforce compliance with technical regulations.

Relevance to the project*: It formulates Laws, Policies, Strategies and Plans that foster accelerated Industrial and Technological growth in the Country for economic growth and development.*
It also inspects, monitors and evaluates the progress, standards, state and efficiency of various sectors, under the trade, industry and cooperatives.

3.4.3 Uganda Coffee Development Authority

Uganda Coffee Development has a mandate to regulate, promote and oversee the coffee subsector; to regulate all on farm and off farm activities in the coffee value chain; to provide foe a coffee auction system; and for other related matters.

Relevance to the project: *it is responsible for regulating coffee processing facilities and plantations in the country.*

3.4.4 Ministry of Gender Labour and Social Development

The Ministry through its Directorate of Labour (which is responsible for administering the Occupational Safety and Health Act, 2006) carries out regular statutory inspections to ensure health and safety at the workplace including health institutions.

Its functions include ensuring that employment policies are in line with the country's labour policies and guidelines; monitoring compensation for occupational injuries and diseases; monitoring compliance with labour standards; and ensuring that equipment and technologies brought into the country comply with the desired safety and health standards.

***Relevance to the project**: it is responsible for the wellbeing of the employees and issues the workplace registration permit*.

3.4.5 Mukono District Local Government

The thrust of the Local Governments Act is that District Local Governments and lower governments (divisional councils (in towns) and Sub County Councils (in districts) are expected to be the main providers of government services. District Local Government is defined as one of the lead agencies under the National Environment Act and is mandated to establish a District Environment Committee that coordinates with NEMA on all issues relating to environment management. The District Environment Officer (DEO) plays an active role in monitoring of environmental aspects and liaises with the NEMA on all matters relating to the environment.

The district local government is also responsible for planning the development of functional rural and urban design, infrastructure and administration of land management within its jurisdictions. It enforces planning regulations (e.g., approval of build and structural plans) and it is also the lead agency for the initiation and implementation of the project ESMP. The district is responsible for the following functions: medical and health facilities, water, roads and the following services: environmental sanitation, water supply, storm water runoff, district and physical planning and land administration.

On the other hand, sub-counties offer environmental protection, road drains & water courses, houses and latrines and water resources functions inter alia. It is also their responsibility to offer services including environmental degradation prevention, construction and maintenance, enforcement of standards and protection of local water sources among others.

3.4.6 The Uganda National Bureau of Standards (UNBS)

The Uganda National Bureau of Standards (UNBS) is the institution that is responsible for ensuring that all consumer products on the Ugandan market meet a minimum standard. The bureau therefore promotes standardization in commerce, industry, safety, health and social welfare. It is a requirement for certain products to meet certain standards in their manufacture, or production, composition treatment or performance and to prohibit substandard goods where necessary. UNBS enforces standards in protection of the public against harmful ingredients, dangerous components, poor quality materials and poor performance. It is also the mandate of the UNBS to endorse or adopt any international or other countries' specification with or without any modification as suitable and desirable for Uganda.

3.4.7 Ministry of Water and Environment (MWE)

MWE is mandated to management and sustainable utilization of water and environment resources for the betterment improve the quality of Water resources for population, ensure better access of water and environment resources in all parts of the country.

3.4.8 Directorate of Water Resources Management (DWRM)

MWE is mandated to management and sustainable utilization of water and environment resources for the betterment improve the quality of Water resources for population, ensure better access of water and environment resources in all parts of the country.

3.4.9 Ministry of Agriculture, Animal industry and Fisheries (MAAIF)

The mandate of the ministry is to "formulate, review and implement national policies, plans, strategies, regulations and standards and enforce laws, regulations and standards along the value chain of crops, livestock and fisheries".

3.4.10 Uganda Investment Authority

Uganda Investment Authority (UIA), is a semi-autonomous government agency which drives national economic growth and development in partnership with the private sector. It is a statutory agency established under the Investment Code 1991 (revised in 2019), mandated to initiate and support measures that enhance investment in Uganda and advise Government on appropriate policies conducive for investment promotion and growth. In light of Uganda's Vision 2040 and building on goals and aspirations in NDP III, the Vision of UIA is "A globally competitive Uganda, profitable for business and investment". The overall Goal is to promote and facilitate "accelerated industrialization and employment creation through investment by 2025. Whereas the Mission is "to promote, attract and retain value-adding domestic and foreign investments through robust marketing and investor-centric policies and services"

Relevance to the project: *it is responsible for regulating investments in the country.*

3.5 International Best Practice

This ESIA benchmarks against both standards and regulations set by the government of Uganda, International Industrial Best Practices set by European Union and International Finance Corporation (IFC) guidelines of World Bank Group. Best Management Practices (BMPs) are generally accepted industry practices or standards for environmental management and occupational health and safety. In the absence of Ugandan legislation, BMPs provide quantitative or qualitative standards against which to compare current performance. The international best practices that were assessed during this ESIA include:

3.5.1 IFC Guidelines

These guidelines help to improve the operators' environmental and social performance. They are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP) and are referred to in the World Bank's Environmental and Social Framework. These guidelines act as minimum requirements and standards for projects to improve performance on sustainability through private certification and enable them access international markets and keep up a good reputation in the public domain. IFC guidelines relevant to the project are discussed below.

3.5.1.1 IFC guidelines: Water Quality and Availability

According to these guidelines, project activities involving wastewater extraction, diversion or impoundment should prevent adverse impacts to the quality and availability of water resources. Both ground water and surface water are essential sources of water for drinking and irrigation purposes in developing countries.

Therefore, conforming to these guidelines is imperative especially in rural areas of developing countries were piped water is limited and unavailable.

3.5.1.2 IFC guidelines: Construction and Decommissioning

These provide specific guidance on prevention and control of community health and safety impacts that may occur during new project development, at the end of the project life cycle, or due to expansion or modification of existing project facilities.

3.5.1.3 IFC guidelines: Waste management

These guidelines apply to projects that generate, store, or handle any quantity of waste across a range of sectors. Facilities that generate and store wastes should practice the following:

- Establishing waste management priorities at the outset of activities based on an understanding of potential Environmental, Health, and Safety (EHS) risks and impacts and considering waste generation and its consequences.
- Establishing a waste management hierarchy that considers prevention, reduction, reuse, recovery, recycling, removal and finally disposal of wastes.
- Avoiding or minimizing the generation waste materials, as far as practicable.
- Where waste generation cannot be avoided but has been minimized, then it should be recovered and reused.
- Where waste cannot be recovered or reused, treating, destroying, and disposing of it in an environmentally sound manner is a resort.

3.5.1.4 IFC guidelines: Occupational Health and Safety

Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. Although the focus is placed on the operational phase of projects, much of the guidance is also applied for construction and decommissioning activities. Companies should hire contractors that have the technical capability to manage the occupational health and safety issues of their employees, extending the application of the hazard management activities through formal procurement agreements. Preventive and protective measures should also be introduced on the onsite to be used by the workers.

3.5.1.5 IFC Guidelines: Community Health and Safety

This section complements the guidance provided in the preceding environmental and occupational health and safety sections, specifically addressing some aspects of project activities taking place outside the traditional project boundaries, but nonetheless related to the project operations, as may be applicable on a project basis. These issues may arise at any stage of a project life cycle and can have an impact to the community even beyond the life of the project.

3.5.1.6 IFC Guidelines: Environmental Air Emissions and Ambient Air Quality

This guideline applies to facilities or projects that generate emissions to air at any stage of the project life cycle. It complements the industry-specific emissions guidance presented in the Industry Sector Environmental, Health, and Safety (EHS) Guidelines by providing information about common techniques for emissions management that may be applied to a range of industry sectors. This guideline provides an

approach to the management of significant sources of emissions, including specific guidance for assessment and monitoring of impacts. It is also intended to provide additional information on approaches to emissions management in projects located in areas of poor air quality, where it may be necessary to establish project-specific emissions standards.

3.6 International standards, best practices and national standards

Environmental standards are a set of quality conditions that are adhered or maintained for a particular environmental component and function. The different environmental activities have different concerns and therefore different standards. The international standards relevant to this project are; Table 3.4 presents review of international standards and best practices.

Table 3.4: Review of International Standards and Best Practices

Principle	Summary of requirement	Relevance to the project
ISO/TC 207 Environmental management	Standardization in the field of environmental management to address environmental and climate impacts, including related social and economic aspects, in support of sustainable development.	The proponent will ensure that sustainable environmental resources extraction practices are adopted.
ISO 14001:2015 Environmental management systems — Requirements with guidance for use	The standard is applicable for companies with a high environmental risks and impacts, but is in principle also suitable for organizations of all sizes across all sectors. The standard provides guidance on how to consider multiple aspects of the organizations activities in order to reduce environmental risks and impact and continuously improve the environmental performance beyond national legal requirements. To be certified the Organization must develop an environmental policy; identify the significant issues; develop targets and action plans; define responsibilities and implement procedures; monitor performance and initiate corrective actions; and conduct management reviews	The proponent will in line with this standard implement suitable environmental management systems at the plant. The proposed project management will develop and implement an appropriate environmental policy.
ISO 45001:2018: Occupational health and safety management systems — Requirements with guidance for use	The standard enables organizations to provide safe and healthy workplaces by preventing work-related injury and ill health, as well as by proactively improving its OH&S performance. It also pertinent to organization in implementation and maintaining an OH&S management system to improve occupational health and safety, eliminate hazards and minimize OH&S risks (including system	In consideration of this standard, the proponent will develop and implement an appropriate occupational health and safety management system to eliminate work hazards, minimize OH&S risks, create a suitable and safe work

	deficiencies), take advantage of OH&S opportunities, and address OH&S management system nonconformities associated with its activities.	environment at the proposed facility.
OHSAS 18001: Occupational Health and Safety	The standard is especially applicable for projects with health and safety risks in the production phase. The certification shows that the company is committed to ensuring a healthy and safe workplace. Furthermore, the management system can increase employee satisfaction and save costs associated with accidents at the workplace.	The proponent will in consideration of this standard develop and implement an appropriate occupational health and safety management system to eliminate work hazards, minimize OH&S risks, create a suitable and safe work environment during the operational phase of the proposed facility.
ISO 31000:2018 Risk management — Guidelines	These guidelines specify the risk management process, these include the systematic application of policies, procedures and practices to the activities of communicating and consulting, establishing the context and assessing, treating, monitoring, reviewing, recording and reporting risks.	The OH&S team will formulate appropriate risk management guidelines to encompass all risks anticipated in the proposed plant compartment with reference to these guidelines.
COVID-19 RESPONSE: ISO STANDARDS		
ISO/PAS 45005:2020 Occupational health and safety management — General guidelines for safe working during the COVID-19 pandemic	This standard specifies guidelines for organizations on how to manage the risks arising from COVID-19 to protect work-related health, safety and well-being. It also provides guidance relating to the protection of workers of all types (e.g., workers employed by the organization, workers of external providers, contractors, self-employed individuals, agency workers, older workers, workers with a disability and first responders), and other relevant interested parties (e.g., visitors to a workplace, including members of the public).	The plant OH&S committee with respect to these guidelines will ensure that COVID-19 SOPs are observed by the all workers and visitors at the plant, to ensure workplace safety during all project phases. These will include; social distancing, hand washing and sanitizing, temperature measurements and putting on face masks.

4.0 PROJECT DESCRIPTION

4.1 Introduction

This section details the proposed site location, access to the site, site amenities, project components, processes involved in the respective units. i.e. in the grain processing unit, coffee processing unit and in the warehouse.

4.2 Project location

The proposed Export trading company facility is located within in Kolo village, Nantabulirwa Ward, Goma Division, Mukono Municipality, Mukono District and can be geographically referenced at (WGS 84 UTM Zone 36N) coordinate 465678.40mE 38610.94mN within 465578.88mE 38735.94mN, 465809.11mE 38643.39mN, 465792.28mE 38503.85mN, 465545.12mE 38577.89mN.

The proposed facility neighborhoods contain Liberty ICD to the West, Warehouses to the North, Kansai Plascon Uganda Limited to the East, and other warehouses to the South. The area is built with industries, factories, warehouses, and offices. This is purely an industrial zone.

The key benchmarks in the proposed project area among others include Liberty ICD, Plascon Uganda Limited, Steel and Tube Industries, Uganda Investment Authority, Roofings road, Kyagalanyi Coffee Factory, Kama Oil Fuel Station, and Livercott Co. Uganda Limited.

4.3 Access to the site

The proposed Export trading company facility site can be best accessed from Namanve industrial Area and from Kampala-Jinja Road by branching off on your right along roofing's road past Uganda Investment Authority to join Bweyogerere Industrial Area Road, then move upwards till Liberty ICD. The proposed facility is located opposite liberty ICD.

Figure 4.1: Google map showing the close view of the proposed site with its neighborhoods

Figure 4.2: Google map showing the proposed site in Namanve Industrial Area, Mukono District.

4.4 Project components

The proposed Export trading facility will contain an administration block, grain processing unit (for processing maize, sim sim, beans, peas, sorghum, and green gram), a coffee processing unit (specifically for processing coffee to coffee beans) and warehouses (for storage of imported agricultural inputs) as detailed below;

Table 4.1: Components of the proposed project

Project unit	Components	Quantity
Administration unit	Administration block	1
	Sanitary facilities	2
	Drainage system	1
	Waiting zone for the visitors	1
	Onsite water storage	1
Grain processing unit	Grain Pre-storage zone	1
	Hopper (feeding point)	1
	Pre-cleaner	1
	Driers	3
	Silos	3
	Final cleaner	1
	Di-stoner	1
	Packaging	1
	Process grain Storage	1
Coffee processing unit	Coffee pre-storage zone	1
Pre-processing	Hopper (feeding point)	2
	Pre-cleaner	2
	Driers	6
	Dry silos	6
Final processing	Dry coffee pre-storage	1
	Main hopper	1
	Pre-cleaner	1
	Drier	3
	Dry silos	6
	Di-stoner	2
	Grinder/separator	1
	Gravity tables	5
	Colour sorter	1
	Packing	5
	Storage	3
	Bulking loading	1
	Weigh bridge	1
Warehouses	Warehouses	2

4.5. Process flows

4.5.1 Grain processing unit

The proposed ETCUL facility will be expected to generally operate for most of the year based on grains supply with allowance for the machinery servicing. Raw grain supply will depend on available stock within the country and at times imported stock from the East African Countries. The key grains delivery will be undertaken along the existing road network with the Kampala-Jinja Highway as the main artery. There is also a very good road network within the business park that connects all the way to the facility gate. The grain intake for the plant is up to approximately 300,000 tonnes per year of grain.

a) Receiving and testing raw grain

On arrival at the facility, grain trucks will enter the premises through the gate and then proceed to the weighbridge where the grain stock will be recorded by weighbridge clerks using a modern and well calibrated weighbridge. The trucks will then be offloaded and raw grains taken for pre-storage, where these grains are then discharge into a pit (hopper) then into receiving silos. This process takes place in the open air. As a result, uncontrolled emissions of particulates and dust are raised into the atmosphere. Grain is tested for quality by the facility laboratory, which measures the following parameters: humidity, purity (cleanliness) and percent of foreign materials. The price of received grain is determined according to these parameters.

b) Conveying, screening and storage of raw grain

Before being stored in the receiving silos, grain passes through driers if the grains are wet. If not, then the grains are conveyed to the dry silos, then to a separator, which is basically a sieve, to separate impurities having a size larger than the grain seeds. Dust and particulate matters are emitted during this process. A cyclone is used to collect these particles and discharge clean air to the atmosphere. Most of these cyclones are equipped with induced draft fans. The accepted grain is then fed to the top of the receiving silos by means of enclosed bucket elevators. An air stream is passed through the conveyor in order for any loose dust to be removed. The dusty air is then vented to the atmosphere through a cyclone.

c) Pre- cleaning phase

The first cleaning phase starts with a scouring machine that removes adherent dirt. This process is also important in decreasing bacteria and epidermis. Grain then goes to an air separator, which removes admixtures, bigger or smaller than the seeds. Large admixtures include sticks, large stones, seeds other than the raw material, peas, etc while smaller admixtures include sand, broken kernels and small stones. Air carrying particulate matters resulting from this process, is discharged to the atmosphere through the cyclones. The grains are then passed through the “destoner”, which is responsible for separating small stones and other solid impurities with diameters up to 2 mm. The separation techniques relays on fluidizing the seeds using air.

The air stream carrying the dust and other fine particles resulting from this process, is discharged to the atmosphere through a dedicated cyclone and not through the first cleaning cyclone. The grain is then passed through a machine, called “Trieur (cockle)”. It removes broken kernels, round seeds and long grains. The air stream from this process is passed through the cyclone of the first cleaning section. Grain passes through a magnetic separator, which is basically a sieve equipped with a magnet to separate any metallic impurities, as well as impurities having a size larger than the grain seeds.

d) Final cleaning

After pre-cleaning, the pre-cleaned seeds are transported by the inbuilt conveyor to the final cleaner then to the storing silos by bucket conveyors equipped with ventilation systems.

e) Products storing and packaging

The different products are then passed through the *entoleter* that gets rid of the insects, tested and stored in their respective silos until packaged in bags of predetermined weight that are then taken for pre-storage and its where the processed grains are collected, and transported to the sales centers using trucks. The grains are also export.

The process majorly adds values to grains. No milling or grinding will be done at the facility.

4.5.1.1 Site Photos

Plate 4.1: Main hopper for the grains processing unit

Plate 4.2: Processing unit for the grains

Plate 4.3: Grains packaging point

Plate 4.4: Weighing units for the packaged grains

Plate 4.5: Some of the packaged grains

Plate 4.6: Site weighing bridge

4.5.1.2 Process flow of grain processing

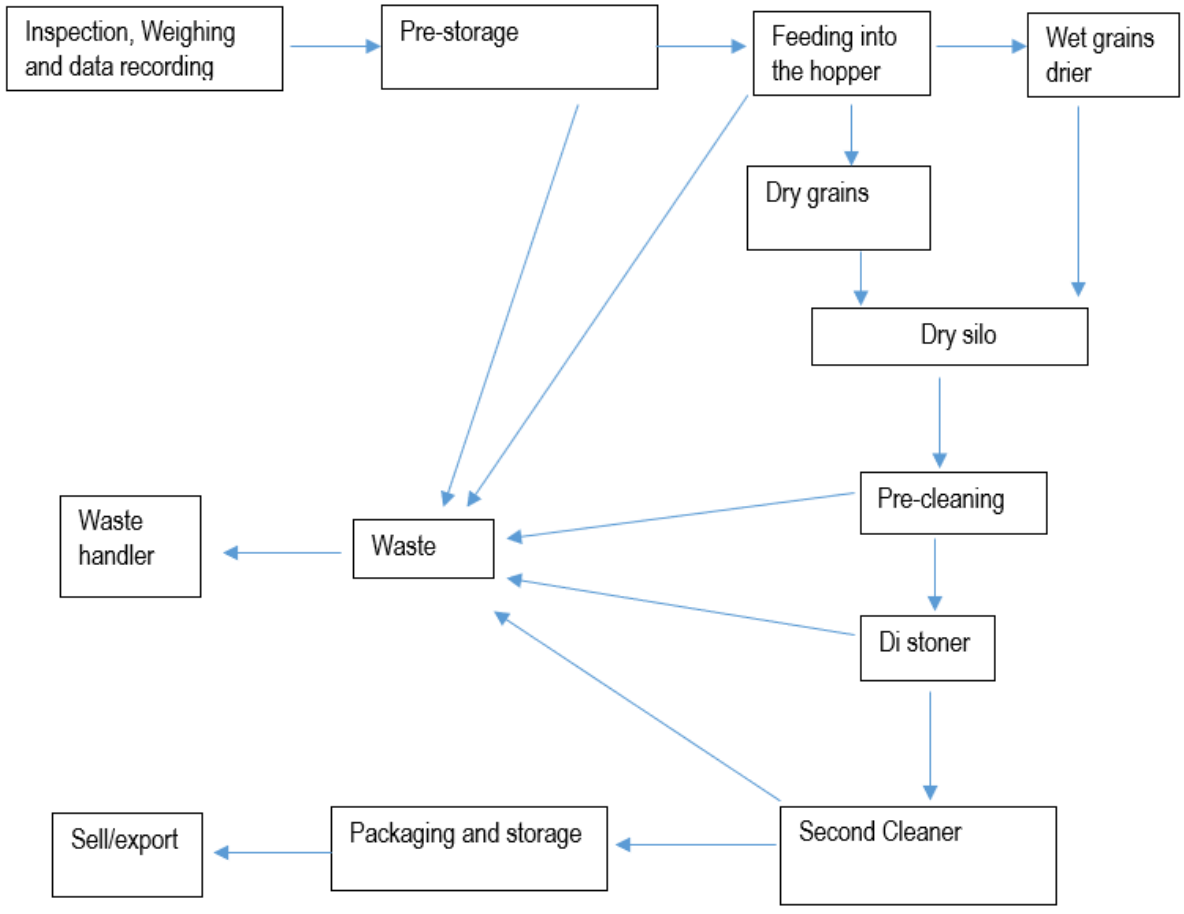

Figure 4.3: Schematic diagram indicating Process flow for grains processing

4.5.2 Coffee Processing Unit

Un processed coffee into the facility are weighed on the delivery tracks at the weighing bridge (full weigh = Weight of the track plus weight of coffee) then after offloading the un processed coffee, the tracks are re-weighed to obtain the actual weight of the delivered un processed coffee. The delivered un processed coffee are temporarily stored in the pre-storage warehouse. ETCUL facility receives approximately 40tons of raw coffee beans per month to be processed.

From the pre-storage, raw coffee is taken to the processing plant where the un processed coffee is fed into the hoppers, coffee beans run though the pre-cleaner to the driers then to the dry silos, at this point, pre-cleaning is done and the pre-processed coffee is then taken for the second pre-storage but in a different location from the latter. The plant has two pre-cleaning sections.

From the second pre-storage area, this coffee is then collected and fed into the main hopper, second pre-cleaning is done through the pre-cleaning chamber, then to the drier to the di-stoner later on propelled to the separator, then channeled to run through the gravity tables, and finally pushed to run through the color sorter then grading which is embedded with screens of 12, 15 and 18. These grades are then stored in the respective silos and released for packaging respectively upon specific given order for export. At this point, the coffee has been processed to coffee beans. The coffee beans are then packaged, stored and sent for export upon orders. The facility also has a bulk loading chamber which loads the coffee beans direct into the transportation tracks containers.

All the waste generated in the coffee processing unit is collected in the waste collection chamber. The waste generated (coffee husks) is re-used in the boilers as a source of energy.
No grinding of coffee is done at the facility. The coffee is processed to coffee beans and then exported.

