



**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT
REPORT FOR THE PROPOSED EXPANSION OF DAIRY
PRODUCTION FACILITY AND NEW EFFLUENT
TREATMENT PLANT LOCATED ON PLOTS 330, 286 BLOCK
7 IN MIGAMBA CELL, NYAKINENGO WARD, MBARARA
NORTH DIVISION and MBARARA CITY**

Submitted to:



**National Environment Management Authority
P.O Box 22255
Jinja Road-Kampala**

**Submitted By:
PEARL DAIRY FARMS LIMITED
P.O. BOX 7420
KAMPALA, UGANDA**

SEPTEMBER 2023

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

PROJECT SUMMARY



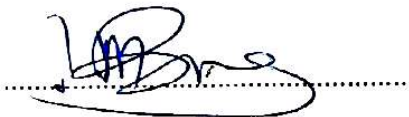

Project Name	Proposed Expansion of Dairy Production Facility and Effluent Treatment Plant
Project Components	<ul style="list-style-type: none"> ❖ 3 entrance and exit gates at designated areas ❖ Truck Parking Yard ❖ Proposed warehouse with Power storage room, Electrical room, Laboratory room, Control room, Rest room and changing rooms and evaporator area. ❖ Assembly point ❖ Visitor and staff paved parking area ❖ Walkways ❖ New Effluent treatment Plant ❖ Powder plant ❖ Internal circulation roads ❖ Green Belts ❖ Perimeter wall; among others
Project Objectives	To produce and market milk and milk products that meet international standards through the use of state of art manufacturing technology, high hygiene standards, and sophisticated and aggressive strategic marketing at competitive prices to the nourish and delight of everyone we serve.
ESIA Study Objectives	<ul style="list-style-type: none"> ❖ Identifying issues that are likely to be of most importance during the subsequent environmental assessment study. ❖ Describe the overall approach to the ESIA; ❖ Consult with key stakeholders especially the project affected persons and decision makers; ❖ Define the approach and methodology for the ESIA; ❖ Provide an early and open process to determine the scope of issues to be addressed in the EIS; and ❖ Identify potentially significant issues or impacts related to the proposed action that should be analysed in the EIS.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Client	Pearl Dairy Farms Limited
ESIA Team	Denis Byamukama Peter Happy Murwany Brian Muhimbura
Report Title	Environmental and Social Impact Assessment Report
Estimated Project Cost	27,342,000,000 (Twenty Seven Billion Three Hundred Forty Two Million Uganda Shillings)
Submission Date	September 2023

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ACKNOWLEDGEMENT

The ESIA Team extends its sincere gratitude to Pearl Dairy Farms Ltd for contracting it to carry out this Environmental Assessment, and for providing the team with all the necessary information and guidance to prepare the report. The ESIA team also acknowledges the assistance and cooperation of the National Environment Management Authority (NEMA), Uganda National Bureau of standards (UNBS), Dairy Development Authority, Mbarara city Local Government Authorities and Area Local Leaders and other lead agencies for their support during the public participation process.

Sincere gratitude goes out to the staff of Greenlife Enviro Consult (U) Limited (Environment Assessors) for the effort rendered during data and information collection, interpretation and analysis, draft material write-up and the printing of the final report.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

TABLE OF CONTENTS

PROJECT SUMMARY	II
PREPARERS OF THIS REPORT	IV
ACKNOWLEDGEMENT	V
TABLE OF CONTENTS	VI
LIST OF FIGURES.....	XI
LIST OF TABLES.....	XII
LIST OF ACRONYMS	XIII
E.0 EXECUTIVE SUMMARY	XIV
1.0 INTRODUCTION	1
1.1 BACKGROUND.....	1
1.2 REQUIREMENT FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT.....	1
1.3 OBJECTIVES OF PEARL DAIRY FARMS LTD (PDFL).....	2
1.4 THE EIA PREMISES.....	3
1.5 ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT	3
1.5.1 Purpose of the ESIA.....	4
1.5.2 Benefits of the ESIA	4
1.6 DECLARATION	4
1.7 DETAILS OF DEVELOPER AND INVESTMENT COST	4
1.8 STRUCTURE OF THE REPORT	5
2.0 PROJECT JUSTIFICATION	6
2.1 NEED FOR THE PROJECT.....	6
2.2 PROJECT ACTIVITIES	8
2.2.1 ESIA Activities.....	8
3.0 ANALYSIS OF PROPOSED ALTERNATIVES	9
3.1 INTRODUCTION.....	9
3.2 PROPOSED ALTERNATIVES	9
3.2.1 Alternatives to the Proposed Layout Design	9
3.2.2 Timing Alternatives.....	10
3.2.3 Technological alternatives and Design	11
3.2.4 "No Project" Option at the Proposed Site	13
4.0 APPROACH AND METHODOLOGY	14
4.1 DOCUMENT REVIEW.....	14
4.2 FIELD SURVEYS.....	14
4.3 CONSULTATION WITH STAKEHOLDERS.....	14
4.4 ENVIRONMENTAL NOISE.....	15

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

4.5 METHODOLOGY OF ASSESSING FAUNA AND FLORA SPECIES	15
4.5.1 Biological Diversity Inventorying	15
4.6 IMPACT IDENTIFICATION, PREDICTION, EVALUATION AND MITIGATION	16
4.6.1 Status of the Impact	16
4.6.2 Extent of the Impact	16
4.6.3 Duration of Impact	16
4.6.4 Magnitude of the Impact	16
4.6.5 Probability of Occurrence	17
4.6.6 Significance of the Impact	17
4.7 CUMULATIVE IMPACTS	18
5.0 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK	20
5.1 POLICIES	20
5.1.1 The National Environment Management Policy (NEMP), 1994	20
5.1.2 The National Policy on HIV/AIDS	21
5.1.3 The National Water Policy, 1999	21
5.1.4 The Land Use Policy, 2004	21
5.2 LAWS	22
5.2.1 The Constitution of Uganda, 1995	22
5.2.2 The National Environment Act, 2019 (Cap 153)	22
5.2.3 The Investment Code Act, 1999	22
5.2.4 The Workers' Compensation Act, 2000	23
5.2.5 The Local Government Act of 1997	24
5.2.6 The Physical Planning Act, 2010	24
5.2.7 Public Health Act, Cap 281 and Drainage and Sanitation Rules	24
5.2.8 The Occupational Safety and Health Act, 2006	25
5.2.9 The Land Act, Cap 227	25
5.2.10 Land Acquisition Act, Cap 226	25
5.2.11 Dairy Industrial Act, 2000	26
5.2.12 The Agricultural Chemicals (Control) Act, 2006	26
5.2.13 The Investment Code, 1991	27
5.2.14 Food and Drug Act, 1964	27
5.2.15 Uganda National Bureau of Standards (UNBS) Act, 1983	27
5.3 REGULATIONS	28
5.3.1 The National Environment (Environmental and Social Assessment) Regulations, 2020	28
5.3.2 The National Environment (Waste Management) Regulations, SI No 49, 2020	28
5.3.3 The National Environment (Noise Standards and Control) Regulations, 2003	29
5.3.4 Uganda Dairy Development Authority (UDDA) Regulations	30
5.3.5 The Water (Waste Discharge) Regulations, No. 32/1998	30
5.3.6 The Water Act (cap 152) and the Water Resources Regulations, 1998	30
5.3.7 The National Environment (Standards For Discharge Of Effluent Into Water Or Land) Regulations, 2020	30
5.3.8 National Environment (Management of Ozone Depleting Substances and Products) Regulations, 2020	31
5.4 INTERNATIONAL BEST PRACTICE	32
5.4.1 IFC Environmental, Health, and Safety Guidelines; Occupational Health and Safety in agriculture Sector.	32

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

5.4.2 NEBOSH International General Guidelines: Management of International Health & Safety Systems Planning, Principles and Practice of Risk Assessment.....	32
5.4.3 World Bank Group General EHS Guidelines and Guidelines	33
5.4.4 World Bank Operational/Safe guard Policies	34
5.5 INTERNATIONAL CONVENTIONS TO WHICH UGANDA IS A PARTY	39
5.5.1 Convention for the Protection of the Ozone Layer and Its Montreal Protocol	39
5.5.2 United Nations Framework Convention on Climate Change (UNFCCC)	40
5.5.3 Rio Declaration (Or Agenda 21)	40
5.5.4 The Convention on Biological Diversity 1992 (CBD)	40
5.5.5 The Convention on Wetlands of international importance (RAMSAR Convention)	41
5.5.6 African Convention on the Conservation of Nature and Natural Resources-1982	42
5.5.7 The International Labour Organization (ILO) Convention	42
5.5.8 The Stockholm Convention, 2004	43
5.6 INSTITUTIONAL FRAMEWORK.....	44
6.0 THE PROJECT DESCRIPTION.....	48
6.1 PROJECT LOCATION AND EXTENT	48
6.2 PROJECT COMPONENTS AND IMPLEMENTATION PHASES	56
6.3 PROJECT DESCRIPTION.....	56
6.3.1 Dairy Effluent Waste Water Treatment	56
6.3.2 Milk evaporating and drying plant.....	59
6.4 SOLID WASTE MANAGEMENT	61
6.5 EMERGENCY/SAFETY SUPPORT SYSTEMS.....	61
6.6 CHEMICALS USED DURING DAIRY PROCESSING AT THE PLANT	61
6.7 DECOMMISSIONING OF THE PLANT.....	62
7.0 ENVIRONMENT AND SOCIAL BASELINE CONDITIONS.....	63
7.1 OVERVIEW	63
7.2 LOCATION AND PHYSICAL ENVIRONMENT	63
7.3 ADMINISTRATIVE STRUCTURE (LGs AND ADMINISTRATIVE UNITS)	67
7.4 DEMOGRAPHIC CHARACTERISTICS	68
7.5 HISTORICAL BACKGROUND.....	68
7.6 NATURAL ENDOWMENTS (NATURAL RESOURCES AND THEIR RATE OF EXPLOITATION)	68
7.6.1 State of the Environment	68
7.6.2 Forestry.....	69
7.6.3 Existing Rivers, Wetlands, and other drainage options	69
7.6.4 Water	69
7.7 SOCIAL – ECONOMIC INFRASTRUCTURE	70
7.7.1 Local economy analysis;.....	70
7.7.2 Human settlement patterns	71
7.7.3 Labor market and welfare.....	71
7.7.4 Agriculture	72
7.7.5 Tourism.....	72
7.7.6 Education services.....	73
7.7.7 Water and Sanitation services	74
8.0 STAKEHOLDER CONSULTATION.....	75