Plate 4.7: One of the coffee hoppers to pre-processing unit

Plate 4.8: One of the coffee pre-processing unit

Plate 4.9: Coffee driers and dry coffee silos

Plate 4.10: Coffee final processing unit

Plate 4.11: Close view of the packaged coffee

Plate 4.12: Manual packaging of processed coffee

Plate 4.13: Pre-storage point for processed coffee

Plate 4.14: Coffee heating source

Plate 4.15: Bulk coffee loading area

Plate 4.16: Coffee husks (wastes) storage silos

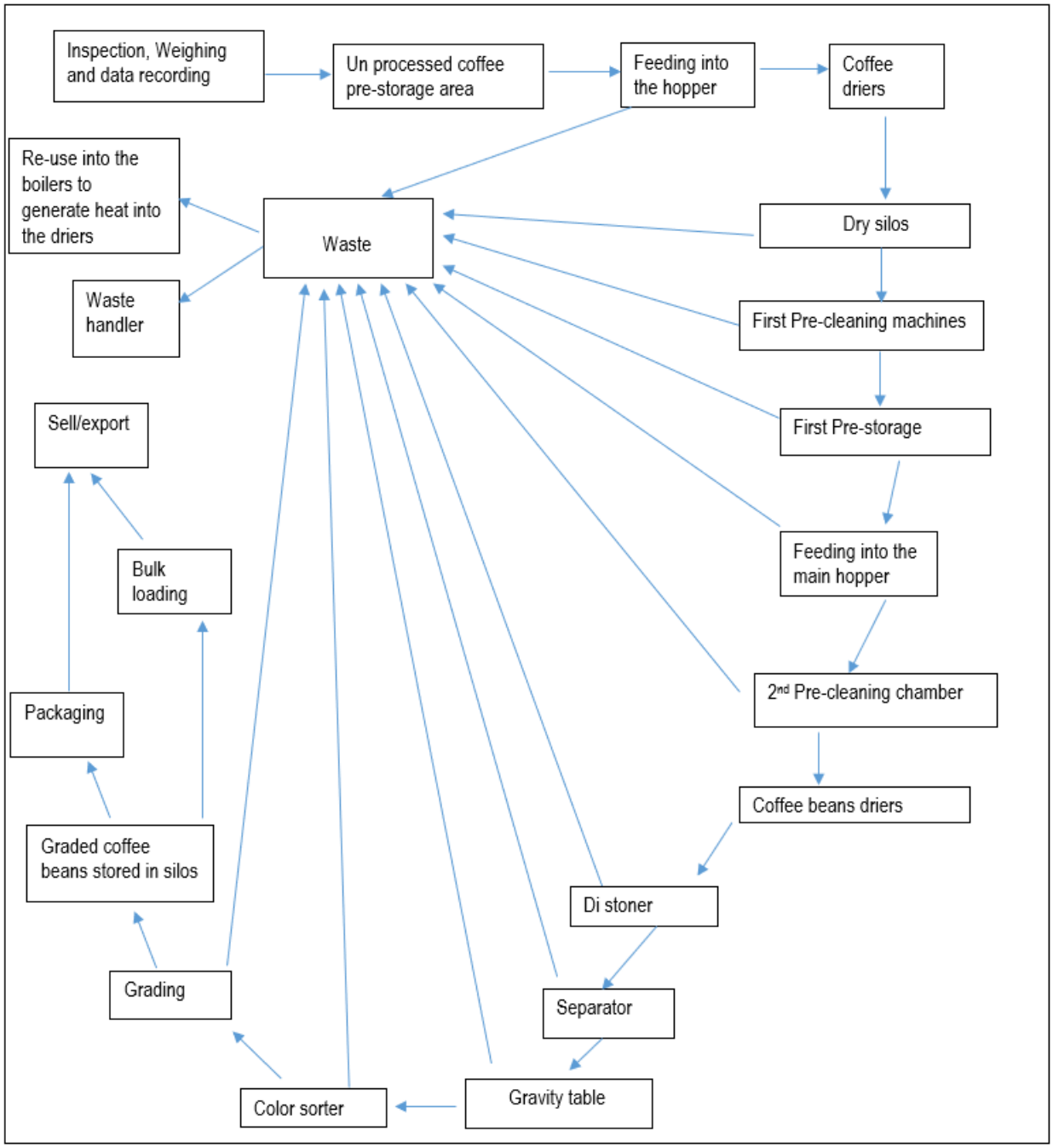

Figure 4.4: Schematic diagram indicating Process flow for coffee processing

4.5.3 Warehouse

The warehouses will be used to store processed grains, processed coffee, with a separate section to store imported agricultural inputs (fertilizers, pesticides, and hand pumps), polymers (pet resins), and industrial chemicals (already package Nitric acid, Hydrochloric acid, sulphuric acid, white lime, titanium dioxide, sodium tri-phosphate, Styrene, aluminum sulphate) which are sold locally to the farmers, industries, and other factories that use these products as input or raw material, here in Uganda.

All what is stored in the warehouses is imported and follows this chronological order: receiving and verifying of imports, recording of data, storing of imports, selling of imports to users or consumers within the Uganda. ETCUL also takes an effort to deliver after sales services to their clients.

In the process, there are anticipated traces of wastes at storage phase and during loading of goods to the trucks after sell. This could be in form of chemicals spills, and solid wastes.

Plate 4.17: Hydrochloric acid containers in the warehouse

Plate 4.18: Sulphuric acid containers in the warehouse

Plate 4.19: Pet resins in the warehouse

Plate 4.20: Agricultural inputs in the warehouse

Plate 4.21: More agricultural inputs in the warehouse

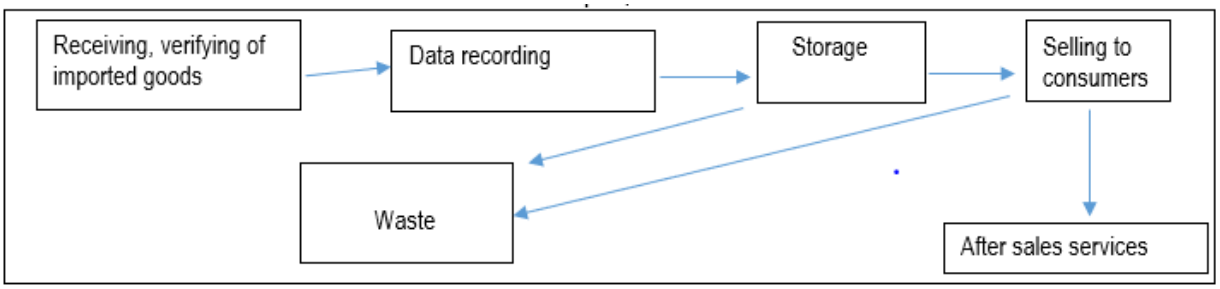

Figure 4.5: Schematic diagram indicating Process flow in the warehouses

4.6 Laboratory

The plant laboratory at the facility is responsible for among others:

a) Testing raw materials, water, wastewater, air etc.
b) Quality control of the different products and comparing the findings with the standard specifications for raw materials and final products.

The measured parameters for quality control are physical properties such as humidity and cleaning grade, chemical composition such as ash content, protein content, and bacteriological counts. The main chemical used for testing quality is alcohol and it is used in small quantities.

4.7 Washrooms and Administration Complex

The facility has washrooms and ablution units for the workers. The administration block for the facility has been constructed and is already existing at the site.

4.8 Water Supply

There is piped water supply from the National Water and Sewerage Network onsite. Rain water harvesting is also implemented. This water is used for cleaning, in washrooms and other services.

4.9 Construction phase

All construction work is to comply with latest BS.Standard Code of Practice, Local Authority by-laws and Fire regulations. Based on similar projects in other parts of Africa, the design team expects the shell and core works to last for a period of nine to twelve months. The use of several prefabricated items will be a key element to guarantee the respect of their programme and to minimize the disturbance usually caused by a construction site. A third-parties communication protocol will be implemented with the main neighbors to the project.

In order to ensure that the neighbors get accurate information concerning the ongoing works and schedule, a pre-demolition / construction meeting shall be set up once the contractors are appointed. On that occasion, the neighbors will be provided with:
- The contact details of the Environment Monitoring personnel on site; and
- The proposed programme of the works.

On a quarterly basis, a site visit shall be proposed to the neighbors for them to observe the progress of the works and to be provided with some information about the next steps of the construction.

4.9.1 Construction Materials

Resources to be used for construction of the commercial building include locally sourced and imported

materials such as cement, reinforcement steel bars, water, electricity, paint, lumber, wood partitions, glass, wood glue, wood vanish, iron, prefabricated bathrooms, steel and aluminium among others.

4.9.2 Construction Equipment to be used

Construction would utilise conventional equipment such as bulldozers, excavators, concrete mixers, vibrators and power drills among others.

4.9.3 Excavation

Minimal excavation will be undertaken to obtain the desired foundation levels for construction of the building. The developer's aim is to avoid excavating below water level. During excavation top soil will be scrapped off and stored onsite which will be later used to back fill the bole pits that would have been created during excavation.

4.9.4 Workforce and Required materials

The workforce will comprise of skilled labor for construction and installation of complex plant sections, casual labor and contractors. The raw materials required during the construction phase include water, ordinary sand, bitumen, hard core, stone aggregates, gravel, cement, earth bricks/cement and sand blocks, various sizes and types of iron bars, timber, clay tiles and iron sheet for roofing, steel materials for plant erection and other auxiliaries among others. These will be accessed from private dealers/suppliers within and around Mukono municipal Council and Kampala while others will be imported. The construction process will approximately utilize 70 workers.

4.9.5 Anticipated waste streams and upset conditions

The project construction phase will generate emissions, effluent and solid waste including;

Emissions:

- Combustion emissions from diesel engines;
- Construction noise (excavation, removal) and heavy vehicular noise;
- Fugitive dust from haulage vehicles, stockpiles, land clearance and earthwork activities.
- Light: during construction night time lighting, will be limited to security purposes only.
- No construction works will be undertaken at night.

Effluents:

- Oil and grease from vehicle and equipment servicing during the construction period;
- Site run off (storm water that may contain mobilized material such as cement or fine sediment;
- Suspended sediment plumes associated with the bare soils and material stockpiles;
- Sewage from any portable lavatories.

Solid waste:

- Vegetation waste (from cleared plants).
- Excavated material and overburden.
- Construction waste

It is recommended that construction materials should be sorted on-site and the inert material should be used, as far as practicable, as filling material. If on-site use is not practicable, the inert construction material should be delivered to public filling areas.

4.9.6 Occupational Safety and Disposal of Overburden

Site preparation will be done to aid the construction process.
All the necessary measures will be undertaken to ensure the safety of the construction workers which include:
Hoarding: Hoarding of the facility; the hoarding should be painted and is aimed at protecting passing pedestrians from falling debris and minimizing intervention between workers and outsiders.

Screen net: Screen nets will be erected around the building and above the hoarding, to control failing debris from spreading to the surrounding areas. The same net will be used to minimize dust emission to surrounding areas.

Protection of workers: Every worker will be dressed in attire suitable for work i.e. overall, leather hard gloves, helmet, nose masks and gumboots. First aid box will be provided at the site in case of any emergency and there will be quick means of moving accident victims to the adjacent hospital.
Sanitary Facilities: There will be provisional sanitary facilities for the workers on site.

4.9.7 Traffic management

Construction will be done in phases; it will limit the load of material onsite and delivery of some materials will be done during off-peak traffic hours to limit traffic congestion especially along the access roads. Other proposed traffic management measures include:

- Delivery of materials needed for immediate use, already mixed concrete and already prepared steel bars.
- Appropriate traffic warning signs will be placed near the turn off to the site informing road users of construction trucks turning ahead and instructing them to reduce speed.

4.9.8 Noise management

Project construction activities can cause elevated noise levels. The three main methods suggested to control noise levels generated from construction of the proposed development are:

- Restricting the hours of working;
- Setting maximum noise levels; and
- Ensuring the use of 'best practicable means' (e.g. sound proofing noise generating equipment).

The sound levels will be regularly monitored from the facility and ensure that they are within the permissible range for building construction and not a nuisance to the surrounding communities.

4.10 Operation phase

This phase will focus on the grain processing, and coffee processing for export, and storage of goods in the warehouses for resale in the Ugandan market. Trucks and trailers will be utilized to transport both raw materials and finished products to and from the facility, ensuring efficient logistics and supply chain management. The project will aim to enhance addition of value to coffee beans and grains, with provision of quality storage space for goods, reduce environmental impact, and support sustainable economic growth.

4.10.1 Environmental and Safety management Strategies

4.10.1.1 Storm water management

Large water flow from the facility environment will be collected and diverted from the area using cut off and storm water drains. Some of the locations for this will include the collection of water from a higher area and the prevention of such runoff flowing down the slope, or the taking care of runoff water from factory roadside drainage. The water from these drains shall then be discharged into the main drainage channels through the excavated area at the lower edge of the facility site where all the natural flow is directed to. Continuous monitoring of the water quality in the neighboring surface water source will be undertaken to ensure that water pollution does not occur as a result of factory operations.

4.10.1.2 Solid Waste Generation and Management

The main sources of solid wastes are grain processing unit and coffee processing unit, these are from the different cleaning processes (broken grains, impurities, foreign materials, husks, grain cots). The facility will have a pneumatic collection system that collects solid wastes from the different cyclones and feeds it to a crusher then to crushed waste silos or storage area. This production process wastes are re-used as fuel (biomass) into the boilers to generate heat to dry the grains and coffee beans. The disposal of non-biodegradable matter, such as waste chemical containers, waste papers, used materials, waste packaging materials, kitchen and domestic wastes, metallic scrap and oily waste from maintenance activities will be undertaken by a NEMA licensed waste handler. Others include office paper, kitchen garbage, and domestic trash from the administrative components of the project. Hazardous wastes include spilt chemicals, small amounts of machinery maintenance materials, such as oily rags, used oil containers and spill cleanup materials.

A diesel generator will be used only during power failure to meet the supply of power to essential services. Spent oil, waste lubricating oil and grease are produced from the generator diesel engine and other plant machinery routine maintenance activities.

All generated wastes will be safely contained pending disposal. Measures will be put in place to avoid spillage of chemicals. Waste with no use value will be transported to designated disposal sites, following the applicable pollution control guidelines and regulations.

All oily waste and other hazardous waste to be generated at the factory will be collected and stored onsite and later transported offsite for effective disposal by a contracted licensed handler as per the national Waste Management Regulations.

Effective collection, storage, and disposal of all wastes and housekeeping will be given priority and periodically undertaken. Several coded waste bins will be acquired for storage of the different types of wastes to be generated and placed at different locations at the plant. These will be regularly emptied to a central collection point where a registered collection firm will remove it to respective disposal locations. Management will ensure that the bins are covered to prevent primates or any animals from infesting on them. Proper maintenance of canteen, kitchen, store, gazetted areas, etc. will be among the regular activities that will be carried out during the operation phase.

4.10.1.3 General plant maintenance

To maintain an appealing environment, plant management will ensure good housekeeping and sanitation around the plant. Proper maintenance and servicing of all plant auxiliaries at all times supported with proper process documentation and data analysis on plant performance.

4.10.1.4 Emergency/safety support systems

Management of the proposed facility will ensure periodic monitoring and upgrading of the safety support systems. These include; the firefighting equipment and well-marked emergency exit routes and assembling points, the necessary signage erected in all areas susceptible to dangers, general information and prohibitions. Portable fire extinguishers consisting of dry chemical carbon dioxide and foam type are to be provided at strategic locations in the plant.

First Aid units fully equipped with the necessary materials shall be provided and proper protection gear shall be availed to employees and visitors at the plant. All the above will be supported with comprehensive continuous employee training and awareness on OHS, EMS and QMS matters. An emergency action plan that includes the procedures for handling leaks and spillage will be developed.

Employees will be intimately involved with the development of the process hazard analysis and on the development of other elements of process safety management required. Access to this data and all other pertinent information will be made readily available to all employees and onsite contractors.

Clear written operating procedures for safely conducting activities within the plant will be developed. This includes steps for each operating phase, operating limits, safety and health considerations and safety systems and their functions. This document will be readily accessible to employees who work on or maintain a covered process, and will be reviewed as often as necessary to assure they reflect current operating practice. Safe work practice will be implemented and will provide for special circumstances such as lockout/ tag out and confined space entry and training limits.

4.10.1.5 Sewerage plan

Based on the conducted site assessment, the sewage treatment system being proposed for this development is on-site storage (septic tanks) and pre-treatment. The facility will accommodate a great number of employees; therefore, a significant amount of waste water will be generated due to human occupancy. The proposed project shall constitute water borne toilets that will be built to the required standards with a high level of gender sensitivity. The toilets will drain into an onsite septic tank constructed with suitable material that conforms to the National Waste Regulations and standards of Uganda. When at full capacity the septic tank will be emptied by a licensed service provider (liquid waste handler) for proper emptying, transportation and safe disposal.

4.10.1.6 Energy supply

The proposed project area is supplied with electricity from the national grid. The design of the facility will incorporate large windows and clear roof designs to utilize sunlight for daytime lighting to reduce electricity usage. The use of energy conserving appliances (i.e. LED bulbs) and renewable energy sources such as solar energy will be encouraged. The design for the facility also provides for maximum natural air circulation and measures will be taken (e.g. planting shade trees) to reduce on internal heat gain during the day. This will eliminate the need for air conditioning.

The coffee processing and grain processing units are installed with boilers fed by biomass to generate heat to the silos. There will also be a power backup at the factory provided using a petroleum-driven generator to ensure sufficient uninterrupted power supply for all its needs.

4.10.1.8 Security onsite

The entire site will also be banded with a concrete perimeter fence. There will be the main entrance for easy security operations around the compound a boundary wall connected with security alarms, entry control, and quick response systems will be used within the project area. Security lights will as well be installed sufficiently within the project area. The proponent is anticipated to engage security firms to beef-up security in order to ensure 24-hour security.

4.10.1.9 Parking area

There will be ample provision for parking at the facility. The drive way and parking area which will be paved, will be spacious, ample and will accommodate enough vehicles. Planned for parking capacity is approximately Fifteen (15) parking slots.

4.11 Decommissioning Plan

The decommissioning plan provides actions to be undertaken to ensure the protection of the environment and human health in the event that the proposed development at a later date is abandoned or ceases to operate. This would entail demolishing the facility, all its associated component structures and all the by-products managed as detailed in the decommissioning plan. The proposed plan also provides for the restoration of the project site. Table 4.2 below presents the proposed plan.

Table 4.2: Decommissioning plan

PARAMETERS TO BE CONSIDERED	PLAN/ ACTIVITIES TO BE UNDER TAKEN DURING ABANDONMENT
Listing of the facilities to be abandoned	These shall include: • The site buildings, • The paved parking surfaces, • The drainage works, • Electric/ power/ water supply lines (if any), • Firefighting facilities, and • Other peripheral shelters and facilities (for example ablution rooms)
Description of waste produced from abandoned activities	The expected wastes that could be produced during the demolition and abandonment phase are: • Debris; Concrete blocks/ slabs/ clay bricks • Wood materials, • Metals and other steel materials, • Plastic and metal pipes used in water supply, • Electrical conduit and, • Used vehicular spare parts.

Description and discussion of waste management	Demolished concrete blocks/ slabs shall be hauled out from the site to be reused or used as backfill materials in other construction projects Metal and steel materials shall be covered and sold to those dealing in metal scrap for reuse and recycling Plastic materials shall likewise be recovered and sold to those dealing in plastic scraps for reuse and recycling Wastes that are not reusable and recyclable shall be properly disposed to the designated dumping areas such as landfill sites and also a licensed waste management facility will be contracted to dispose the wastes.
Description and management of residual site	Earthwork and top soil will be required to restore the derelict site to the near pre-construction state or as for the contiguous environment.
Description of site rehabilitation/ restoration	This comprises of the entire project site that will be restored blend and function as naturally as possible with the neighboring landscape

5.0 ENVIRONMENT BASELINE CONDITIONS

5.1 Introduction

This chapter investigates the environmental and social baseline conditions within the project site/area for the parameters/receptors identified below. For each receptor, the parameter specific methodology adopted for the assessment has been identified, followed by a detailed description of the outcomes and results.

5.2 Physical Environment

Mukono District lies in the Central region of Uganda, sharing borders with the District of Buikwe in the East, Kayunga along river Sezibwa in the North, Luwero in the North West, Kampala and Wakiso in South West, Tanzania, and Lake Victoria in the South with the Islands of Buvuma District.

The District Headquarters is in Mukono municipality central Division, situated along Kampala-Jinja Road (21Kms East of Kampala City). Mukono central division serves as an Administrative and commercial center. Other urban centers include the four town boards namely Katosi, Namataba, Kasawo and Nakifuma town boards.

Mukono District has a total area of 2,986.47km², water bodies cover a total area of 1,181.73km², that is about 38.9% of the district total area and 61.1% is the district land area.

The proposed Export trading company facility will be located within in Kolo village, Nantabulirwa Ward, Goma Division, Mukono Municipality, Mukono District and can be geographically referenced at (WGS 84 UTM Zone 36N) coordinate 465678.40mE 38610.94mN.

The proposed facility neighborhoods contain Liberty ICD to the West, Warehouses to the North, Kansai Plascon Uganda Limited to the East, and other warehouses to the South. The area is built with industries, factories, warehouses, and offices. This is purely an industrial zone.

5.2.1 Topography

The northern part of the district is flat but the southern region consists of sloping land with great many undulations; 75% of the land is less than 60^{o} in slope. Buvuma Island in L. Victoria has 12% of land with 120 slopes. Most of Mukono District lies on a high plateau (1000-1300) above sea level with some areas along Sezibwa River below 760m above sea level, drained by rivers of Sezibwa and Musamya.

The proposed site lies on a dry piece of land at 1165m above sea level.

5.2.2 Soils

Soil types and distribution

There are two main categories of soils namely; Ferralitic soils and Ferrisols.
These are detailed in the table 5.1 below.

Table 5.1 Types of soils found in Mukono District.

Soil types	Location by sub-county,
Mirambi catena	Ntunda
Lwampanga series	Along Sezibwa river

Sesse series	Koome island

The predominant soil type at the project site and its neighbourhood is loam soil with simple structure.

5.2.3 Geomorphology and Geology

Mukono district geology is underlain by the Pre-Cambrian rock system - crystalline metarmorphic basement Complex and comprises of the granitoid and granitic gneisses, and later granitic intrusions and quartz veins. Tiny portions are underlain by recent deposits of alluvial and lacustrine formations in the valleys.

5.2.4 Hydrology and drainage

Water bodies cover a total area of 1,181.73km^2, out of which open water bodies cover 396.3km^2 (rivers and the lakes) and wetlands/swamps cover 151km^2. Hence, water bodies constitute 40% of the total area of the district.

The proposed site lies within Namanve industry park, on a dry piece of land with developments at either side.

5.2.5 Climate

Mukono District falls within the Lake Victoria climatic zone. The climate in this zone displays comparatively small variations in temperature, humidity and wind throughout the year. The climate is generally humid to moist sub-humid in the southern part of the district, and dry sub-humid for the rest of the district. The mean annual rainfall is 11,000mm distributed over 106 rain days, with peaks in March – May and September – November. Temperatures range between 16^{o}C and 28^{o}c throughout the year.

Both relief and the climate provide a good potential for investment in cash and food crop, horticulture and floriculture on a commercial basis. Existing commercial farms in the district also provide a good background for experience sharing for those investors who want to venture in such areas.

5.3 Biological Environment

A biodiversity assessment was conducted as part of the environmental assessment study to ascertain the impacts the project may have on the biodiversity surrounding the site and the results are detailed herein.

5.3.1 Vegetation assemblage

In Mukono district generally, the vegetation cover is of the forest/savannah mosaic characterized by patches of dense forest in the south and scattered trees in shrubs and grassland in the north. Natural forests on private land and government-controlled forests are a characteristic of this region.

The wetland vegetation comprises of typha, miscanthus, hyparrhenia species, some cyperaceous and creepers, mostly *convolvulaceae*. Swamp forest tree species such as *pseudospondias microcarpa*, *mitrogyra* species, *tarbementana, ficus spp* and *bridelia micrautha* and phoenix *reclinata* shrub vegetation include some edible plants such as psidium guava and *afromonium augustifolium*. Several species found here are utilized by the local community for food, fuel, building materials, medicines and raw materials for crafts.

The proposed site has no sensitive vegetation cover within it and its neighborhoods. The proposed facility lies within a nationally gazetted industrial park (Namanve).

5.3.2 Fauna

Most of the animals reported to be present at the site were encountered during the survey either through direct observation or signs. However, some animals are difficult to see especially during day times like snakes and other nocturnal birds. During the study, some animals were identified and they included; Cows, goats, lizards and chameleons. Through consultations, rats and squirrels are believed to be common at and around the site. There was no game park that could be affected by the project activities and operations.

5.4 Socio-economic Environment

This section describes the current socio-economic conditions for the district as a whole and within the local communities near the project area to the greatest extent possible.

5.4.1 Population

The 2014 Population Census Final Results of Mukono Population was at 599,817 and the projected population at 601,516 as Mid 2015 population [including Municipal council] while the rural sub-counties take 27% of the district population i.e. 162,409 persons.

Table 5.2 Population & other Demographic Indicators per Sub- County

Sub-county	Household size	Number of households	Female Population	Male Population	Total Population	% of total population
Goma	4.1	21,595	48,626	43,142	91,768	15
Kimenyedde	4.2	8,429	18,639	17,232	35,871	6
Koome Islands	2.7	6,939	8,683	11,125	19,808	3
Kasawo	4.2	8,544	18,545	17,522	36,067	6
Kyampisi	4.2	10,486	23,131	22,184	45,315	8
Mukono T.C.	3.9	17,338	38,156	32,072	70,228	12
Nabbale	4.3	8,486	19,314	17,924	37,238	6
Nagojje	4.0	8,468	17,365	17,241	34,606	6
Nakisunga	4.0	12,076	24,352	23,968	47,936	8
Nama	3.9	13,865	28,168	26,831	54,999	9
Ntenjeru	4.0	10,185	20,903	19,820	40,723	7
Ntunda	4.6	3,296	7,491	7,691	15,182	3
Mpatta	3.9	4,335	8,313	8,930	17,243	3

Mpunge	3.9	3,661	7,159	7,390	14,549	2
Seeta-Namuganga	4.7	7,872	19,082	18,818	37,900	6
Total		145,575	307,927	291,890	599,817	100

Source: The 2014 Uganda Population and Housing Census.

The demographic structure of the district is not different from other Districts, that is the triangular structure that depicts a big population in the 0 – 18 years of age and small population in the productive population bracket. Such a trend if not controlled contributes to poverty since household incomes are spent on consumable services for the young generation as compared to household saving on the other hand. Given their age this group contributes little if any to the national income.

5.4.2 Economy

a) Areas of economic potentials

The social economic dynamism being witnessed nationally and globally has as well affected the communities in Uganda and Mukono in particular. Locally developed/adapted policies like liberalization, privatization, structural adjustment Programme have had an effect on the employment, personal and household incomes and in general the productive sector.

b) Industrialization

The district is one of the major industrial Districts in the country base with major industries concentrated in the following areas;

Mukono Town Council: Hosts Lwanyonyi – Industrial pack, Kyetume abattoir and railway. This town council is as well blessed with the following Hotels/facilities: - Colline Hotel, Ankrah Foundation, Patron Hotel and other guest houses. The establishment of Christian University of Uganda has as well increased institutional and private sector activities in Mukono Town Council.

Seeta – Goma Sub-County: Hosts Kampala Industrial and Business Park Zone with Century Bottling plant for soft drinks, African Poly bags producing polyethylene bags, Biyinzika Poultry breeders. Rider Hotel is magnificent 3-star hotel about 300 meters from the Kampala – Jinja Highway along Namilyango road. To date Uganda Investment Authority has given way to the construction of a mineral water plant in Namanve.

All the above investments indicate that Mukono District is a suitable place for investment because;

- The expected extension of piped water system to Mukono from Gaba water plant will provide adequate water supplies or industrial, institutional and domestic purposes,
- The existing industries in those mentioned areas provides infrastructure which facilitates benefit of Economics of scale,
- The ability to access skilled labour which has historically developed from old industries,
- Cheap and easy means of transport to markets due to good roads like the Mukono-Kampala highway, Mukono – Kayunga Road and the Kalagi – Gayaza under tarmac king.
- The Industrial Park at Lwanyonyi has in place infrastructure which requires an investor little initial capital.

c) Production

Over 80% of Mukono is agriculturally based characterized as subsistence production. Partial commercial agriculture exists with farmers like SCOUL sugarcane plantations, Tea estates. Commercial farming is characterized by use of migrant labor from West Nile living in labor camps characterized by poor housing, sanitation and with little pay, and etc. to date high value crops like vanilla, flowers have boosted and replaced the declining volumes of coffee. However, more farmers who have lost coffee needs to be encouraged to take on such crops as a replacement. Subsistence agriculture is characterized by low acreage due to increasing family sizes and slicing of land, low productivity per unit acre arising from deteriorating soil fertility over cultivation and soil erosion. The females provide most labor and yet the men take most of the biggest share of farm proceeds.

d) Fishing

Fishing is the third largest economic activity in the district. Given that almost three quarters of Mukono's surface area is under water, this provides an adequate fish catchments area. To date a big number of fish processing industries in Kampala are fed by fish from Mukono. The distribution of landing and available facilities is provided in the district situation analysis.

e) Economic shocks

Economic shocks like price slump of cash crops (coffee) on world market have affected the eventual incomes of the farmer in two ways. Output per acre is low and the price is low, the eventual revenue is low. On top of this, natural shocks, like the coffee wilt, banana wilt have destroyed thousands of coffee and banana acres District wide and Ntunda sub-county respectively. This has affected yields per acre.

f) Distinguished employment

Disguised employment looms large especially among the youths whose access to paying jobs is limited by their lack of skills. This coupled with poor attitude or culture to work has led many of the youth using their productive labor and time in non-paying jobs.

g) Urbanization

Because of the Kampala urban spill and the Kampala – Jinja high way, the rate of urbanization is high. The 2014 Population Census put Mukono at an urbanization level of 26.6%. At this level, Mukono is the second in central region to Kampala and fourth after Kampala, Jinja and Arua nationally. As already mentioned, there is one Municipal Council with a high rate of growth. However surprisingly as these towns spring up, there is less effort in terms of physical planning for these towns to the extent that many of them may develop into slums. Such towns are Nakifuma-Nagalama, Kasawo, Kisoga-Ntenjeru, Katosi and Namataba Town Boards.

The proposed site lies within Namanve industrial park which is the greatest industrial sector employer of youths within Mukono. The area also has attracted urbanization, industrialization, and development to Mukono and the country at large.

5.4.3 Social Infrastructure

5.4.3.1 Energy

The major sources of energy in the Mukono district are electricity, charcoal, firewood LPG and petroleum products like kerosene, petrol and diesel. Charcoal and firewood are used in homes for cooking while electricity and kerosene are used for lighting. LPG is the least used in the project Area.

The proposed project area is supplied with electricity from the national grid. The design of the facility will incorporate large windows and clear roof designs to utilize sunlight for daytime lighting to reduce electricity usage. The use of energy conserving appliances (i.e. LED bulbs) and renewable energy sources such as solar energy will be encouraged. The design for the facility also provides for maximum natural air circulation and measures will be taken (e.g. planting shade trees) to reduce on internal heat gain during the day. This will eliminate the need for air conditioning.

The coffee processing and grain processing units are installed with boilers fed by biomass to generate heat to the silos. There will also be a power backup at the factory provided using a petroleum-driven generator to ensure sufficient uninterrupted power supply for all its needs.

5.4.3.2 Water Supply

The extension of piped water system to Mukono from Katosi water plant provides adequate water supplies for industrial, institutional and domestic purposes. The main sources of potable water within the district are piped water, rain water harvesting and a protected water wells for communal consumption.

The proposed facility will utilize piped water supply from the National Water and Sewerage Network which is connected onsite. Rain water harvesting is also implemented. This water will be used for cleaning, in washrooms and other services.

5.4.3.3 Poverty Analysis in the District

Mukono District is extracted to have 49% of its population living below the poverty line, with Nakifuma County being the worse off at 56% of the Population below the poverty line. N.B. Individuals on the island can earn income on a daily basis. However, service delivery is very poor due to the hardships involved in providing services in islands. This has made the population here to have very poor standards of living, though the per capita income is better than with many other lower local governments on the main land.

Inequality is highest in urban areas and shows a wider range of variability than the estimated levels in rural areas.

There has been a general increase in poverty of the rural population of Mukono of the past 5 year. This has been mainly attributed to the coffee, banana wilt invasion and Boda-boda Motorcycles in the urban centers. The sub counties of Ntunda and Nagojje were worst hit by the banana wilt problem. Coffee wilt has attacked the district without discrimination of any area. This has greatly affected the incomes of the people in the district. The vanilla crop, which had come up as a substitute to coffee has also hit a snag after the prices of the crop tremendously dropped to a level that left the business unviable. Buvuma islands, although doing fairly well in the per capita income, the area is in danger due to the very poor services available to the population. The toilet coverage and safe water is below 20%. Water borne diseases are quite common in the area.

Namanve industrial park has helped bridge the poverty gap, and this proposed project in particular will also reduce the gap further by employing workforce in administration, technical zones, semi technical sections, and casual laborers.

5.4.3.4 Transport

Mukono District is proud to have a total motorable feeder road network of about 759kms, and 700kms of community roads. The challenge is that about 70% of the community roads are in poor status. This therefore prohibits easy access of produce, fish and other commercial goods to markets. It is therefore important to urge our communities and local leaders to rise up for this cause. Good access and feeder road network will stimulate attitude to work and hence employment especially in agriculture.

The proposed Export trading company facility site can be best accessed by road from Namanve industrial Area and from Kampala-Jinja Road by branching off on your right along roofing's road past Uganda Investment Authority to join Bweyogerere Industrial Area Road, then move upwards till Liberty ICD. The proposed facility is located opposite liberty ICD.

5.4.3.5 Communication Networks

Mukono district has good postal and telecommunication services and has direct links through telephone exchanges and other forms of communication such as telefax, telephones, radio calls and electronic mail to the rest of the country in addition to offering expedited Mail Services (EMS) to whoever is in need. The district enjoys good coverage of the entire mobile telecommunication networks providers; UTL, Airtel, MTN and Smile.

The proposed site has access to telecommunication services and has direct links through telephone exchanges and other forms of communication to whoever is in need. The proposed site enjoys a stable coverage of the entire mobile telecommunication networks providers; UTL, Airtel, MTN and Smile.

5.4.3.6 Security and Fire Bridge

The facility is located in Namanve Industrial Area within reach of the Mukono fire brigade, this can give support in case of any conflicts and fire outbreak though there are fire protection measures that were put on site. The entire site will also be banded with a concrete perimeter fence. There will be the main entrance for easy security operations around the compound a boundary wall connected with security alarms, entry control, and quick response systems will be used within the project area. Security lights will as well be installed sufficiently within the project area. The proponent is anticipated to engage security firms to beef-up security in order to ensure 24-hour security.

5.5 Site specific Baseline Data

Baseline data onsite was acquired during field trips made to the project area and surrounding communities.

5.5.1 Air quality Assessment

Air samples were collected using a GASALERT MAX XT II. Measurements were taken at 3 different locations around the project area with their geographical coordinates noted. The existing quality of the air environment serves as an index for assessing the pollution load and the assimilative capacity of the area. The results from the measurements undertaken onsite are presented in the table 5.3 below.

Particulate matter measurements were taken using the PCE-PCO 2 particulate counter and logger in various sections of the quarry for particulate matter and results presented in table 5.4 below.

Table 5.3: Ambient Air Quality Status

Assessment point	Parameter			
	O_2 (%)	**H_2S (ppm)**	**CO (ppm)**	**LEL (%)**
36N 465794.53 m E 38504.14 m N	22.5	0	0	0
36N 465740.31 m E 38581.24 m N	23.0	0	0	0
36N 465618.88 m E 38636.86 m N	20.7	0	0	0
The overall observation at the project site showed that the detection of hydrogen sulphide (H_2S), carbon monoxide (CO) and combustible gases (%LEL) were either below detectable level (BDL) or zero indicating the ambient air quality is essentially very clean. Oxygen level at all check points was 20.9%, which is the naturally occurring concentration in atmospheric air.				

Table 5.4: Particulate matter results

S/N	**Sampled point**	**$PM_{2.5}$ µg/m³**	**PM_{10} µg/m³**
1.	36N 465807.11 m E 38644.42 m N	15	35
2.	36N 465581.38 m E 38727.15 m N	17	44
3.	36N 465547.05mE 38577.03 m N	14	41
4.	36N 465794.53 m E 38504.14 m N	20	52
5.	36N 465740.31 m E 38581.24 m N	25	48
6.	36N 465618.88 m E 38636.86 m N	21	50
	National Standards	35 µg/m³	60 µg/m³
	EA standards	75 µg/m³	150 µg/m³

From the readings of the particulate matter at the proposed site, it indicated that the particulate matter was within the acceptable limits.

5.5.2 Noise Assessment

Unpleasant sounds are classified as noise pollution. Sound possesses three definite properties: intensity, frequency and duration. Intensity is the loudness of a sound or the pressure it exerts through the ear. It is measured in decibels (dB). In assessing noise, an empirical measure called “dB (A)” indicates damage to hearing. Noise levels were measured

using an EXTECH™407727 Digital Sound Level Meter (range 30-140 dBA) set to “Slow”

response and “Auto Recording” modes on weighting scale.

The results from the measurements undertaken onsite are presented in the table 5.5 below.

Table 5.5: Ambient Noise measurements

Coordinates	Maximum dB(A)	Minimum dB(A)	Average dB(A)
36N 465807.11 m E 38644.42 m N	88.6	65.4	77.0
36N 465581.38 m E 38727.15 m N	83.0	60.7	71.85
36N 465547.05mE 38577.03 m N	79.6	55.5	67.55
36N 465794.53 m E 38504.14 m N	101.6	79.9	90.75
36N 465740.31 m E 38581.24 m N	95.3	80.5	87.9
36N 465618.88 m E 38636.86 m N	88.7	69.8	79.25

Due to the proposed land use and activities intended it is expected that ambient noise levels will increase. During the construction phase, noise will be generated as a result of construction related activities. Noise impacts associated with both the operational phase and construction phase of the development will be investigated further.

These impacts will be investigated further and mitigation measures relating to both the construction and operation phases will be included in the Environmental Management Plan.

5.5.3 Water quality

An assessment of water quality in the project area was done. The water quality data analysis at the sampled sources is shown in table 5.6 below. The concentrations of total suspended solids, turbidity and colour were also measured and found to be above the standard maximum concentrations. Therefore, there is need for treatment of the water before source is used for domestic use.

Table 5.6: Water analysis results

Parameters	Units	Sample source	National Standards for Potable water
PH (Physical Chemical)		6.75	5.5-9.5
Electrical Conductivity (EC)	µs/cm	128	2500
Alkalinity Total	mg/l	28.0	500
Magnesium as Mg^{2+}	mg/l	5.40	100
Manganese	mg/l	0.013	0.1
Nickel as Ni^{+}	mg/l	0.0	0.02
Nitrate-N	mg/l	3	45

Phosphorus	mg/l	0.01	1.0
Potassium; as K^+	mg/l	3	50
Sodium; as Na^+	mg/l	10	200
Sulphates; SO_4^{2-}	mg/l	4	400
Total dissolved solids (TDS)	mg/l	88.0	1500
Total suspended solids (TSS)	mg/l	14	0.0
Turbidity	Ntu	26.90	25
Calcium as Ca^{2+}	mg/l	10.20	150
Hardness; Total	mg/l	30.0	600
Iron: total	mg/l	0.18	0.3
Chlorides	mg/l	6.0	500
Copper	mg/l	0.01	2
Bi-Carbonates	mg/l	108.0	500
Colour (True)	TCU	148	50
Flouride; F^-	mg/l	0.15	1.5
Bact:Escherichia Coli IDEXX	CFU/100ml	6	0

From the laboratory analysis of the water sample, the results above shows that uncomplying physio-chemical & microbiology characteristics as provided by the National Standards for untreated portable water.

5.5.4 Soil analysis

Soil analysis was done for a sample collected from site to establish the threshold values for existing parameters therein (Ph, soil texture class, conductivity, oil and grease, organic matter etc.). The soil composition profile of the sample was found to be clay soil and of simple structure. Table 5.7 shows the soil analysis results. From the analysis the results showed oil and grease was 0% content, Cadmium was also 0%. The results also showed that Mercury had 0% content which shows no pollution to the environment.

Table 5.7: Soil analysis results

Parameter	Mean-Results
PH	6.82
Conductivity[µs/cm]	239
NO_3[mg/kg]	36.0
Ca[mg/kg]	22.0
Mn[mg/kg]	0.24

Cl[mg/kg]	34.0
Cu[mg/kg]	0.23
SO4[mg/kg]	44.0
PO4[mg/kg]	46.0
Fe[mg/kg]	1.27
Pb[mg/kg]	0.05
NH3[mg/kg]	1.12
Mg[mg/kg]	26.0
Na[mg/kg]	12.0
K[mg/kg]	4.0
Cd[mg/kg]	0.00
Ni[mg/kg]	0.13
Zn[mg/kg]	0.01
Hg[mg/kg]	0.00
Oils & grease [%]	0.0
Bulk Density [g/cm^3]	1.01
Organic matter [%]	2.87
% Sand distribution in the soil	38.0
% silt distribution in the soil	40.0
% clay distribution in the soil	19.13
Soil texture class	Loam soil

The soil composition profile of the sample analyzed was found to be loam soil and of simple structure.

6.0 ANALYSIS OF PROPOSED ALTERNATIVES

This chapter identifies and describes the alternatives that were considered for the plastics recycling project. The concept of alternatives is aimed at ensuring that the best among all possible options in all aspects through the examination of the environmental, technology, social and economic costs of the various feasible land use options including the proposed use and the present use. Feasible land use options are compared in terms of lowest costs and most benefits criteria: environmental impacts, social acceptability, economics (including productivity of land use) and engineering feasibility.

The consideration was based on options chosen by the design team in consultation with key stakeholders (Municipal Council, NEMA, UNBS and other relevant authorities). The alternatives include: development at a different site, proposed project. The alternative of not carrying out the proposed project was also considered in order to demonstrate environmental conditions without the project.

6.1 Alternative 1: The "No-Project"

The selection of this option would mean discontinuation of project designs and establishment of the ETCUL facility would not occur.

In the event that the development does not proceed, the proposed site is expected to maintain its natural characteristics maintaining baseline conditions described in detail in chapter 5. It should be noted that the site was originally used for agriculture (farmland) but has attracted development infrastructure and later on, it was gazetted as an industrial park. There would be no significant impacts if the development is forfeited and, as such, the proposed site land is expected to maintain its original characteristics.

However, the potential development of the area would be stifled. The "No Action" Alternative would have a great implication on the socio-economic environment of the area and surrounding communities. Due to the gazettement of Namanve as an industrial park, proposed quality of the proposed development, it is anticipated that it would be a major industrial boost in the park, enhance development, provide a major opportunity for employment, revenue and benefits associated with the industrial sector. If this alternative were adopted, the proponent would need to find an alternative site for the development.

6.2 Alternative 2: The Project Development Alternative

This alternative considers the construction and operation of a processing facility with storage warehouses as proposed by the proponent, and as outlined in this ESIA. This option has good support from the persons who would be most affected by project implementation, i.e., business operators, Uganda investment Authority, Uganda Manufacturers Association and residents within Kolo Cell and Mukono Municipal Council. Therefore, community support is anticipated for the development. This alternative will provide positive benefits to the communities and the Ugandan industrial sector. This includes benefits such as employment opportunities, induced business growth, and increased property value, generation of revenue for the government. During the construction phase it is estimated that up to 70 individuals will get employment while approximately 100 employees (including tradesmen, drivers, administrators and laborers) during the operational phase. Additionally, the multiplier effects to the construction and support industries during this period are likely to affect a much larger number of people. The proposed project will also make a positive contribution to social infrastructure, overall development and improve on area infrastructural components (roads, drainage) which are bound to benefit the surrounding community.

6.3 Alternative 3: "Development at a different site"

If the proposed project is implemented elsewhere, negative social and ecological impacts that are likely to result from its development would still be carried to another location and could be worse since there would be space for future expansion of the facility. Mukono Municipal Council would lose all the expected

benefits associated with the project in terms of job opportunities, business opportunities and revenue in form of taxes. The current site location is also advantageous in that;

a) It is a nationally gazetted industrial park;
b) The size of the available land is appropriate for facility and its associated components.
c) The land is legally owned by the proponent.
d) There are significant structural developments on onsite.
e) According to its location, the proponent will benefit from access to roads, and ancillary industries.

This alternative should therefore not be put into consideration since the site location is more suited for this project than any other.

6.4 Comparison of Alternatives

The recommended alternative is the "Project Development Alternative" because it recognizes the viability and need for the project. In addition, as noted throughout this ESIA study, the significance of the anticipated impacts from the project have generally been considered and appropriate mitigation and management measures identified for the identified impacts making project development feasible.

7.0 STAKEHOLDER CONSULTATION

7.1 Introduction

Public participation is the involvement of all parties who potentially have an interest in the project being proposed for development or who may be affected by its implementation. Its principal objective in an Environmental and Social Impact Assessment (ESIA) process is to inform and enrich decision-making. It is an integral part of the ESIA process that ensures that the views of the local community members (within the proposed development location area) and other stakeholders are heard and taken into consideration.

Disclosure on the other hand refers to the provision of relevant and adequate project information to enable stakeholders understand the risks, impacts and opportunities of the project. The views of the identified stakeholders are then considered, responded to and incorporated into the project design whenever feasible and suitable. According to the IFC guidelines, public consultation is viewed as critical in raising the awareness of project impacts and gaining agreement on management and technical approaches in order to maximize benefits and reduce negative consequences.

This section summarizes the consultations undertaken as part of the ESIA for the proposed the facility. It is based on the public consultation and disclosure plan for the assessment which forms part of the Consultant team's stakeholder engagement.

Stakeholder consultations undertaken were led by the consultant team, which provided support to address issues relevant to the ESIA process. In order to facilitate effective consultations, background information was produced and circulated at stakeholder meetings. The ESIA team continued and widened the consultation process to obtain information and concerns to inform the process through a series of face-to-face meetings with individual stakeholders, lead agencies from concerned sectors and Local Communities.
The objectives of embarking on the consultations process for the project are:

- Learn through local knowledge and understanding, particularly for environmental and social baseline feedback;
- Inform and educate to avoid misunderstandings about the proposed project/development;
- Establish areas of co-operation and development;
- Identify problems, concerns and needs;
- Obtain feedback;
- Dissemination of information on the project;
- Promote project ownership and enhance social acceptability;
- Build trust amongst the various stakeholders;
- Evaluate alternatives and seek solutions; and
- Resolve and avoid conflicts.

7.2 Identification and involvement of key stakeholders

Previous experience shows that certain potentially contentious issues never get to the public domain if the correct consultation process is not maintained from the conceptual stage of any development. The proponent has maintained a steady consultation process with all relevant parties, to ensure that all issues of concern are rationalized and sorted out prior to implementation of the proposed development in Mukono Municipality.

The consultation process was approached in the following ways: -

- Issuance of notice of intent to carry out an ESIA for the proposed development to the local council (L.C.1) chairperson (local council committee);

- Sustaining consultation with stakeholders with explanations on key issues as they arise and affect the people; and
- Maintaining effective communication with communities;

7.2.1 The primary stakeholders are:

- The Immediate communities neighboring or within the proposed development vicinity;
- Mukono Municipal Council with Kolo Cell leaders inclusive;
- National Environment Management Authority (NEMA);
- Ministry of Gender, Labor and Social Development (MoGLSD), Occupation, Safety and Health department.

7.3 Field Interaction

The site assessment survey (site visit) took place in September 2024, which offered an opportunity to interact with host community. The socio-economic aspect of the study involved field interviews and consultation with a few host community members and leaders. The community leaders interviewed included the Kolo leaders and other community members.

7.4 Future Consultations

The proponent shall maintain continuous consultation with all relevant parties (host community), Mukono Municipal Council, through the regulators-NEMA concerned with or likely to be affected by the proposed project at all stages of the development.

7.5 Highlights of Findings

As a means of gathering detailed information on the perspective of key stakeholders on the potential impacts associated with the proposed project, questionnaires were administered in communities located within the project area. During the consultative meetings, the proposed development and its resulting consequences on the industrial sector and receiving environment were clearly highlighted. Both positive and negative perceptions and fears of the stakeholders on how the proposed facility is likely to affect the lives of the existing and future generations were captured. Key issues/ remarks are outlined in table 7.1 below.

Table 7.1: Major concerns captured from stakeholder engagement

Stakeholder	Comments
MUKONO MUNICIPAL COUNCIL	
Masengere George Senior Environmental Officer Mukono Municipal Council 0772956502	• Develop a waste management plan and effectively implement it • Utilize services of a licensed waste handler to collect and transport offsite all the generated wastes. • Fully implement the site ESMP • Ensure proper implementation and management of OSHE within the site • Do comprehensive consultations with community members
COMMUNITY LOCAL LEADERS AND COMMUNITY MEMBERS	
	• No issue with the project in the area • There is traffic jam created by the delivery trucks, that park along the road side, • Employment opportunities created to the locals since most of the workers come within the community; • Air pollution due to dust from the facility;

	• Fire management measures should be put in place to avoid fire outbreaks; • Money paid to the workers is insufficient and sometimes there are delays in payment; • There is need to have a restaurant within the facility to ease availability of food to the workers; • There are no major complaints about the operations of the facility in the area; • Poor drainage systems around the site; • There is need to avail more PPEs to the workers; • Noise pollution originating from the facility needs to be addressed.

7.6 Grievance Mechanism

A grievance mechanism will be developed as one of the key elements for the proposed project. A grievance redress committee will be established by the developer as well as Local leadership and contractor. This will actively manage and track grievances received to ensure that appropriate resolution and actions are taken. A clear time schedule will be defined for grievances, ensuring that they are addressed in an appropriate and timely manner, with corrective actions being implemented if appropriate and the complainant being informed of the outcome.

7.7 Next Steps

The stakeholder consultation is an ongoing, iterative process and will continue throughout the project life i.e. during both the construction and operation phases of the project. Effective and comprehensive consultations shall be considered as a guidance tool for the proponent in project implementation.

8.0 ANALYSIS OF POTENTIAL IMPACTS AND MITIGATION MEASURES

Introduction

This section provides an assessment of impacts, both positive and negative, on the physical, biological and socio-economic components of the environment that may arise from site preparation, construction and operation phases of the project. It also details alternative approaches or mitigation measures that need to be implemented in order to avoid, minimize, remedy or compensate for the potential negative impacts and enhance the potential benefits of the project. The section further provides a prediction of the residual impacts that may remain, assuming that all mitigation measures are implemented.

Methodology

The methodology employed for analysis of these impacts was reviewing existing policies, laws, regulations and standards pertaining to construction and operation of similar facilities. Field surveys were undertaken to collect raw data to correlate with literature review. Field surveys were meant to identify the impacts and come up with mitigation measures. This was done with clear understanding of the processes, activities and dynamics of the proposed project. The anticipated impacts have been assessed basing on the study team's experience from similar projects and systematic impact analysis criterion described in section 2 of this report (methodology).

8.2 Method used for impact classification and evaluation

The identified impacts were later classified either to have no effect on the environment, moderate or major effect. The classification was done basing on four broad indicators of extent, duration, magnitude and possibility of occurrence (See chapter 2 for description of classification indicators).

8.2.1 Cumulative impacts

Cumulative impacts were also identified and assessed. Cumulative impacts are defined as environmental impacts that arise from several activities impacting the same environmental receptor. The causes of these impacts may be from various project activities or partly from project-related activities (internal aggregations) and pre-existing conditions (external factors).

External activities form part of the baseline conditions, and are taken into account in the examination of the baseline, as well as divergence from the baseline that might be expected to arise from project implementation. In this way, the impact of the project on the surrounding area especially as it relates to the cumulative impacts of this project with any existing developments will be included. All cumulative impacts have been assessed just like other impacts.

8.3 Environmental and social impacts and proposed mitigation measures

Impacts in this section have been described and analyzed for construction and operation phases. Brief methodology for impact identification is also presented, discussion of the impact and proposed mitigation measures are presented hereunder.

8.4 IMPACTS ARISING FROM CONSTRUCTION PHASE

8.4.1 Creation of Employment Opportunities

Construction of the factory will avail short-term employment opportunities to skilled, semi-skilled and casual workers. At the moment it is difficult to determine how many people will work at the site however it is anticipated that up to 70 people will get employment at the site once construction commences. The workers will benefit from the salaries and wages for a short time. The significance of this impact is anticipated to be **MEDIUM POSITIVE** should the recommended enhancement measures be implemented.

Impact	Enhancement	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Creation of employment opportunities	Without Enhancement measures	Positive	6	1	2	4	36	
	With Enhancement	Positive	6	1	6	4	52	
Enhancement Measures	• All construction workers employed at the site including locals and outsiders should be given an induction course on proper work ethics and responsible social behavior • When possible, local labor should be used for construction activities • The contractor should avoid use of child labor. • The contractor should ensure that employees are paid well and on time. • A good working relationship between contractor and employees should be established to avoid incidences of work abandonment which would delay the project operation. • The contractors should to the greatest extent possible employ people from within the local community • The proponent should maintain a roster of all people employed at the site. The proponent should also take precaution during recruitment of workers by liaising with the local authorities particularly the area • The proponent should also maintain and update a log of all people working at or visiting the site. • Ensure gender equality							
Cumulative Impact	It is anticipated that job creation could lead to an improvement in the livelihood of the workers							
Reversibility	No							

8.4.2 Impacts arising from Improper Waste Management

Construction activities may generate significant amounts of non-hazardous and hazardous solid waste. Non-hazardous wastes likely to be generated include scrap wood and small concrete spills. Hazardous wastes include small amounts of construction machinery maintenance materials, such as oily rags, used oil containers and spill cleanup materials. If the non-hazardous wastes are improperly managed, they may degrade site aesthetics or cause injuries thus being a nuisance in the area. Hazardous waste may contaminate the soil and run off in the area. Improper storage and disposal of overburden during site preparation would create an erosion challenge to the area storm water drains. Improper siting of

stockpiles of construction material at the site could lead to the fine materials getting washed into drainage channels.

With every construction comes the need to provide construction workers with showers and sanitary conveniences. The disposal of the wastewater generated at the construction has the potential to have a minor negative impact on groundwater. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation measures	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Improper Waste management	Without Mitigation measures	Negative	3	3	8	4	56	
	With mitigation measures	Negative	1	1	2	1	4	
Mitigation Measures	• Prepare a site waste management plan. This should include the designation of appropriate waste storage areas, collection and removal schedule. • Used oil and other hazardous solid wastes should be stored appropriately and then be transported and disposed of by companies experienced in handling hazardous waste • Equipment to be used on the sites should be well serviced and in sound mechanic condition to prevent cases of oil and fuel spillage. • Special attention should be given to minimizing and reducing quantities of waste generated. • Fine-grained materials (sand, murram, etc.) should be stockpiled away from heavy runoff areas.							
Cumulative Impact	No							
Reversibility	Yes							

8.4.3 Inadequate Occupational Health and Safety for workers

Construction operations have potential to cause accidents to workers. These include occupational injuries from working at heights, hot works (welding), falling objects and electrocutions. Accidents often happen unexpectedly and unintentionally and can result in the loss of life and injuries, as well as damage to property. In addition, it is very important that the proponent considers the health and safety of its workers and occupants (staff & visitors) as operation of the project will require the use of a significant amount of

equipment, petroleum and chemical products and a host of raw materials in its functional phase and maintenance. The probability of an accident occurring at the project site during these phases of the development is high. This is due to the intense use of machinery and other heavy-duty equipment. The levels of dust in the area are also likely to increase, which may cause respiratory illnesses in humans. It is therefore important that the mitigation measures outlined below are implemented to ensure the safety of workers / occupants during the various phases of the development.

Major injuries at the site may result from falling objectives, contact with hazardous substances, handling steel bars, being struck by an object, exposure to electrically powered machinery or hand tools and transportation accidents. These injuries can range from minor ones to possible loss of life. However, if caution and personal protection gear is provided to workers, these injuries and accidents would be avoided. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **HIGH NEGATIVE** to **LOW NEGATIVE.**

Impact	Mitigation measures	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Inadequate Occupational Health and Safety	Without Mitigation measures	Negative	3	5	10	4	72	
	With mitigation measures	Negative	2	1	2	2	10	
Mitigation Measures	• Sensitization of project affected persons about the project and accidental risks. • Contractor(s) education and training on pedestrian safety Install safety signage. Conduct safety and First Aid training. • Personnel should be provided with special footwear, clothing, gloves, helmets and other necessary protective gear for use. • Workers should be trained in safety matters including accident prevention, proper control and maintenance of equipment and facilities. • Occupation health and safety should be ensured on site by appointing an officer to be in charge of implementing all health and safety rules and guidelines and provide appropriate safety/warning signs. • Designate the roles and responsibilities of employees, which will enable a clear chain of command in the event of an accident and allows persons to be aware of their responsibilities in the event of such occurrences. • Place a fully equipped first aid kit on the project site. Ensure that a crew member is trained in basic first aid practices. • Place information/warning signs around the project site, which indicates where hazardous and flammable material will be stored. Signs must also be placed around the construction site displaying the numbers of the person responsible for handling emergencies on the site, the Police Fire Department, and the nearest medical facility.							

Cumulative Impact	No
Reversibility	Yes

8.4.4 Income to construction material suppliers

Sand, cement, gravel, paint, electric cables, pipes, timber, roofing materials, are a few of the myriad construction materials likely to be used at the site. These materials may be purchased from the suppliers in the neighborhood of the site or within the Industrial Area outlets. Suppliers of these materials will realize incomes throughout the construction phase. The significance of this impact is anticipated to be **MEDIUM POSITIVE**, once the recommended enhancement measures are implemented.

Impact	Mitigation measures	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Income to construction material suppliers	Without enhancement measures	Positive	5	1	2	4	32	
	With enhancement measures	Positive	5	1	6	4	48	
Enhancement Measures	• Suppliers should promptly be paid • Whenever possible, construction materials should be bought from local suppliers • Quality materials should be obtained in order to avoid waste							
Cumulative Impact	No							
Reversibility	Yes							

8.4.5 Generation of Noise and Vibration

The construction of the facility will involve activities and equipment that are likely to generate noise. Equipment or machinery likely to generate noise at the site includes concrete mixers and a generator while activities likely to generate high levels of noise are hauling of construction materials. If these sources are not carefully controlled, there may be an increase in the background noise levels of the area.

This may affect the health of workers and community members in the neighborhood. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE.**

Impact		Impact					Significance
		Nature	Extent	Duration	Magnitude	Probability	

	Mitigation measures							
Generation of Noise and Vibration	Without mitigation measures	Negative	5	1	2	4	32	
	With mitigation measures	Negative	1	1	2	2	8	
Mitigation Measures	• Construction should utilize quiet machinery of efficient mechanical condition. • Construction activities that will generate disturbing sounds should be restricted to day-time working hours and put off when not in use. • Regular servicing of all equipment to ensure high operation efficiency thus less noise and vibration. • Regular measurement and monitoring of noise levels to make sure threshold levels are not exceeded • Workers operating equipment that generates noise should be equipped with noise protective gear. • Site hoarding off should be done in order to reduce the exposure of noise to the surroundings. • Ensure regular tool box meetings on noise management							
Cumulative Impact	None							
Reversibility	Yes							

8.4.6 Excessive Air Emissions

The proposed construction activities would cause temporary localized increase in area air emissions. Emissions would include fugitive dust from ground disturbance and combustion by-products from construction equipment to the immediate site neighborhoods. The levels of emissions generated would change through time depending on the level of activity, weather and condition of the ground itself. Earthmoving activities during construction and offloading granular construction materials will be the main source of dust. This situation will be worst if construction is done in the dry season. Dust would pose an adverse impact. Mobile emissions from mechanical equipment such as graders and compactors could also lead to an increase in ambient levels of pollutants such as carbon monoxide, nitrogen oxides and particle emissions especially soot. These are known to cause nausea and headaches in humans when inhaled in large quantities.

This will be a negative impact that is short time in duration and therefore unlikely to be significant. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE.**

Responsible parties: Proponent, manufactures, Contractors, Employees.

ANTICIPATED DUST SOURCES AT PROPOSED CONSTRUCTION SITE		
Vehicle and Equipment Use	**Wind Exposures**	**Contractor Activities**
• Vehicle and equipment entering and leaving the project site • Vehicle and equipment movement and use within the project site • Sediment tracking off-site • On-site construction traffic	• Cleared and dug up areas • Excavated, filled, compacted or graded areas • Construction staging areas • Equipment service areas • Bare ground areas • Spilled materials • Construction stockpiles • Soil and debris piles	• Land clearing and grubbing • Earthwork including soil excavation, filling, soil compaction, rough grading and final grading • Materials handling including material stockpiling

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Excessive Air Emissions	Without mitigation	Negative	1	1	6	4	32	
	With mitigation	Negative	1	1	2	2	8	
Mitigation Measures	• Whenever necessary, exposed ground should be sprayed with water in a manner that effectively suppresses dust. • The proponent should use well-conditioned and serviced equipment. • A speed limit for all project traffic should be introduced and enforced to reduce dust generated by over speeding. • Stockpiles of fine materials should be wetted or covered with tarpaulin during windy conditions. • Watering of un-vegetated areas and stripped road surfaces along which construction vehicles and trucks travel, should control levels of fugitive dust by up to 75%.							
Cumulative Impact	Yes							
Reversibility	Yes							

8.4.7 Excavation Impacts

A number of accidents occur on construction sites owing to excavation related impacts. Excavations are defined generally as “operations where contact with soil is expected, such as trenching, removing soil to

install foundation footings, or exposing underground pipes for repair / replacement. The most common hazards associated with excavations, in addition to those posed by working with heavy and mechanical equipment include;

a) Unidentified or misidentified utilities where workers may be exposed to hazards such as electric shock, suffocation or explosions if they unexpectedly come in contact with utility lines.
b) Cave-ins are also common accidents on construction sites. Worker injury or structural damage may result from sidewalls of excavations caving in.
c) Structural instability arising from structures becoming unstable if excavation occurs below the base of building or equipment pad foundations, or below retaining wall footings.
d) Water accumulation is also another common excavation related hazard where accumulated water in excavations can cause sloughing of excavation sidewalls, resulting in unsafe conditions for those entering the excavation, particularly if the use of electrical equipment is required.
e) Lack of egress: workers may become injured while exiting an excavation if egress is not adequate, particularly if an emergency evacuation is required.
f) Workers may accidentally fall into an open, unprotected excavation, or vehicles may accidentally be driven into an uncovered or inadequately barricaded pit.

To ensure safety during excavation at the proposed project site, a detailed excavation plan will be designed for the project. This will be a negative impact that is short term in duration and therefore, unlikely to be significant. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE.**

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Excavation Impacts	Without mitigation	Negative	3	1	8	4	48	
	With mitigation	Negative	1	1	4	3	18	
Mitigation Measures	• Stripped top soil should be ferried off the site and disposed of responsibly (landscaping and plant nursery operators often need this soil, presenting a beneficial disposal option). • Excavated soil should be stockpiled away from storm water runoff paths. • The proponent should develop a project excavation plan • There should be examination of geomorphic features / classified landforms and elevations at the site							
Cumulative Impact	No							
Reversibility	Yes							

8.4.8 Impacts arising from soil erosion

The clearing of the site will reduce the natural infiltration in the soil and promote erosion especially in the upper layers of the soil during extreme rainfall events. Soil erosion may be caused by exposure of soil surfaces to rain and wind during site clearing, earth moving, and excavation activities. The mobilization

and transport of soil particles may, in turn, result in sedimentation of surface drainage networks, which may result in impacts to the quality of natural water systems and ultimately the biological systems that use these waters. Erosion would increase sediment load in runoff from the site discharging into the neighbouring drainage channels leading to siltation. The storm water channels will be modified during the clearing of the site and this could cause localized flooding on the site and possibly to the communities adjacent to the site.

Proper runoff of storm water plays a vital part in the natural hydrological process of an area. Of concern is the fact that it usually contains numerous pollutants such as sediment, nutrients, bacteria, oil and grease, metals, plastics and miscellaneous waste that are being transported off the points of generation. During construction activities, oil contamination may arise from hydraulic leakages from construction equipment, improper handling of petroleum products and fuel spillage. Contamination may also occur from the improper disposal of used oils, hydraulic fluids, toxic and empty containers.

This will be a negative impact that is short term in duration and therefore unlikely to be significant. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE.**

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Impacts arising from soil erosion	Without mitigation	Negative	3	1	8	3	36	
	With mitigation	Negative	1	1	4	2	12	
Mitigation Measures	• The proponent should prepare a storm water pollution prevention plan (SWPPP) to mitigate storm runoff and soil erosion throughout the site. • Phased construction will minimize the impacts arising from erosion from clearance of large tracts of land. • Areas with exposed soils should be monitored during periods of heavy rainfall throughout the construction phase of the project. • Care should be taken not to deposit earth material and any other demolition wastes into the area underground drainage channels.							
Residual impact	Full implementation of the proposed mitigation measures should leave no room residual impacts.							
Reversibility	Yes							

8.4.9 Hydrological Impacts

Hydrological impacts arising due to construction of the proposed facility will result from site preparation works. Site preparation works will comprise of backfilling, soil compacting, earthworks and limited excavations for foundations. During this phase, both surface water and groundwater resources will be at risk of pollution from the accidental spillage of fuels, lubricants cement and wet concrete, or from the inadequate or unsafe disposal of sanitary wastewater. Therefore, impacts likely to arise during this phase include alteration of surface water quality due to direct discharges of contaminants.

Also, accidental spillage or leakage resulting from cars of potentially polluting substances such as fuel during construction would affect surface water especially the adjacent stream. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE.**

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Hydrological impacts	Without mitigation	Negative	2	4	2	5	40	
	With mitigation	Negative	1	2	2	2	10	
Mitigation Measures	• Ensure good construction management practices that include proper storage of construction materials; • Wet concrete, cement, sand and other construction materials will be prevented from entering any watercourses. • Care should be taken not to deposit earth material and any other construction wastes into the wetland. • Site clearance for construction should be phased so as to minimize the area of exposed soil at any given time. • Temporarily bund exposed soil and redirecting flow from heavy runoff areas that threaten to erode or result in substantial surface runoff to storm water drains. • Areas with exposed soils should be monitored during periods of heavy rainfall throughout the construction phase of the project							
Residual impact	No							
Reversibility	Yes							

8.4.10 Fire Risks

Providing fire-fighting equipment is essential at the plastics recycling factory. Fires may also originate from leaks or spills of flammable petroleum products and faults in the factory's electric connection. The damage of a fire outbreak could lead to loss of property or even human life. Whereas damage to property is a reversible adverse impact, loss of human life is irreversible. It might not always be possible to avoid all potential sources of fire accidents hence the need to take precautions. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **HIGH NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance
		Nature	Extent	Duration	Magnitude	Probability	

Fire risks	Without mitigation	Negative	2	4	10	4	64	
	With mitigation	Negative	1	4	4	2	18	
Mitigation Measures	• Install fire detectors, fire alarms and fire suppression system at strategic points at the factory. • Install a hydrant system of adequate capacity to handle emergencies involving large fires. • All sections of the production block should have at least two extinguishers; • Factory workers should have basic training in fire control. • Undertake fire drills at the factory, at a minimum once a year. • Electrical installation on the factory shall conform to acceptable national safety standards.							
Residual impact	No							
Reversibility	Yes							

8.4.11 Generate Revenue to Utility Companies

Utility companies like UMEME and NWSC will benefit from bills paid for electricity and water respectively utilized during the construction phase. This is a positive impact that will continue into the operation phase of the project.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Generation of revenue to utility companies	Without Enhancement	Positive	3	1	4	4	32	
	With enhancement	Positive	5	1	4	4	40	
Enhancement measures	• The contractor should ensure that the utility companies are promptly paid							
Residual impact	No							
Reversibility	Yes							

8.4.12 Traffic Disruption

The transportation and use of heavy equipment and trucks is required during construction.

Trucks will transport raw materials and heavy equipment. This has the potential to directly impact traffic flow along site approach road. Construction process may necessitate the re-routing of some vehicular and pedestrian traffic and introducing traffic delays thereby increasing in travel time. Any re-routing of vehicular traffic has the potential to lead to increase in fares. Increased accident potential from additional trucks traversing the main roads is also a possibility. Disruptions in traffic and reduced level of service due to increased large/construction vehicle on the roads may occur during this phase of project development.

Movement of heavy equipment and construction materials increases the risk of traffic-related accidents and injuries to workers and local communities. Dusting and spillages occur on the roadways between source and site during transportation. Dusting degrades local air quality and material spillages worsen road driving conditions and increase the risk of road accidents. Wear and tear on roads from loaded trucks transporting material and/or construction debris is also a cause for concern. These occurrences represent indirect, short-term, reversible, negative impacts on public health and safety related to the project. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Traffic Disruption	Without mitigation	Negative	**2**	**1**	**6**	**4**	**36**	
	With mitigation	Negative	**1**	**1**	**2**	**1**	**4**	
Mitigation Measures	• Transporting construction materials shall be scheduled for off-peak traffic hours. This will reduce the risk of traffic congestion and road accidents on the approach road to the site. • Flagmen shall also be employed to control traffic and guide vehicles each time a vehicle is branching off to the site. • Appropriate traffic warning signs should be placed near the turn off to the site informing road users of construction trucks turning ahead and instructing them to reduce speed. • Loading of trucks for transportation of construction materials to the site must be within the permissible limits (guidelines) for Uganda National Roads Authority (UNRA) axel loads for the targeted roads. • Raw materials should be properly covered during transportation to the site to prevent spillage along the roadway. • The trucks should be parked on the proposed site until they are off loaded. • Heavy equipment should be transported early morning (12 am – 5 am) with proper pilotage. • Training and sensitization of personnel (drivers) in road safety and traffic regulations should also be done by the road contractors.							
Cumulative Impact	No							
Reversibility	Yes							

8.4.13 Drainage Modification

The construction of the plastics moulding and spirits blending plant will create impervious surfaces on the site as roofed structured and paved surface will be set up. This makes it apparent that the site could generate considerable volumes of runoff during periods of prolonged rainfall. The high run off could result into flooding of the area if proper drainage is not put in place. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Drainage Modification	Without mitigation	Negative	2	4	6	4	48	
	With mitigation	Negative	1	4	2	1	7	
Mitigation Measures	• A well-planned drainage system should be developed around the site to direct runoffs. • The runoff from the roofs shall be reduced by installing rain water harvesting systems.							
Cumulative Impact	Yes							

8.5 Operation Phase Impacts

8.5.1 Generation of revenue

Operation of the facility will generate revenue to government and utility companies. It will pay revenue to utility companies by paying for water and electricity used. Generally, its operation will contribute to the development of the country. The significance of this impact is anticipated to be **HIGH POSITIVE**, once the recommended enhancement measures are implemented.

Impact	Enhancement	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Generation of revenue	Without enhancement	Positive	5	4	6	5	75	
	With enhancement	Positive	5	4	8	5	85	

Enhancement Measures	• Ensure prompt payment of salaries to employees and taxes to government
Cumulative Impact	No
Reversibility	No

8.5.2 Job Creation

Operation of the proposed factory will automatically avail long-term employment to skilled and unskilled labour. People likely to be employed include technical personnel, logistic managers, safety and health specialists, security personnel, financial controller and casual laborers. Increased income due to employment opportunities will empower many families directly those employed and indirectly to those who depend on them. With the implementation of the suggested enhancement measures, the significance of the impact can be increased from **MEDIUM POSITIVE** to **HIGH POSITIVE.**

Impact	Enhancement	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Job Creation	Without enhancement	Positive	5	4	4	4	52	
	With enhancement	Positive	5	4	6	5	75	
Enhancement Measures	• Ensure that employees get contracts developed in accordance with law; and • Ensure prompt payment of wages and salaries.							
Cumulative Impact	Yes							
Reversibility	No							

8.5.3 Air quality impacts

The impacts identified due to air borne emissions at the site are impacts on human health from emissions of NOx, NO_2, CO and SO_2 arising from the combustion of fuel and car exhaust emissions. The proposed facility will contribute to greenhouse gases through the emission of fossil fuel derived carbon dioxide (CO_2) to the atmosphere. Emissions from the biomass boiler, including particulate matter and greenhouse

gases, could affect local air quality. Storage and handling of acids may release vapors or fumes that require proper management.

The gases emitted may reduce air quality with impacts on human health particularly where dust particles contain harmful matter. VOCs can cause dizziness, asphyxiation and are potentially carcinogenic. This impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE** provided the suggested mitigation measures are implemented.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Air quality impacts	Without mitigation	Negative	3	4	6	4	52	
	With mitigation	Negative	1	4	2	3	21	
Mitigation Measures	• The proponent should use well-conditioned and serviced equipment which don't emit gases and also can burn fuel completely • Machines generating dust should be regularly serviced; • Develop a dust management plan • Monitor regularly the gas capture units to check if it is not faulty. • It is recommended that regular air quality monitoring be conducted on the facility. • The generation and release of emissions of any type should be managed through a combination of: - Energy use efficiency - Process modification - Selection of fuels or other materials, the processing of which may result in less polluting emissions and • Application of emissions control techniques.							
Cumulative Impact	Yes							
Reversibility	Yes							

8.5.4 Occupation health and Safety risk

Operation of the project is likely to be associated with a number of occupational health and safety hazards. These may be related with fire accidents, unavailability of potable water supply, clean eating area, lighting, safe access, first aid, work environment temperature, severe weather and facility shutdown, workspace and exit, and Integrity of workplace structures. Other hazards may result from falls caused by slippery floors and stairs, accidental contact with moving machinery, exposure to hazardous chemicals and noise from cars.

The storage and use of hazardous materials could cause bodily injuries to workers and other personnel if handled inappropriately. They can be carried by air borne dust particles. However, with the implementation of the suggested mitigation measures can reduce the significance of the impact from **HIGH NEGATIVE** to **LOW NEGATIVE.**

		Impact	

Impact	Mitigation	Nature	Extent	Duration	Magnitude	Probability	Significance	
Occupation health and Safety risk	Without mitigation	Negative	3	5	6	5	70	
	With mitigation	Negative	1	4	2	3	21	
Mitigation Measures	• Provide employees with protective gear like overalls, gumboots, and hand gloves, chemical masks, eye goggles, special foot wear, safety glasses, helmets, face protection and other protective equipment for use. • Sensitize workers on the need to improve hygiene like washing hands before meals and breaks at the end of the work shift. • Workers should be trained in safe chemical handling practices, and proper control and maintenance of equipment and facilities. • First aiders should be trained and these will be available to handle minor accidents and to administer first aid in case of serious accidents before the victims are transferred to the health facilities for extensive medical attention. • Occupational health and safety will be ensured on site by appointing an officer to be in charge of implementing all health and safety rules and guidelines and provide appropriate safety/warning signs. • Cuts and bruises should receive prompt attention to prevent contact with the incoming feedstock. • All hazardous material will be safely stored in clearly labelled containers, in areas with restricted access, handled and used only by experienced personnel or those who have undergone under training.							
Cumulative Impact	No							
Reversibility	No							

8.5.5 Fire risks

Inadequate fire safety precautions, equipment or awareness during operation of the facility could cause extensive damage in case of a fire outbreak. Fires can start from ignitable materials the composting building, cigarette smoking in non-designated places or poor electrical connections. The damage could be loss of property or human life. Whereas damage to property is a reversible adverse impact, loss of human life is irreversible. It might not always be possible to avoid all potential sources of fire accidents hence the need to take precautions. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE to LOW NEGATE**

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Fire risks	Without mitigation	Negative	2	4	8	4	56	

	With mitigation	Negative	1	4	4	2	18	
Mitigation Measures	• Install fire detectors, fire alarms and fire suppression system at strategic points at the plant. • Install a hydrant system of adequate capacity to handle emergencies involving large fires. • All sections of the production block should have at least two extinguishers; • Facility workers should have basic training in fire control. • Undertake fire drills at the facility, at a minimum once a year. • Electrical installation on the facility shall conform to acceptable national safety standards.							
Cumulative Impact	No							
Reversibility	No							

8.5.6 Traffic Disruption

Operation of the facility will disrupt the flow of traffic in the area. This is because there will be many trucks ferrying raw materials to the facility and finished products from the facility. These trucks may disrupt traffic along the Namanve road especially at the branch off to the site. This may create traffic congestion in the area and even increase in the risk of accidents. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Traffic Disruption	Without mitigation	Negative	2	4	6	3	36	
	With mitigation	Negative	1	4	4	3	27	
Mitigation Measures	• Transporting products shall be scheduled for off-peak traffic hours. This will reduce the risk of traffic congestion and road accidents in Namanve. • Flagmen shall also be employed to control traffic and guide vehicles each time a vehicle is entering Namanve road from the site. • Raw materials should be properly covered during transportation to the site to prevent spillage along the roadway. • Training and sensitization of personnel (drivers) in road safety and traffic regulations should also be done by the road contractors.							
Cumulative Impact	Yes							
Reversibility	Yes							

8.5.7 Generation of solid waste

Operation of the project is likely to generate significant quantities of waste. The amount of waste that may be generated depends on the quality of the raw materials and the use or reprocessing of the discarded materials into commercially viable by-products. Organic solid wastes likely to be generated at the facility include office paper, kitchen garbage, and other domestic trash from the administrative components of the project. Generation of solid waste from processing activities will require safe disposal of hazardous materials. If these wastes are improperly managed, they may degrade the environmental quality of the site and the neighborhoods. Implementation of the suggested mitigation measures can reduce the significance of the impact from **HIGH NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Generation of solid waste	Without mitigation	Negative	2	4	6	4	48	
	With mitigation	Negative	1	4	2	3	21	
Mitigation Measures	• Prepare a site waste management plan. This should include the designation of appropriate waste storage areas, collection and removal schedule. • Solid waste should be sorted by type and kept in different clearly labeled containers, and recycled or reclaimed where possible; • Adequate waste collection containers should be provided all around the plant to collect non-hazardous waste. • Solid wastes where recycling or reclamation is not practical should be disposed of in an environmentally acceptable manner; • Hazardous solid wastes should be properly stored in clearly marked containers; and • Licensed companies with experience in handling hazardous waste should be contracted to dispose of hazardous solid waste material. • Measures like; spill, incident management and response procedures as well as spill response equipment and effluent monitoring equipment should be adopted							
Cumulative Impact	No							
Reversibility	Yes							

8.5.8 Generation of noise

Operation of the project will generate noise. Noise within the plant operations will be higher in some areas. Long term exposure to high levels of noise can cause permanent damage to the hearing. It is expected that during operation of the project, noise will be generated on a daily basis for longer hours of the day over project lifetime and this is expected to affect receptors near the facility especially where high baseline noise levels were recorded. Noise from the operation of the facility will mainly result from the operating machines within in the facility. Other sources include standby generator which will be used as a backup in case of any power black outs. Excessive noise is an occupational hazard to workers and can cause hearing loss if one is exposed for long periods. With the implementation of the suggested

mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE TO LOW NEGATIVE.**

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Generation of noise	Without mitigation	Negative	2	4	8	3	42	
	With mitigation	Negative	1	4	4	2	18	
Mitigation Measures	• Workers operating equipment that generates noise should be equipped with noise protection gear. • Machines should be regularly serviced to ensure high operational efficiency thus less noise. • Regular servicing of all equipment to ensure high operation efficiency thus Less noise and vibration;							
	• Switch off equipment when not in use; • Regular measurement and monitoring of noise levels to make sure threshold levels are not exceeded.							
Cumulative Impact	No							
Reversibility	No							

8.5.9 Inadequate security

Operation of the facility will attract large numbers of people. This may also attract wrong doers, especially thieves, who may cause violent crimes resulting into loss of money, property and even human life. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Inadequate security	Without mitigation	Negative	1	4	8	4	52	
	With mitigation	Negative	1	4	2	2	14	
Mitigation Measures	• Security guards should be employed at the facility, both during the day and at night, to protect workers and the plant's property. • Better security measures such as check points should be set up at all entrance gates. There should also be adequate lighting systems to ensure security at the plant at night.							

Cumulative Impact	No
Reversibility	No

8.5.10 Excessive Resource Consumption and biomass effects

Without adequate investment in conservation practices, the plant may consume significant quantities of resources, especially power and water. Water consumption is related to plant requirements for manufacturing and housekeeping. Energy use is influenced by building siting, design, construction and operating patterns. For instance, designing facility buildings without ability to harness sun light for lighting, especially during the day, could lead to immense wastage of electricity. The use of a biomass boiler can have both positive (renewable energy source) and negative (deforestation or resource depletion if biomass is not sourced sustainably) implications. Biomass combustion emits air pollutants, such as particulate matter, nitrogen oxides, and volatile organic compounds, Land-use changes, fertilizers, and transportation can lead to greenhouse gas emissions, lead to water pollution through fertilizer runoff and wastewater. Health wise, the workers are exposed to high temperature, risks of fire burns, among others. This is not only environmentally undesirable but it is also financially burdensome. The fact that the plant needs energy for running the machines; it shows that the plant's energy requirements will be high. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **HIGH NEGATIVE** to **MEDIUM NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Excessive resource consumption	Without mitigation	Negative	3	4	8	4	65	
	With mitigation	Negative	1	4	4	4	36	
Mitigation Measures	• Employ energy conservation technologies like use of efficient equipment, low-wattage fluorescent bulbs, finishing the interior walls in white reflective paint to enhance lighting and save energy and maximizing use of natural sunlight within the spirits blending plant to the greatest extent possible. • Use water-saving equipment, including ultra-low-flush toilets, low-flow showerheads, infrared and ultrasonic sensors, water spigots, and pressure-control valves.							
	• Harvest rain water for use in the blending process to reduce on the consumption of underground water through a borehole. • Recycle water and apply it in non-critical areas like cooling process so that the amount extracted is reduced • Utilize efficient Combustion Technologies; • Ensure proper emissions Control Systems are in place • Provide workers with appropriate PPEs • Provide appropriate signages around the boilers • Properly manage wastes from the boilers							

Cumulative Impact	No
Reversibility	Yes

8.5.11 Water Quality alteration, soil contamination, and biodiversity loss

Potential for chemical spills (e.g., from fertilizers or acids) from the warehouse and dust from the grain the coffee processing units that could contaminate local water sources. Wastes generated from the site join the storm water drainage channel into local water course altering its quality. Improper handling or accidental leaks of fertilizers and acids can lead to soil degradation and contamination. The facility's construction and operation could also disrupt local ecosystems and wildlife habitats. This is due to vegetation clearance, fragmented habitats and reduced biodiversity. Chemical runoff from the warehouses and wastewater contaminates the nearby water sources, harming aquatic life. Chemical Use (Pesticides, herbicides, and fertilizers) harm non-target species and contaminate soil and water. The facility to be in existence will mean construction was done and the facility is operational. This indicates that biodiversity, water and the soil status will be highly affected. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **HIGH NEGATIVE** to **MEDIUM NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Water Quality alteration and soil contamination	Without mitigation	Negative	2	4	8	4	56	
	With mitigation	Negative	1	4	4	4	36	
Mitigation Measures	• Implement effective wastewater treatment systems. • Utilize water-saving technologies and practices. • Collect and store rainwater for non-potable uses. • Do regular water quality monitoring. • Construct sedimentation ponds to capture pollutants. • Develop and properly implement a waste management plan • Re-vegetate open grounds by ways of beautification and planting of trees							
	• Regularly test soil for contaminants. • Develop and effectively implement a chemicals management plan • Utilize environmentally friendly technologies in the processing units							
Cumulative Impact	No							
Reversibility	Yes							

8.5.12 Social cultural Impacts

Potential health risks to the nearby communities from emissions, chemical spills, or accidents involving hazardous materials. Possible impacts on local traditions and lifestyles, especially if the facility alters land use or access to resources. Community concerns about safety and environmental impacts could lead to

opposition, necessitating engagement and transparency from the facility operators. Increased social impacts will grow to a point of forced rejection of the project by the community, and authorities in the area thus forced project closure. With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **HIGH NEGATIVE** to **LOW NEGATIVE.**

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Air quality impacts	Without mitigation	Negative	3	4	6	4	52	
	With mitigation	Negative	1	4	2	3	21	
Mitigation Measures	• Carry out stakeholders' engagement in case of any concern that arises, • Involve stakeholders' decisions during final company decision making, • The proponent should use well-conditioned and serviced equipment which don't emit gases and also can burn fuel completely; • Properly manage all areas generating any form of pollution to the surroundings; • Machines generating dust should be regularly serviced; • Develop a dust management plan • Monitor regularly the gas capture units to check if it is not faulty. • It is recommended that regular air quality monitoring be conducted on the facility. • The generation and release of emissions of any type should be managed through a combination of: Energy use efficiency, Process modification, Selection of fuels or other materials, the processing of which may result in less polluting emissions and • Application of emissions control techniques.							
Cumulative Impact	Yes							
Reversibility	Yes							

8.6 CUMULATIVE IMPACTS

Cumulative impacts result when the effects of an action are added to or interact with other effects in a particular place and within a particular time. It is the combination of these effects, and any resulting environmental degradation, that is the focus of the cumulative impact analysis. While impacts can be differentiated by direct, indirect, and cumulative, the concept of cumulative impacts takes into account all disturbances since cumulative impacts result in the compounding of the effects of all actions over time. Thus, the cumulative impacts of an action can be viewed as the total effects on a resource, ecosystem, or human community of that action and all other activities affecting that resource. Cumulative impacts are also assessed in terms of the incremental effect that acts cumulatively with the effects of other actions, either past, existing or future.

8.6.1 Noise and Vibration Effects

Cumulative noise impacts are assessed in terms of traffic-related noise and a general increase in urbanization in the proposed area. The local communities and service providers may all lead to increase in generated noise. It is expected that the existing residents and companies within the project area will

no longer enjoy the levels of peace and tranquility currently that they have experienced for years. The cumulative impact can hence be both positive and negative.

8.6.2 Air Quality and Dust Effects

Implementation of the proposed project would result in short-term impacts to air quality associated with construction and long-term impacts associated with increased vehicle traffic.

These will be most felt by the existing residents and companies along the existing approach road. Implementation of appropriate mitigation measures will reduce potential short-term impacts related to construction; however, these will not completely mitigate them and may increase as the facility starts operating.

8.6.3 Traffic and Transport Effects

The development will include only one entrance from the road. This is likely to result in a cumulative impact of traffic over time as increasingly more residents and companies move into the area. Traffic disruption is also likely to increase with increase in project expansion and induced businesses in the project area.

9.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

9.1 Introduction

Environmental management is concerned with a planned, integrated programme aimed at ensuring that identified and unidentified impacts of the proposed development are contained and brought to an acceptable minimum. It provides confidence on the part of project planners that a reliable scheme will be put in place to deal with any contingency that may arise during all phases of development, from preliminary study to abandonment or decommissioning stage.

This Environmental Management Plan has the following specific long-term objectives:

- Achieve, enhance and demonstrate sound environmental performance built around the principle of continuous improvement;
- Ensure compliance with legislation;
- Ensure compliance with environment company policy;
- Integrate environment fully into the business;
- Rationalize and streamline existing environmental activities to add value in efficiency and effectiveness;
- Encourage and achieve the highest performance and response from individual employees and contractors;
- Provide standards for overall planning, operation, audit and review;
- Enable management to establish environmental priorities;
- Be applicable throughout the organization;
- Hold early consultations with communities and regulating authorities to ensure hitch free operations.

Table 9.1 & 9.2 Presents the Environment and Social Management Plan during construction and operation phases of the proposed project.

Table 9.1: Construction phase Environmental and Social Management Plan

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Fire risk	Develop and effectively implement a fire emergency management plan	Fire free zone	Fully fledged fire management systems	Throughout the construction phase	Contractor Developer	Fire drills
Occupational Health and Safety Impacts	Personnel should be provided with special PPE for use, A first aider and first aid boxes should be available on site to handle minor accidents, Ensure that at all times there are quick means of ambulating victims to the nearest health facilities. Safely manage hazardous materials and situations Recruit a health and safety officer	Safe working environment	Record of injuries Safety signs Presence of a safety committee	Throughout the construction period	Contractor Occupational health and safety department, Environmental Officer	Occupational health and safety training
Generation of solid waste	Prepare a site waste management plan. This should include the designation of appropriate waste storage areas, collection and removal schedule.	No litter	Waste collection and storage facilities	Throughout the construction period	Contractor, NEMA, Environmental Officer	Waste management training

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Generation of Noise	Use well-conditioned equipment. Use noise mufflers on relevant equipment. Develop and effectively utilize a noise management plan	Zero noise	Record of complaints	Throughout the construction period	Contractor, NEMA and Environmental Officer	None
Drainage modification	A well-planned drainage system should be developed around the site to direct runoff to the neighboring channel so as to minimize the possibility of flooding on the site or its neighborhoods.	Minimal run off	Quantity of the run off No flooding water	Throughout the construction period	Contractor, proponent, Environmental Officer	None

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Air Emissions	Stockpiles of fine materials should be wetted or covered with tarpaulin during windy conditions. The proponent should use well-conditioned and serviced equipment.	Permissible emission levels and a safe working environment	Record of dust emission levels compared with the threshold level Record of complaints Record of respiratory infections	Throughout the construction period	Contractor and proponent	Traffic regulations and code of driving including speed limits.
Traffic Disruption	Transporting construction materials shall be scheduled for off-peak traffic hours. This will reduce the risk of traffic congestion and road accidents on the surrounding road. Flagmen shall also be employed to control traffic and guide vehicles along the access roads to the site. Develop and implement a traffic management plan	No traffic disruption and accidents	Record of complaints. Record of accidents. Traffic signs	Throughout the construction period	Contractor	Driver's code of conduct

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Income to construction material generation	Pay suppliers promptly	Local suppliers benefit from the purchases made from them	Proportion of material bought from local suppliers	Throughout the construction period	contractor	None
Creation of employment opportunities	Prompt payments	Local people getting jobs	Number of locals employed	Throughout the operation period	Proponent and Facility manager	None
Generate Revenue to Utility Companies	The contractor should ensure that the utility companies are promptly paid.	Utility companies benefit from the construction	Amount of money paid to be utility companies	Throughout the construction period	Contractor	None

Table 9.2: Operational phase Environmental and Social Management Plan

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Job creation	Prompt payments	Local people getting jobs	Number of locals employed	Throughout the operation period	Proponent and Facility manager	None
Increase Government Revenue	Ensure prompt payments	Increase government's and utility company's revenue	Amount paid to government and utility companies	Throughout the operation period	Proponent and management	None

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Waste generation	Prepare a site waste management plan. Solid waste should be sorted by type and kept in different clearly labeled containers, and recycled or reclaimed where possible;	No litter	Waste collection and storage facilities	Throughout the operation period	Project Management, proponent, NEMA and EO	Proper waste management practices
Fire risk	A fire management plan will be put in place with fire extinguishers available around the entire ware house	No fire outbreak	Record of fire outbreaks	Throughout the operation period	Project management, proponent, NEMA and EO	Adequate training about Fire safety, prevention and control
Traffic Disruption	Develop a code of conduct for track drivers to ensure safety of other road users.	No accidents	Record of accidents	Throughout the operation period	Project management, proponent and EO	Training in traffic laws and guidelines

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Air emissions	A speed limit for track drivers should be introduced and enforced to reduce dust generated by over speeding Regular maintenance of the machines Control dust from the facility	Controlled emissions	Record of complaints	Throughout the operation period	Project management, and EO	None
Occupational hazards	Provide employees with protective gear	No accident, injury and disease	Cases of accidents, injuries and diseases	Throughout the operation period	Project management and EO	Occupational health and safety practice training
Inadequate security	The facility should have a perimeter fence Ensure fulltime presence of security guards and maintenance of security lights.	Safe environment	Record of crime	Throughout the operation period	Proponent and Manager	None
Excessive Resource consumption and biomass effects	The proponent should employ water and energy conservation technologies Develop and implement a biomass effects management plan	Optimal use of water, energy and biomass	Quantity of water, energy, and biomass used	Throughout the operation period	Proponent	Boiler use and management trainings

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
Water quality, soil contamination and biodiversity loss	Implement effective wastewater treatment systems. Utilize water-saving technologies and practices. Collect and store rainwater for non-potable uses. Do regular water quality monitoring. Construct sedimentation ponds to capture pollutants. Develop and properly implement a waste management plan Re-vegetate open grounds by ways of beautification and planting of trees	No changes to water and soil quality with maintained biodiversity	Soil and water quality tests, existence of biodiversity	Throughout the operation phase	Developer LC I leader Mukono Municipal council	none
Cultural-social impacts	Carry out stakeholders' engagement in case of any concern that arises, Involve stakeholders' decisions during final company decision making, The proponent should use well-conditioned and serviced equipment which don't emit gases and also can burn fuel completely; Properly manage all areas generating any form of pollution to the surroundings; Develop a dust management plan	Good relationship with the community	No issues from the community	Throughout the operation phase	Developer LC I leader Mukono Municipal council	none

Impact	Mitigation/Enhancement Measure	Desired Outcome	Indicator (s)	Timing	Responsibility	Capacity Building Requirements
	It is recommended that regular air quality monitoring be conducted on the facility.					
Generation of noise	• Workers operating equipment that generates noise should be equipped with noise protection gear. • Machines should be regularly serviced to ensure high operational efficiency thus less noise. • Regular servicing of all equipment to ensure high operation efficiency thus Less noise and vibration;	Noise free environment	No complaints from the workers and neighbors on noise	Regularly	Mukono Municipal council HSE officer	Safe use of PPEs

9.2 Implementation Schedule and Reporting

9.2.1 Institutional Arrangements

The proponent will be responsible for implementing the ESMP throughout the operation of the facility. He will also be overall in-charge and responsible for the overseeing implementation of ESMP. The facility manager and facility supervisor will be responsible for monitoring the ESMP implementation. The facility manager will be specifically responsible for implementation of mitigation measures proposed in this ESMP. They will undertake regular visits to the site for monitoring the ESMP compliance. They will also be required to carry out regular monitoring of ESMP implementation and providing progress report to staff member (Environment, health and safety dept.) responsible for environmental compliance. Legal Officer will do counter checking compliance of the ESMP within the National and International legal framework, Environment Health and Safety will carry out evaluation or/and auditing of ESMP and activities involved with operation of the proposed Residential Apartment.

9.2.2 Monitoring and Reporting

A comprehensive monitoring plan for ESMP comprising monitoring parameters, frequency and responsibility of monitoring is given in Table 9.2 Compliance to the proposed monitoring plan will be affected through the identified parties to achieve the objectives of ESMP.

Table 9.3: Reporting plan for the Proposed development

Reporting Frequency	Reporting Responsibility	Review and Decision By
Monthly	Facility supervisor	Facility manager
Monthly	Facility manager	Managing Director
Annual	External Consultant	Regulatory authorities-NEMA

9.2.3 Training

All employees and contractors shall receive training on the contents and requirements of the ESMP. Thereafter, regular specific environmental trainings shall be carried out depending on the emerging environmental concerns.

9.3 Decommissioning, Abandonment and Restoration Plan

The proposed development plan is designed to last for quite a long time, at the end of the project life span; facility management shall invoke the decommissioning and abandonment programme and procedures as shown in the table 9.3 below. The tasks shall include the following:

- Ensuring that the decommissioning and abandonment are done with the same care and respect for the environment with which the project was designed, constructed and operated.
- Assessing residual impacts that the project has had on the environment during its life span.
- Monitoring the abandoned environment.
- Restoring the environment as much as possible to its original state.

Facility management shall maintain a record of the abandoned facilities and a copy will be given to the relevant authorities who include NEMA, Mukono Municipal Council, the host community and other stakeholders.

9.3.1 Decommissioning Plan

As earlier mentioned, the decommissioning plan provides actions to be undertaken to ensure the protection of the environment and human health in the case that the facility is at a later date abandoned or seizes to operate, whether after a short time or a long period of time. The proposed plan also provides for the rehabilitation of the project site. Therefore, the entire facility and associated component structures are demolished and all the byproducts managed as detailed in the decommissioning plan.

Table 9.4 The Decommissioning plan.

PARAMETERS TO BE CONSIDERED	PLAN/ ACTIVITIES TO BE UNDER TAKEN DURING ABANDONMENT
1. Listing of the activities abandoned	These shall include: – Residential apartments block, paved forecourts, generator house, machines, sanitary facilities, drainage structures and perimeter wall. – Electric/ power/ water supply lines (if any); – Abolitions; and – Other peripheral shelters and facilities
2. Description of site rehabilitation/ restoration	These include major openings such as pipelines and electric conductors that have been installed during reconstruction shall be properly restored to prevent any accidents that might happen within the site.
3. Description and discussion of waste produced from abandoned activities	The expected types of wastes that could be produced during the demolition and abandonment phase are: a) Concrete blocks/ slabs/ bricks; b) Wood materials; c) Metals and other steel materials; d) Plastic and metal pipes used in water supply; e) Electrical conduits; f) Any unused fuel or oils and parts; and g) Sewage waste.
4. Description and discussion of waste management	- Demolished concrete blocks/ slabs shall be hauled out from the site and used as backfill materials to other construction projects earlier identified. - Metal and steel materials shall be recovered and sold to those dealing in metal scrap for reuse and recycling. - Plastic materials shall likewise be recovered and sold to those dealing in plastic scraps for reuse and recycling. - Wastes that are not reusable and recyclable shall be properly disposed to the designated dumping areas such as landfill sites. - Sewage shall be handled by the licensed sewage collectors while oil hazardous waste shall be handled by licensed and experienced firms.

PARAMETERS TO BE CONSIDERED	PLAN/ ACTIVITIES TO BE UNDER TAKEN DURING ABANDONMENT
Description and management of residual site	The removal and salvage of above and below ground components and wastes will remain at some pits. Therefore, there will be need to re-grade and reseed disturbed areas. Earthwork and top soil will be required to restore the derelict site to the near pre-construction state or as for the contiguous environment, including site contours or ground level.

10.0 CONCLUSION

The proposed project design has integrated mitigation measures with a view to ensuring compliance with all the applicable laws and procedures. Some potential negative impacts have been identified for the project; most of them are short term and relate mainly to site preparation and construction. Key potential negative environmental impacts include: safety and health, disruption of traffic, generation of noise, generation of waste, generation of dust and fire risks.

During project implementation and occupation, Sustainable Environmental Management (SEM) will be ensured through avoiding inadequate/inappropriate use of natural resources, conserving nature sensitively and guaranteeing a respectful and fair treatment of all people working on the project, general public at the vicinity and inhabitants of the project.

In relation to the proposed mitigation and environmental management measures that will be incorporated during construction and operation phases; and the developments' input to the proponent and the general society, the proposed project is considered beneficial and important. It is our considerable opinion that the proposed development is a timely venture that will subscribe to proponent's timely investment.

Most of the identified negative impacts are localized and of short-term nature. Therefore, if the recommended mitigations measures are adequately implemented and monitored, the proposed project's benefits should outweigh its costs. It is therefore recommended that the environmental aspects of the project be approved to pave way for the project implementation.

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Appendices

Appendix A: Proof of land ownership

KYG.BLK.112

LEASEHOLD REGISTER

Volume 4138 Folio 25

THE REPUBLIC OF UGANDA

REGISTRATION OF TITLES ACT

CERTIFICATE OF TITLE

DESCRIPTION OF LAND

The Leasehold land edged red on the plan attached hereto and situate and known as follows:-

PLOT
~~Street~~ Number: 27
Road Name: KYAGGWE BLOCK 112
~~Township/Municipality/City~~: AT. KOLO
District: MUKONO
Area: APPROX. 1.890 HECTARES

TERM from 21ST SEPT. 2010 for ---99-------- years ~~and~~ ---------- months at the rent and subject to the covenants and conditions contained or implied in Lease Number bound up herewith and to the incumbrances (if any) entered in the Incumbrance Register.

Easements

PROPRIETORSHIP

Date, time and Inst. No.	Name and Address of Proprietor	Signature of Registrar
REGD. 11/10.2010 AT. 9.50AM INST. MK0116084	EXPORT TRADING COMPANY (U) LTD OF P.O.BOX 33336, KAMPALA.	Registrar of Titles

Appendix B: Certificate of incorporation

NO. 44122

THE REPUBLIC OF UGANDA

Certificate of Incorporation

(Under section 16 (1) of the Companies Act)

I CERTIFY that ..... EXPORT TRADING COMPANY (U) LIMITED .....

.....

has this day been incorporated with Limited Liability.

Dated at Kampala, this ..... 14TH ..... *day*

of ..... APRIL ..... *the year* ..... 2000. .....

..... RITA BBANGA-BUKENYA (MRS.) .....

Registrar of Companies.

ASST.

Printed by Uganda Printing and Publishing Corporation

Appendix C: Soil test results

MAKERERE
P.O. Box 7062 Kampala, Uganda
Fax: 256-041-531061

UNIVERSITY
TEL: 256-041-540992
Email:
chemistry@chemistry.mak.ac.ug

DEPARTMENT OF CHEMISTRY

28/10/2024

SOIL ANALYSIS REPORT

PROJECT **ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED AGRO PROCESSING PLANT AND WAREHOUSES**

LOCATION **KOLO CELL,NANTABULIRWA WARD,GOMA DIVISION,NAMANVE INDUSTRIAL PARK**
0.35031,32.69056

1.0 BACKGROUND

This is to certify that soil sample from the above source submitted has been analyzed with the following methods and the corresponding results were obtained

1.1 METHODS OF ANALYSIS

1.1.0 Soil Texture Determination by Hydrometer Method

Calgon (sodium hexametaphosphate) Solution, 10%

Dissolve 100 gm of calgon in 1 litre of distilled water. This solution should not be kept over one month, when too old it loses its dispersing efficiency because it will be converted to another compound.

Procedure

a. Weight out 50 g of air dry < 2mm soil (100 gm in case of very sandy soil) into a 400 ml beaker.

b. Saturate the soil with distilledwater and add 10 ml of 10% Calgon solution. Allow to stand for 10 minutes
c. Transfer the suspension to the dispersing cup and make to the mark in the cup with distilled water
d. Mix the suspension for 2 minutes with an electric high speed stirrer. Use ordinary bottles if a cup is not available. Shake the suspension overnight if no stirrer is available.

e. Transfer the suspension into a graduated cylinder and rinse remaining soil into the cylinder with distilled water. Insert the hydrometer into the suspension and add water to 1130 ml, then remove the hydrometer.

f. Cover the cylinder with a tight-fitting rubber bung and mix the suspension by inverting the cylinder carefully ten (10) times. Note the time.

g. Quickly add 2-3 drops of amyl alcohol to the soil suspension in order to remove froth and after 20 seconds place the hydrometer gently into the cylinder

CHEMISTRY DEPARTMENT KAMPALA UGANDA MAKERERE UNIVERSITY

h. At 40seconds, take a hydrometer reading and measure the temperature of the suspension.
i. Repeat step 6 (mixing of the soil suspension 10 times) and allow the cylinder to stand un disturbed for 2 hours.
j. After 2hrs take the hydrometer and temperature readings.

k. Make the necessary temperature corrections (Table 5.1). Temperature affects the hydrometer readings and, because the hydrometer has been calibrated at 68°F (20°C), either correction factors must be Applied or the determination conducted in a temperature controlled room kept at the correct temperature.

%Sand. - After 40 seconds, the sand has settled and the hydrometer reading reflects the grams of silt + clay in 1 litre of the suspension. To calculate the amount sand present in 1 litre of the suspension, subtract this value from the original sample weight. For example, if the hydrometer reading after 40 seconds corrected for temperature is 18.0 g/litre, then silt + clay weigh 18.0 g in the 1 litre soil suspension. Therefore, the sand weighs 50.0 – 18.0 = 32.0 g in the 1 litre suspension (of the original 50.0 gm air-dry soil sample). The percentage sand is calculated by dividing the sand content (32 g) by the total (50 g) and multiplying by 100 as follows

% Clay. After 2 hours, the silt has settled. The hydrometer reading now reflects the clay content of the original suspension. For example, if hydrometer reading after the temperature correction is 4.7 g/litre, then the percentage of clay in the soil is:

%Silt. The silt content is calculated by subtracting the sum of the clay and sand contents from 100%

Soil texture. Once the sand, silt and clay distribution is measured, the soil may be assigned to a texture class based on the soil texture triangle

1.1.1 Bulk Density Determination by the Soil Infill Method

If soil conditions are such that it shrinks and swells, the infill method may be employed:

- In a vessel approximately 10 cm x 10 cm x 10 cm. dry the soil at 105°C for 24 hr and weigh, (W).
- Fill the vessel with dry coarse sand from a known volume of sand. Make sure that the sand surface is level with the adjacent soil surface. Record the volume of sand remaining and hence calculate the volume used to fill the hole, V.

Bulk density (g/cm^3) = Dry Weight of removed soil (g) /Volume of replacement sand (cm^{-3})

1.1.2 Organic Matter Determination

Weigh 10 ± 0.1 g of well mixed air dry « 2 mm) manure or compost sample of a known moisture content in a dry porcelain or nickel crucible. Heat slowly in a furnace (raising the temperature setting in steps (100, 200 and 550°C). The final temperature setting of 550°C should be maintained for 8 hours.
Remove the crucible containing a grayish white ash. Cool in desiccators and weigh

The percentage ash and organic matter are calculated by the differences in weight of the crucibles before and after combustion as follows:
%ash = [(w3-W1)/(W2-W1)]x100
And % organic matter = 100-%ash

Where W1 = the weight of the empty, dry crucible; W2 = the weight of the dry crucible containing manure; and W3 = the weight of the dry crucible containing manure following ignition. Note that the weight of the ash = W3 – W1.

1.1.3 Soil PH and Electroconductivity Determination

1. Add 50 ml deionised water to 20 ± 0.1 g soil.
2. Stir the mixture for 10 minutes; allow standing for 30 min, stirring again for 2 min.
3. Measure the pH of the soil suspension
4. Allow to settle for 1 hr then measure the conductivity of the supernatant liquid. For samples with an EC > 1.0 mS/cm consider saturated paste extract analysis.

5. The Electroconductivity measurement identifies soils which are potentially saline.
6. The Electroconductivity of the saturated paste extract is measured to determine the level of salinity.
7. Dissolve 0.7456 g of KCl in 1000 ml water: 1.412 mS/cm at 25°C
8. Dissolve 7.456 g of KCl in 1000 ml water: 12.900 mS/cm at 25°C.
9. Weigh about 300 ± 25 g soil into a plastic container.
10. Add water to the soil with stirring until it is nearly saturated.
11. Allow the mixture to stand covered for several hours to permit the soil to imbibe the water, and then add more water to achieve a uniformly saturated soil-water paste. At this –point the soil paste glistens as it reflects light, flows slightly when the container is tipped, slides freely and cleanly off a spatula, and consolidates easily by tapping or jarring the container after a trench is formed in the paste with the slide of a spatula.
12. After mixing, allow the sample to stand (preferably overnight, but at least 4 hr), and then recheck the criteria for saturation. Free water should not collect on the soil surface, nor should the paste stiffen markedly or lose its glisten. If the paste is too wet, add additional dry soil to paste mixture.
13. Transfer to a Buchner filter funnel fitted with highly retentive filter paper. Apply vacuum, and collect the filtrate. If the initial filtrate is turbid, refilter.
14. Measure the conductivity of filtrate against that of the standards.

1.1.4 Digestion of samples for the determination of N-total (finally measured as NH_4), P, Na, K, Ca, Mg and Zn with H_2SO_4 Se/salicylic acid and H_20_2

This digestion procedure is for the determination of N-total (finally measured as NH_4), P, Na, K, Ca, Mg and Zn.

Principle

The large part of organic matter is oxidized by H_20_2at relatively low temperature. After decomposition of the excessH_20_2 and evaporation of water, the digestion is completed by conc H_20_4 at approximately 300°C under the influence of Se as a catalyst.
Salicylic acid is used to form nitro-salicylic acid compounds in order to prevent loss of free nitrate.
Since $CaS0_4$may be formed when cooling after completing the digestion it is necessary to wait 24 hours after the addition of water before Ca analysis. During this period the $CaS0_4$will dissolve.

Apparatus

Heating block, for temperatures up to 300°C, with holes for tubes. Destruction tubes made of glass, acid rinsed and dried.

Reagents, all p.a. grade

a) Conc. H_20_4
b) HP_2 30%
c) Se powder
d) Salicylic acid, powder

e) Preparation of H_2O_4– Se mixture

f) Heat 250 ml. of conc. H_2O_4 on a hot plate until fumes will appear (± 300°C), add 0.88 g Se while mixing. Keep the temperature high. The originally dark coloured suspension turns via green-blue into a clear yellowish solution. Cool down.

g) Digestion mixture

h) Dissolve 7.2 g of salicylic acid in 100 ML H_2O_4– Se mixture at room temperature. The colour will change from blue to yellow/greenish while mixing. This solution should not be stored for more than 48 hours.

Procedure

i. Weight about 0.3 g with an accuracy of 0.001 g of the dried material and transfer quantitatively to the destruction tube (do not weigh less than 0.1 g)

ii. Add 2.5 mL digestion mixture; swirl carefully until all the material is moistened. Prepare also 2 blanks and 2 reference samples

iii. Allow standing for at least 2 hours, during these period nitro-salicylic acid compounds will be formed

iv. Place the tube at 100°C for at least 2 hours in an oven, during this period the nitrosalicylic compounds will be reduced

v. Cool the tubes to room temperature and add successively three 1 mL aliquots of H_202 mix carefully after each addition. The reaction is violent, wait until the reaction with H_202 has ceased (± 10 sec) before adding the next portion.

vi. Place the tube again in the preheated block and heat 330°C. In the beginning the rack with tubes should be lifted up from time to time to prevent loss of liquid during boiling. The digestion is considered complete when the digests have turned colourless or light yellow; this usually takes about 2 hours

vii. The digest is diluted with about 15 mL of water, add about five pumice grains, boil (lower the rack with tubes a few cm in the heating block, be careful!) and after cooling made up to 50 Ml in a volumetric flask. Mix well, let particles settle for 24 hours, before analysis

viii. Dilute this digest 20 x prior to N and P analysis with the Tecator-Aquatec system. Calibrate this system with a standard serie of: 0.30 – 0.50 – 0.70 – 1.00 – 1.50 – 2.00 and 2.50 mg $P0_43$ P/L, or

6.00 – 8.00 – 10.00 and 12.00 mgNH/ - *NIL*

Remarks:

- Before weighing, the material should contain a moisture content of 1-2%, so store the material in a dessicator after drying or dry again at 70°C before weighing. If this is not done, the sample may contain up to 10% moisture. The use of cone. H_2S0_4 then causes a raise in temperature, which will result in a loss of nitrate.

- The sample is normally dried at 70°C in a well-ventilated drying oven during 24 hours. The material is then finely ground, in order to obtain a homogeneous sample from which representative subsamples can simply be taken. As a rule of thumb, the milled material should pass 1 mm sieve when less than 1 gram is to be weighed out. Both drying and milling should be carried out with equipment that does not release elements for which the samples are to be analysed.

- The dried and milled samples should be stored in a cool and dry placein tightly stoppered flasks or in sealed polythene bags, protected against direct sunlight. During storage, the material may attract moisture so that the drying procedure at 70°e must be repeated just before weighing out a sample for analysis.

- The analytical results are often referred to "oven-dry" material, which means dried at 105Oc. For

Comparability, therefore, the moisture content should be determined by drying at 105°C and taking the difference with the 70°C dried sample. The drying at 105°C should be done, however, with a separate sample, since this operation may change its chemical composition.

1.1.5 The destruction of soil and sludge for the determination of Cd, Cr, Cu, Pb, Mn, Fe and Zn with atomic absorption technique

1.1.5.1 *Apparatus*

- Destruction-bloc with destruction tubes of borosilicate glass
- Nichiryo pipet model 3100 with removable tips

1.1.5.2 *Reagents*

All reagents with a low percentage of heavy metals

- Hydrochloride acid, 37% HCl
- Nitric acid, 65% HN03
- Hydrogen peroxide, 30% H_2O_2
- Pumice

1.1.5.3 Glassware

All rinsed with 1 + 1 HNO_3
Measuring cylinder, 500 mL
Measuring cylinder, 50 mL
Funnels with a diameter of 6 cm
1 L flask for the acid-mixture, see note
Volumetric flasks of 250 mL

1.1.5.4 Procedure

a) Transfer not more than 1.250 g of a ground air-dried sample to the destruction tube, add 50 mL H_2O and three boiling chips
b) Add 50 mL HCl/HNO_3, 3:1, mix and place a funnel on top of the destruction tube
c) Heat the tube to 100°C and maintain for 1 hour
d) Heat to 125°C and maintain for 15 minutes
e) Heat to 150°C and maintain for 15 minutes
f) Heat to 175°C and maintain for 15 minutes
g) Heat to 200°C and add, if necessary (if no volume is left), 5 mL HNO_3
h) Concentrate to about 5 mL
i) Add, after cooling, 1 mL 30% H_2O_2 and destruct for 10 minutes. Repeat 1 x
j) Add, after cooling, 3 mL 30% H_2O_2 and destruct again for 10 minutes
k) Add 50 mL water and 25 mL HCl, mix and heat till boiling

l) Cool and transfer the whole sample to a 250 ml. volumetric flask, fill up to the mark, mix and let settle during 8t least 15 hours

m) Measure the absorbance of the clear supernatant.

Note: 1.prepare a fresh acid-mixture and do not close the container

- Duration of procedure steps 1-7 at least 7 hours
- Determine two blanks
- Sludge samples will decompose almost completely

Amount of ions = $\frac{C \times D}{M}$ Where C = Concentration of sample solution
M = mass of sample in grams
D = dilution factor

Or Amount of ions = $\frac{C \times V_1}{V_2}$ Where C = Concentration of sample solution (mg/l)
V_1 = final volume (250)
V_2= volume of sample

Or Percentage (%) = $\frac{\text{mg/l x final volume (lt)}}{\text{Wt(g)}} \times 100$

➢ The concentration of Nitrites (NO_2), Nitrates (NO_3), Ammonia (NH_3), Phosphates (PO_4^{3-}), Sulphates (SO_4^{2-}), were then measured using the UV – visible Spectrophotometer test procedures (Shimadzu model 1601) / methods at various wavelengths Viz.: - NO_2 λ_{520nm}& detection limits 0.001, $NO_3\lambda_{570nm}$& detection limits 0.001, NH_3 λ_{640nm}& detection limits 0.01, and PO_4^{3-} λ_{640nm}& detection limits 0.01, $SO_4^{2-}\lambda_{520nm}$& detection limits 0.01.

❖ The different metal ions were analysed using Shimadzu model 6200 Atomic absorption spectrometer (AAS), after digestion and taking the measurements at different wavelengths Viz.:-
Na λ_{589nm}& detection limits 0.01, Ca $\lambda_{422.7nm}$& detection limits 0.01, Mg $\lambda_{285.2nm}$& detection limits 0.01,K $\lambda_{766.5nm}$& detection limits 0.01, Pb $\lambda_{283.3nm}$& detection limits 0.01, Fe $\lambda_{248.3nm}$& detection limits 0.01, Cu $\lambda_{324.8nm}$& detection limits 0.01, Zn $\lambda_{213.9nm}$& detection limits 0.01, Al $\lambda_{309.3nm}$& detection limits 0.01 and Mn $\lambda_{279.5nm}$& detection limits 0.001.

❖ Chlorides were measured using Mohr's method with $AgNO_3$.

2.0 ANALYSIS RESULTS

Upon the analysis the following mean – results were obtained

Parameter	Mean - Results
P^H	6.82
Conductivity [µs/cm]	239
NO_3 [mg/kg]	36.0
Ca [mg/kg]	22.0
Mn [mg/kg]	0.24
Cl [mg/kg]	34.0
Cu [mg/kg]	0.23
SO_4 [mg/kg]	40.0
PO_4 [mg/kg]	46.0
Fe [mg/kg]	1.27
Pb [mg/kg]	0.05
NH_3 [mg/kg]	1.12
Mg [mg/kg]	26.0
Na [mg/kg]	12.0
K [mg/kg]	4.0
Cd [mg/kg]	0.00
Ni [mg/kg]	0.13
Zn [mg/kg]	0.01
Hg [mg/kg]	0.00
Oils & grease [%]	0.0
Bulk Density [g/cm^3]	1.01
Organic matter [%]	2.87
% Sand distribution in the soil	38.0
% Silt distribution in the soil	40.0
% Clay distribution in the soil	19.13
Soil texture class	Loam soil

REMARKS

The soil composition profile of the sample submitted for analysis was found to be loam soil and of simple structure.

ANALYST.....

RUHARARA BUDIGI

CHEMISTRY DEPARTMENT KAMPALA UGANDA MAKERERE UNIVERSITY

Appendix D: Water test results

NATIONAL WATER AND SEWERAGE CORPORATION
CENTRAL LABORATORY—Plot M11,old Portbell Rd,Bugolobi
P.O. Box 7053, KAMPALA,Email,External .services@nwsc.co.ug

CERTIFICATE OF ANALYSIS

Document No:NWSC/WQ/QF/42.3A

Project:ESIA for proposed Agro processing plant and warehouses
Sample Description:L:Kolo Cell
P:Nantabulirwa,S/C:Goma division,Namanve industrial Park
Sample Recieved Date:28/10/2024
Sampled By:Client's Staff
Sample Number:23/104//2024/C/B

Invoice No:134/INV/2024/126-QUO

Parameters	Units	Test Result	National Standards for UnTreated water	Test Method
Alkalinity Total	mg/l	28	500	APHA-23208
Bact:Escherichia Coli IDEXX	CFU/100mL	6	0	Colilert-18/APHA-9222B
Bi-Carbonates	mg/l	108.0	500	APHA-23208
Calcium ; as Ca2+	mg/l	10.20	150	APHA-311A
Chlorides-Cl^-	mg/l	6.0	500	Hach8206
Colour(True)	TCU	148	50	Hach 8025
Copper	mg/l	0.01	2	APHA-8288
Electrical Conductivity (EC)	µs/cm	128	2500	APHA-2510
Fluoride :F^-	mg/l	0.15	1.5	Hach -8029
Hardness: Total	mg/l	30.0	600	APHA-2340C
Iron:Total	mg/l	0.18	0.3	APHA3111A
Magnesium : as $Mg2^+$	mg/l	5.40	100	APHA-3111A
Manganese	mg/l	0.013	0.1	APHA8288
Nickel:as Ni+	mg/l	0.0	0.02	APHA-8288
Nitrate-N	mg/l	3	45	Hach 8192
pH(Physical Chemical)	-	6.75	5.5– 9.5	APHA-4500H 8
Phosphorus	mg/l	0.01	1.0	Hach3025-31
Potassium:as K+	mg/l	3	50	APHA-9964-1
Sodium:as Na+	mg/l	10	200	APHA-9964-1
Sulphates:SO_4^{2-}	mg/l	4.0	400	Hach 8051
Total dissolved solids (TDS)	mg/l	88.0	1500	APHA-2540C
Total suspended solids (TSS)	mg/l	14	0.0	APHA-25400
Turbidity	NTU	26.90	25	Hach 8195

Remarks; The sample tested showed uncomplying physio-chemical & microbiology characteristics as provided for by the National Standards for untreated portable water

AUTHORISED BY.; Manager,Central Laboratory Services.....
APPROVED BY: Senior Manager-Water Quality Management .....

*** The NWSC certificate of analysis by no means constitutes a permit to any person undertaking to conduct business. Results are for the sample as received at the laboratory premises.

NATIONAL WATER & SEWERAGE CORPORATION
REC. NO.
SIGN:
DATE:31/10/2024
EXTERNAL SERVICES

Appendix E: Stakeholders consultation record

Stakeholder consultation record with the community

STAKEHOLDER CONSULTATION RECORD

PROJECT	ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR A PROPOSED ESTABLISHMENT OF A GRAIN, COFFEE PROCESSING PLANT AND STORAGE WAREHOUSES IN KOLO CELL, NANTABULIRWA WARD, GOMA DIVISION, MUKONO MUNICIPALITY, MUKONO DISTRICT.
AGENCY	
DATE	

No.	Name /Designation	Views	Contact/ Signature
	Basomye Peter (Resident)	No problem with both the plant and ware houses.	0748410109
	Mulungi peter (Neighbour)	No issue about the company	0707637036
	Mwesigwa Jamira (Resident)	-Sometimes, there is traffic jam as their vehicles take long at the gate before they open up - Vehicles park along the ways and bring about jam -Many of workers are from the surrounding residents	0735250611
	Bwire David (Neighbour)	-Much fumes from the company and these are husks. - The company has not sensitized people about fire and there was a fire outbreak but the company there was no way of handling	0705206409

	Isabirye Ashraf (Neighbour)	- Workers are paid little money. - There is no restaurant inside or any canteen so workers eat out for lunch.	0788298294
	Kizito Segya (Resident)	- The company vehicles cause traffic jam along the road.	0764157804
	Owor David (Neighbour)	No complaint	0784 23444

Consulted by: NAMBWULA ANNET Signature:

STAKEHOLDER CONSULTATION RECORD

PROJECT	ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR A PROPOSED ESTABLISHMENT OF A GRAIN, COFFEE PROCESSING PLANT AND STORAGE WAREHOUSES IN KOLO CELL, NANTABULIRWA WARD, GOMA DIVISION, MUKONO MUNICIPALITY, MUKONO DISTRICT.		
AGENCY			
DATE			
No.	Name /Designation	Views	Contact/ Signature
	Bukenya Al. (Neighbour)	No issues about the company.	0708611086 Bukenya.
	Mirembe Irene (Neighbour)	No complaint about the company	07
	Obera Moses (Resident)	The workers are paid less money.	0784099644
	Amanya Enock Neighbour	No complaint	0777469442

	Obbo Simeo	Delay to pay workers	0782719620
	Ayebale Ivan (Neighbor)	- The drainage around the road is not good, the roads flood around the company - Dust from the company into the population.	077637071[illegible]
	Wafula Phillip (Resident)	- Dust from the company. - There are no safety gargets for casual workers so any time they can lose their lives	0740610935
	Aiwomo Elizabeth LC1 Secretary	- Noise pollution. - Air pollution.	0741989[illegible] LC1 CHAIRPERSON KKOLO CELL NANTABULIRWA WARD GOMA DIVISION MUKONO MUNICIPALITY 28/10/24

Consulted by: NATABAKULA ANNET Signature: .....

Consultation record with Mukono Municipal Council

28/10/2024

	CONSULTATIONS AT MUKONO MUNICIPAL COUNCIL		
01.	Musenguzi George 0772956502	01. The developer should develop a waste mgt plan and effectively implement it. 02. Utilize services of licensed waste handlers in both transportation and collection. 03. The developer should put into action the site ESMP 04. Proper implementation of measures to manage OSHE 05. Consultations with community members should also be done.	On phone consultation 0772956502 at 4:30pm

Consulted by: Bagonza G. .... Signature: [signature]

Consultation record with UNBS

UGANDA NATIONAL BUREAU OF STANDARDS

Headquarters
Plot 2 - 12, Bypass Link,
Bweyogerere Industrial &
Business Park,
P.O. Box 6329 Kampala
Web: www.unbs.go.ug

Telephone: +256 417 333250
+256 417 333251
+256 417 333252
Telefax: +256 414 286123
Helpline: 0800 133133

Ref: BO/SDD/186 **03rd October, 2024**

Fulcrum Environmental Engineers Ltd.
2nd Floor Rm 6, Daaki Plaza Gayaza, Ntinda Road.
P.O Box 106816
Kampala.

Attention: Mr. Muwonge Edwine

Subject: Recommendations Regarding the Environmental and Social Impact Assessment for the Proposed Grain and Coffee Processing Plant in Kolo Cell, Mukono Municipality

Thank you for your letter dated 12th September 2024, concerning the Environmental and Social Impact Assessment (ESIA) for the proposed grain and coffee processing plant and storage warehouses in Kolo Cell, Mukono Municipality. The Uganda National Bureau of Standards (UNBS) offers the following recommendations for consideration:

1. **Chemical Storage and Food Safety:** To prevent contamination and ensure food safety, it is crucial to maintain strict segregation between chemical storage and grain storage areas. Chemical spills or leaks can compromise the quality and safety of food products. Implement robust storage practices and protocols to mitigate these risks and protect the integrity of the grain and coffee intended for consumption.
2. **Conformity Assessment for Imports:** Please note that the importation of certain raw materials, industrial spare parts, and machinery for the processing plant will be subject to Pre-Export Verification of Conformity to Standards (PVoC), as mandated by the UNBS (Inspection and Clearance of Imports) Regulations, 2022.
3. **Acquisition of Relevant Standards:** To support efficient, safe, and responsible operations, we recommend that the processing plant management acquire the following Uganda Standards:

    i. US EAS 130:2020, *Green coffee beans - Specification*
    ii. US EAS 2:2017, *Maize grains - Specification*
    iii. US EAS 1006:2021, *Sesame seed (simsim) - Specification*
    iv. US EAS 757:2019, *Sorghum grains - Specification*
    v. US 28 EAS 39:2002, *Code of practice for hygiene in the food and drink manufacturing industry*
    vi. US 1793:2019, *Handling, storage and disposal of pesticides*
    vii. US ISO 45001:2018, *Occupational health and safety management systems — Requirements with guidance for use*
    viii. US 1662:2017, *Waste management – Requirements*

You can access a comprehensive list of applicable standards on the UNBS webstore: https://webstore.unbs.go.ug/.

Nakawa
Plot M217 Nakawa
Industrial Area
P.O. Box 6329, Kampala
Tel: +256 417 333250/1/2

Katwe
Plot 64/65, 3rd Floor Quality
Chemicals House
Katwe Road
Tel: +256 312 279484

Jinja
Plot 06, Rippon Road
Tel: 0434131127

Mbale
Plot 53 B
Nabua Road
Tel:0454-431053

Lira
Plot 26/28, Olwol Road
P.O. Box 804 Lira
Tel: 0372271192

Mbarara
Plot 22, Bananuka Drive
P.O. Box 276 Mbarara
Tel: 048521644

UNBS appreciates your commitment to incorporating standards into the ESIA process. We believe that adherence to these recommendations will contribute to the sustainable, safe, and responsible development of the proposed processing plant.

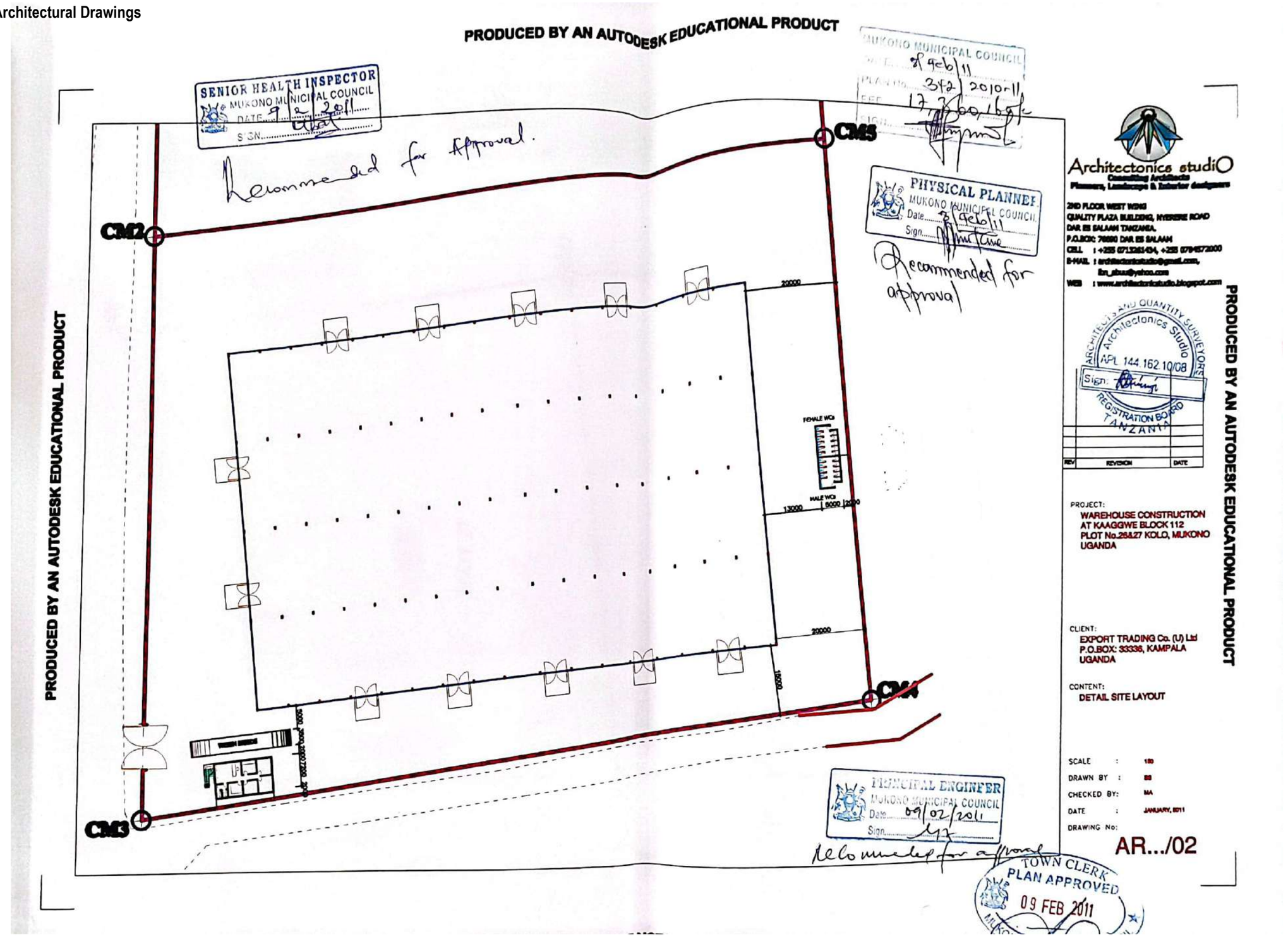
Sincerely,

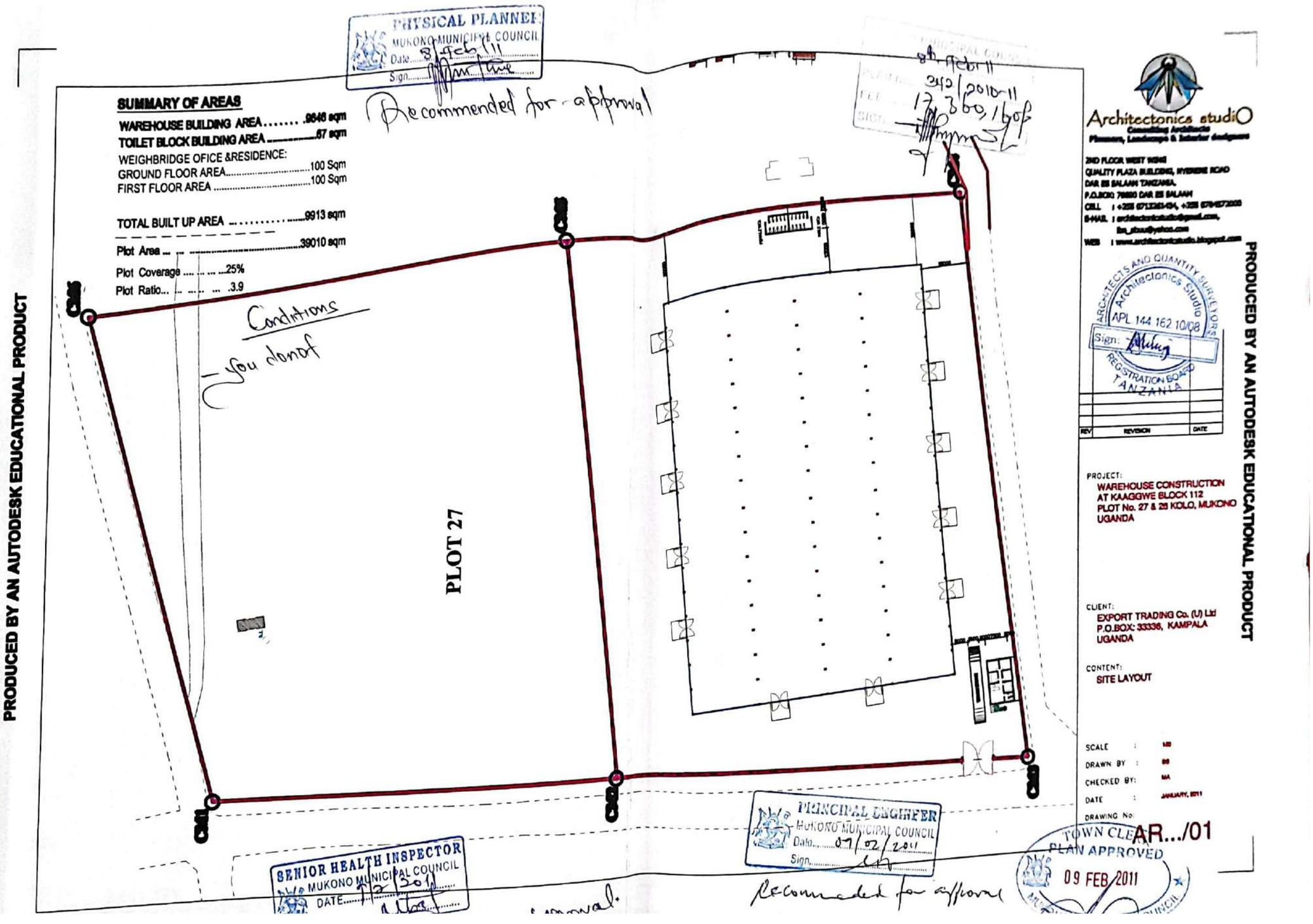
UGANDA NATIONAL BUREAU OF STANDARDS

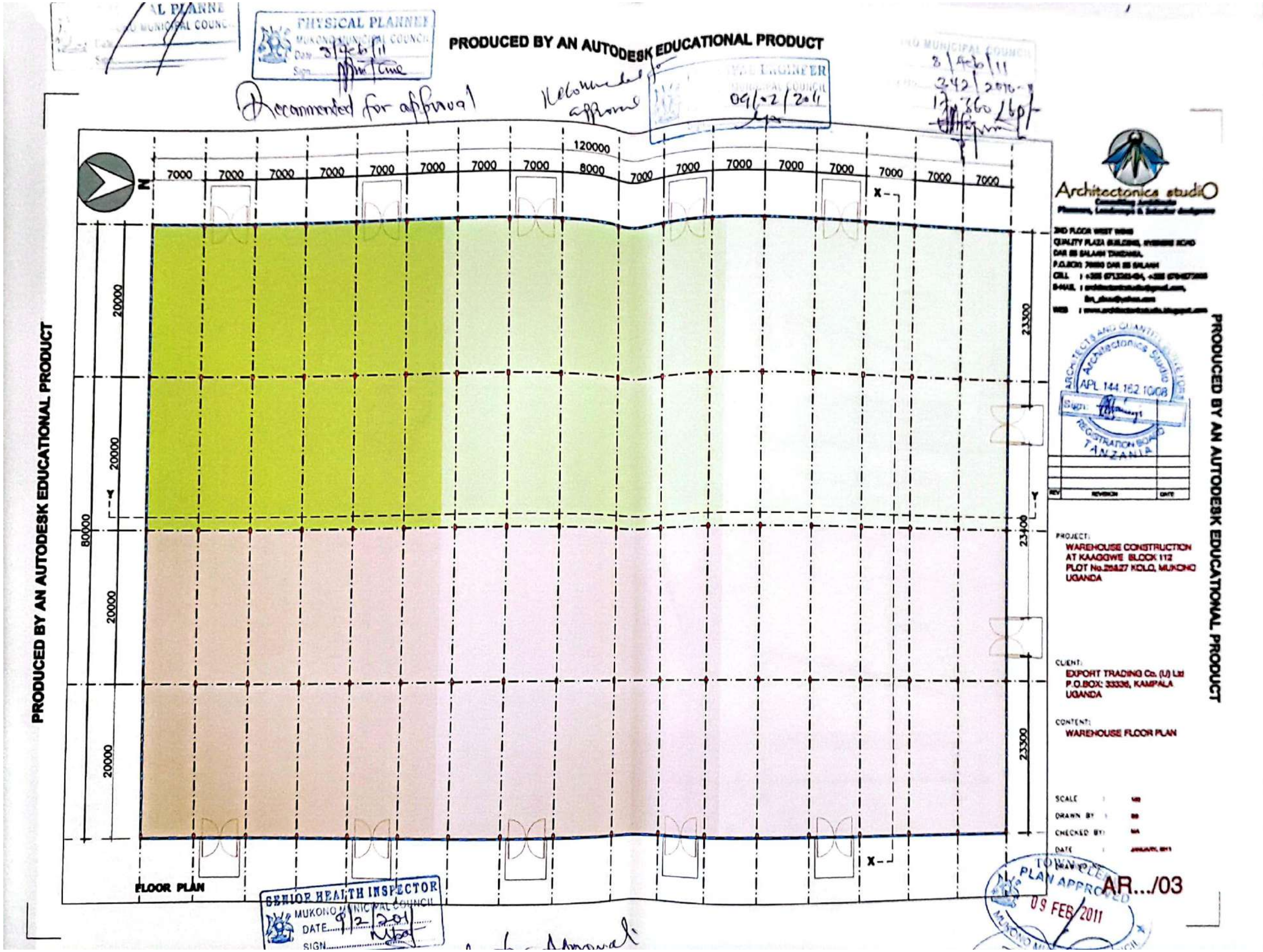
Andrew Othieno

MANAGER STANDARDS DEPARTMENT

Appendix F: Architectural Drawings



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PHYSICAL PLANNER
MUKONO MUNICIPAL COUNCIL
Recommended for approval
120000
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8000
20000
80000
23300
23400
N
FLOOR PLAN
SENIOR HEALTH INSPECTOR
MUKONO MUNICIPAL COUNCIL
Architectonics studiO
APL 144 162 10/08
REGISTRATION BOARD
TANZANIA
PROJECT:
WAREHOUSE CONSTRUCTION
AT KAAGGWE BLOCK 112
PLOT No.25&27 KOLO, MUKONO
UGANDA
CLIENT:
EXPORT TRADING Co. (U) Ltd
P.O.BOX: 33336, KAMPALA
UGANDA
CONTENT:
WAREHOUSE FLOOR PLAN
SCALE
DRAWN BY
CHECKED BY:
DATE
AR.../03
PLAN APPROVED
09 FEB 2011

PHYSICAL PLANNER
MUKONO MUNICIPAL COUNCIL
Date 8/Feb/11
Sign

Recommended for approval

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

8th Feb. 11
342/2010-11
17,360,000/=

PHYSICAL ENGINEER
MUKONO MUNICIPAL COUNCIL
Date 09/02/2011
Sign

Recommended for approval

26G ALUZINC IT ROOFING SHEET
ROOFING SHEET CLADING
1500MM HIGH LOUVRE BLOCKS
3000MM HIGH BLOCK WALL
ROOF FALL = 1.5 : 10

INDUSTRIAL EXTRACTOR FANS

RAIN GUTTER

4500

FRONT ELEVATION

PHYSICAL PLANNER
MUKONO MUNICIPAL COUNCIL
Date
Sign

26G ALUZINC IT ROOFING SHEET
ROOFING SHEET CLADING
1500MM HIGH LOUVRE BLOCKS
3000MM HIGH BLOCK WALL
ROOF FALL = 1.5 : 10

INDUSTRIAL EXTRACTOR FANS

RAIN GUTTER

CROSS SECTION XX

SENIOR HEALTH INSPECTOR
MUKONO MUNICIPAL COUNCIL
DATE 9/2/2011
SIGN

Recommended for approval.

Architectonics studiO
Consulting Architects
Planners, Landscape & Interior designers

2ND FLOOR WEST WING
QUALITY PLAZA BUILDING, HYDERE ROAD
DAR ES SALAAM TANZANIA.
P.O.BOX 79800 DAR ES SALAAM
CELL : +255 [illegible], +255 [illegible]
E-MAIL : [illegible]
WEB : www.architectonicsstudio.blogspot.com

ARCHITECTS AND QUANTITY SURVEYORS
Architectonics Studio
APL 144 162 10/08
Sign:
REGISTRATION BOARD
TANZANIA

REV	REVISION	DATE

PROJECT:
WAREHOUSE CONSTRUCTION
AT KAAGWE BLOCK 112
PLOT No.25&27KOLO, MUKONO
UGANDA

CLIENT:
EXPORT TRADING Co. (U) Ltd
P.O.BOX: 33336, KAMPALA
UGANDA

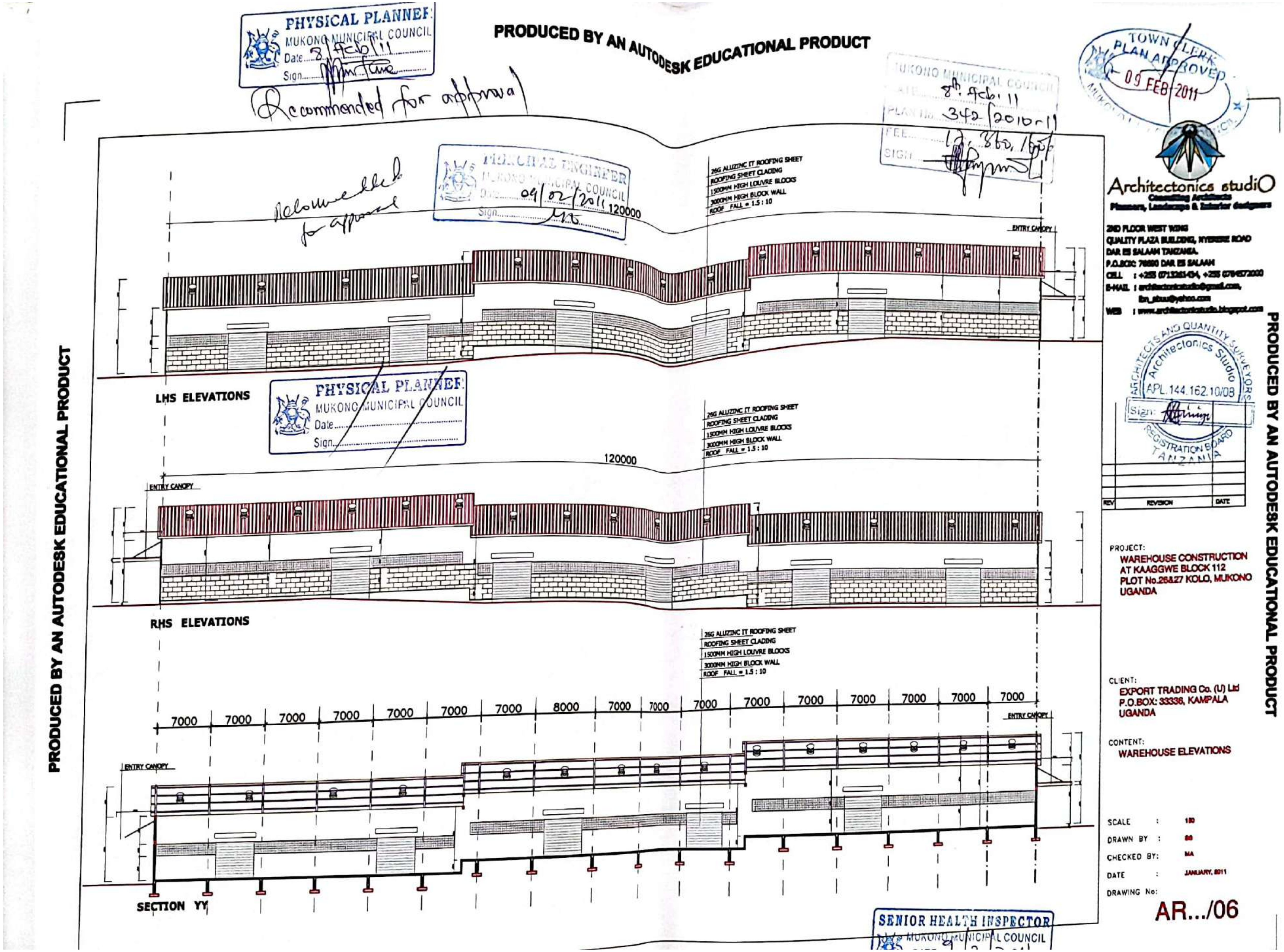
CONTENT:
WAREHOUSE SECTION (XX

TOWN CLERK
PLANS APPROVED
09 FEB 2011
MUKONO MUNICIPAL COUNCIL

SCALE : 1:50
DRAWN BY : MA
CHECKED BY:
DATE : JANUARY, 2011
DRAWING No:

AR.../05

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT


PHYSICAL PLANNER
MUKONO MUNICIPAL COUNCIL
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT
TOWN CLERK
PLAN APPROVED
09 FEB 2011
MUKONO MUNICIPAL COUNCIL
MUNICIPAL ENGINEER
MUKONO MUNICIPAL COUNCIL
120000
ENTRY CANOPY
LHS ELEVATIONS
PHYSICAL PLANNER
MUKONO MUNICIPAL COUNCIL
RHS ELEVATIONS
SECTION YY
SENIOR HEALTH INSPECTOR
MUKONO MUNICIPAL COUNCIL
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DATE
PROJECT:
WAREHOUSE CONSTRUCTION
AT KAAGGWE BLOCK 112
PLOT No.26&27 KOLO, MUKONO
UGANDA
CLIENT:
EXPORT TRADING Co. (U) Ltd
P.O.BOX: 33336, KAMPALA
UGANDA
CONTENT:
WAREHOUSE ELEVATIONS
SCALE
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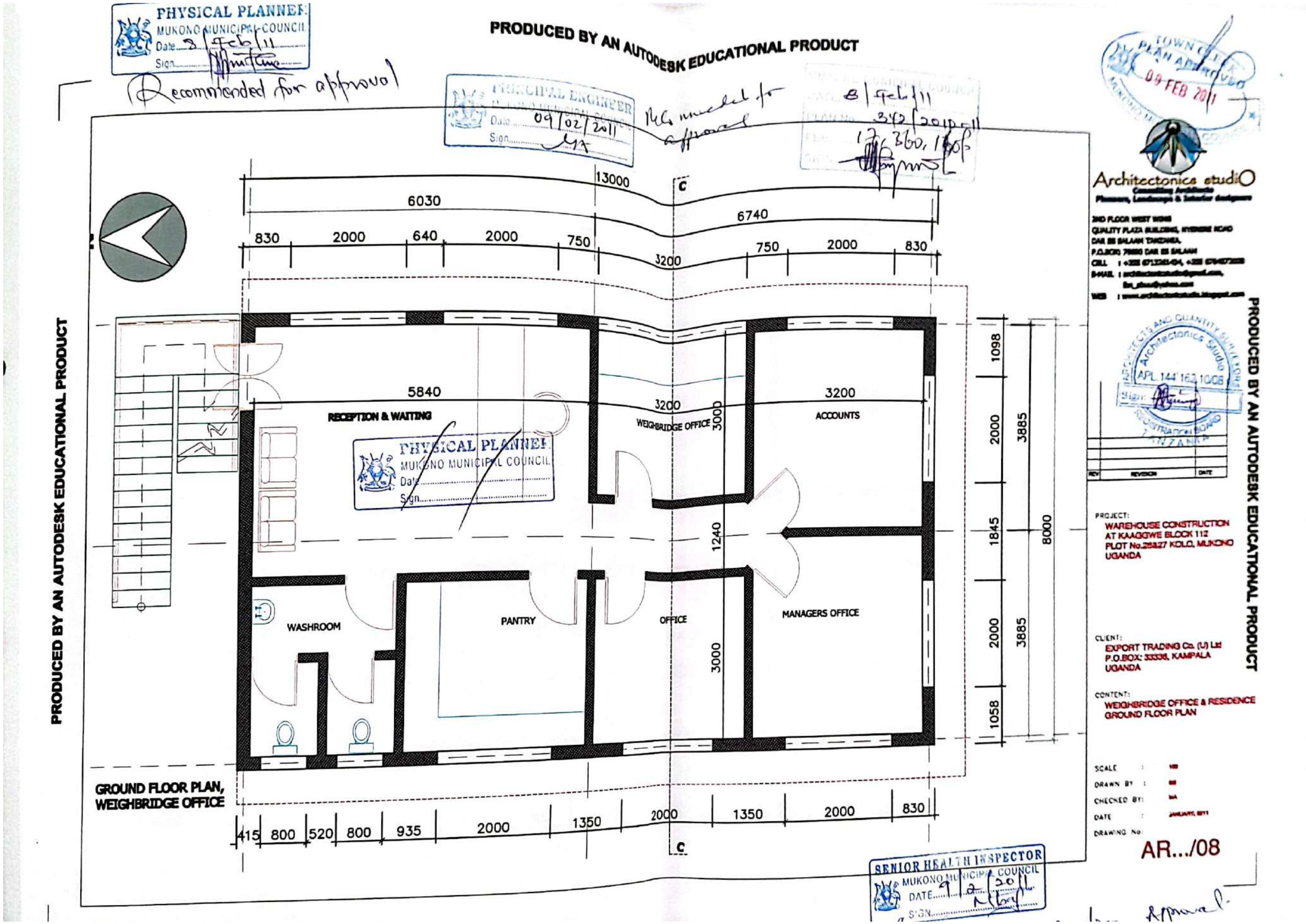
CHECKED BY:
DATE
JANUARY, 2011
DRAWING No:
AR.../06



PHYSICAL PLANNER
MUKONO MUNICIPAL COUNCIL
Recommended for approval
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT
PRINCIPAL ENGINEER
09/02/2011
TOWN CLERK PLAN APPROVED 09 FEB 2011
Architectonics studiO
RECEPTION & WAITING
WEIGHBRIDGE OFFICE
ACCOUNTS
WASHROOM
PANTRY
OFFICE
MANAGERS OFFICE
GROUND FLOOR PLAN, WEIGHBRIDGE OFFICE
SENIOR HEALTH INSPECTOR
MUKONO MUNICIPAL COUNCIL
PROJECT:
WAREHOUSE CONSTRUCTION AT KAAGGWE BLOCK 112 PLOT No.25827 KOLO, MUKONO UGANDA
CLIENT:
EXPORT TRADING Co. (U) Ltd P.O.BOX: 33336, KAMPALA UGANDA
CONTENT:
WEIGHBRIDGE OFFICE & RESIDENCE GROUND FLOOR PLAN
SCALE
DRAWN BY
CHECKED BY
DATE
DRAWING No
AR.../08

PHYSICAL PLANNER
MUKONO MUNICIPAL COUNCIL
Date 8/Feb/11
Sign

Recommended for approval

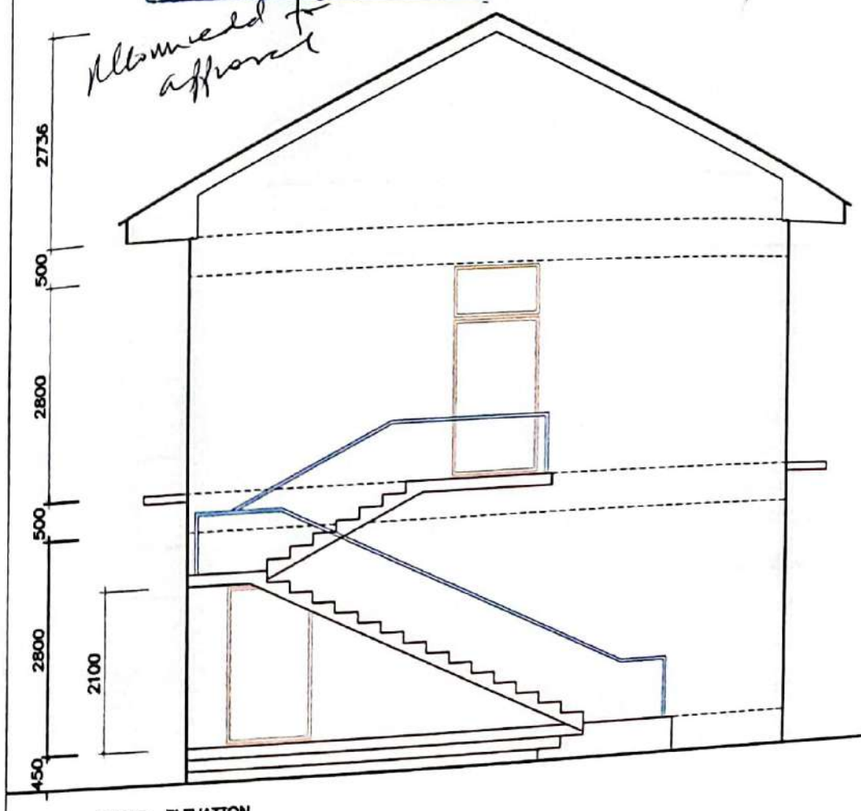
PRINCIPAL ENGINEER
MUKONO MUNICIPAL COUNCIL
Date 09/02/2011
Sign

Recommended for approval

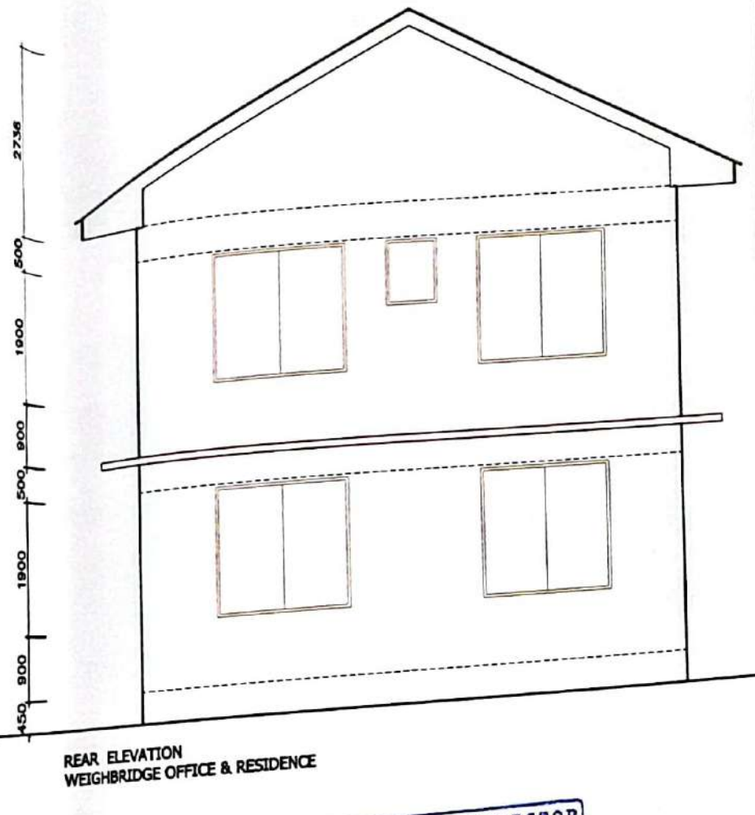
PHYSICAL PLANNER
MUKONO MUNICIPAL COUNCIL
Date
Sign

MUKONO MUNICIPAL COUNCIL
DATE 8/Feb/11
PLAN No 342/2010-11
FEE 12,360,000/=
SIGN

TOWN CLERK
PLAN APPROVED
09 FEB 2011
MUKONO COUNCIL



FRONT ELEVATION
WEIGHBRIDGE OFFICE & RESIDENCE



REAR ELEVATION
WEIGHBRIDGE OFFICE & RESIDENCE

SENIOR HEALTH INSPECTOR
MUKONO MUNICIPAL COUNCIL
DATE 9/2/2011
SIGN

Recommended for Approval

Architectonics studiO
Consulting Architects
Planners, Landscape & Interior designers

2ND FLOOR WEST WING
QUALITY PLAZA BUILDING, NYERERE ROAD
DAR ES SALAAM TANZANIA.
P.O.BOX: 76000 DAR ES SALAAM
CELL : +255 0713261434, +255 0784572000
E-MAIL : architectonicstudio@gmail.com,
tan_abus@yahoo.com
WEB : www.architectonicstudio.blogspot.com

ARCHITECTS AND QUANTITY SURVEYORS
Architectonics Studio
APL 144.162.10/08
Sign:
REGISTRATION BOARD
TANZANIA

REV	REVISION	DATE

PROJECT:
WAREHOUSE CONSTRUCTION
AT KAAGGWE BLOCK 112
PLOT No.2882,27 KOLO, MUKONO
UGANDA

CLIENT:
EXPORT TRADING Co. (U) Ltd
P.O.BOX: 33336, KAMPALA
UGANDA

CONTENT:
WEIGHBRIDGE OFFICE & RESIDENCE
ELEVATIONS

SCALE	:	1:50
DRAWN BY	:	BS
CHECKED BY:		MA
DATE	:	JANUARY, 2011
DRAWING No:		AR.../12

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PHYSICAL PLANNER
MUKONO MUNICIPAL COUNCIL
Date 3/Feb/11
Sign

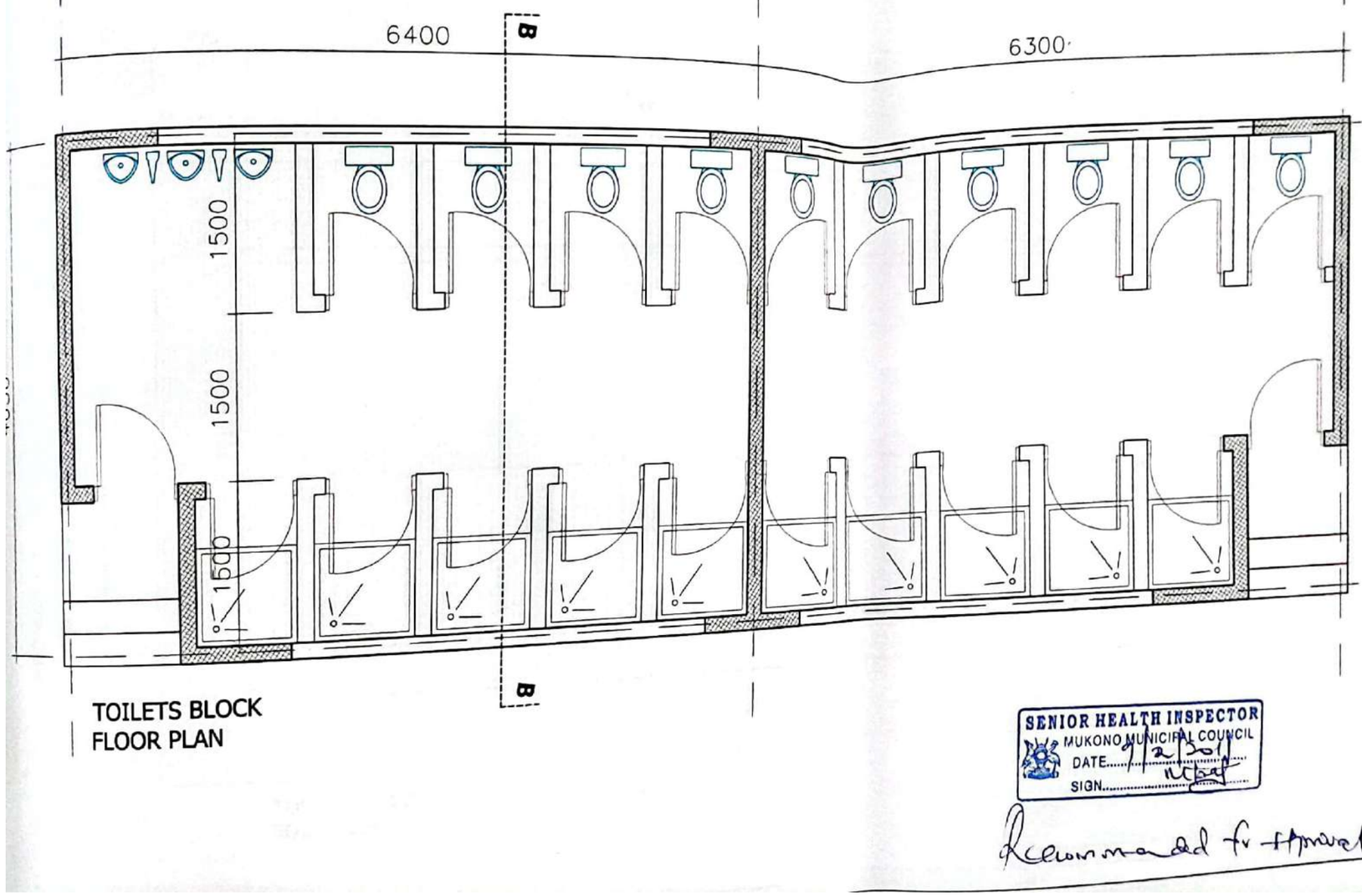
Recommended for approval

MUKONO MUNICIPAL COUNCIL
DATE 3/Feb/11
PLAN NO 342/2010
FEE 17,360,000/=
SIGN

PRINCIPAL ENGINEER
MUKONO MUNICIPAL COUNCIL
Date 04/02/2011
Sign

Recommended for approval

TOWN CLERK
PLAN APPROVED
09 FEB 2011



TOILETS BLOCK
FLOOR PLAN

SENIOR HEALTH INSPECTOR
MUKONO MUNICIPAL COUNCIL
DATE 9/2/2011
SIGN

Recommended for Approval.

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2ND FLOOR WEST WING
QUALITY PLAZA BUILDING, NYERERE ROAD
DAR ES SALAAM TANZANIA.
P.O.BOX: 76690 DAR ES SALAAM
CELL : +255 0713261434, +255 0784572000
E-MAIL : architectonicstudio@gmail.com,
ibn_abuu@yahoo.com
WEB : www.architectonicstudio.blogspot.com

ARCHITECTS AND QUANTITY SURVEYORS
Architectonics Studio
APL 144 162 10108
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TANZANIA

REV	REVISION	DATE

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PROJECT:
WAREHOUSE CONSTRUCTION
AT KAAGGWE BLOCK 112
PLOT No.26&27 KOLO, MUKONO
UGANDA

CLIENT:
EXPORT TRADING Co. (U) Ltd
P.O.BOX: 33336, KAMPALA
UGANDA

CONTENT:
TOILETS BLOCK
FLOOR PLAN

SCALE	:	1:50
DRAWN BY	:	SS
CHECKED BY:		MA
DATE	:	JANUARY, 2011
DRAWING No:		AR.../15