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

8.1 INTRODUCTION	75
8.2 OBJECTIVES.....	75
8.3 IDENTIFICATION AND INVOLVEMENT OF KEY STAKEHOLDERS.....	75
8.3.1 <i>The primary stakeholders are:</i>	76
8.3.2 <i>Highlights of Findings</i>	78
8.4 FUTURE CONSULTATIONS.....	79
8.5 GRIEVANCE MECHANISM.....	79
9.0 ANALYSIS OF POTENTIAL IMPACTS & MITIGATION MEASURES.....	80
9.1 INTRODUCTION	80
9.2 POTENTIAL IMPACTS ON SOCIO-ECONOMIC ENVIRONMENT	80
9.2.1 <i>Positive Impacts</i>	80
9.2.2 <i>Negative Impacts</i>	83
9.3 IMPACTS ON BIO-PHYSICAL ENVIRONMENT	96
9.3.1 <i>Negative Impacts</i>	96
9.4 POTENTIAL IMPACTS ON SOCIO-ECONOMIC ENVIRONMENTAL	106
9.4.1 <i>Positive Impacts</i>	106
9.4.2 <i>Negative Impacts</i>	111
9.5. POTENTIAL IMPACTS ON BIO-PHYSICAL ENVIRONMENT	112
9.5.1 <i>Negative Impacts</i>	112
10.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN	126
10.1 INTRODUCTION	126
10.2 OBJECTIVES OF ESMP	126
10.3 SCOPE OF THE ESMP	126
10.4 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN.....	128
10.4.1 <i>Construction Phase</i>	128
10.4.2 <i>Operation Phase</i>	149
10.5 IMPLEMENTATION SCHEDULE AND REPORTING.....	160
10.5.1 <i>Institutional Arrangements</i>	160
10.5.2 <i>Implementation Responsibilities</i>	160
10.5.3 <i>Monitoring and Reporting</i>	163
10.6 SOCIAL MANAGEMENT PLAN (SAP)	163
10.6.1 <i>Mitigation</i>	163
10.7 ESMP REPORTING	164
10.8 ESTIMATED COST	165
10.9 CAPACITY BUILDING AND TRAINING PLAN	166
10.10 EMERGENCY PREPAREDNESS PLAN.....	167
10.11 OUTLINE OF CHANCE FIND PROCEDURE	167
10.12 GRIEVANCE REDRESS MECHANISM.....	168
11.0 RECOMMENDATIONS AND CONCLUSION	170
11.1 RECOMMENDATIONS	170
11.2 CONCLUSIONS.....	170
11.3 OPINION OF A TEAM OF ENVIRONMENTAL ASSESSMENT PRACTITIONERS.....	171
BIBLIOGRAPHIES & REFERENCES	172

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

APPENDICES.....	173
APPENDIX 1: STAKEHOLDER CONSULTATION COMMENTS FOR LEAD AGENCIES.....	173
APPENDIX 2: LETTER FOR REQUEST FOR STAKEHOLDER CONSULTATION AND RESPONSE FROM UGANDA NATIONAL BUREAU OF STANDARDS	181
APPENDIX 3: LETTER FOR REQUEST FOR STAKEHOLDER CONSULTATION AND RESPONSE FROM DAIRY DEVELOPMENT AUTHORITY	184
APPENDIX 4: STAKEHOLDER CONSULTATION WITH THE ENVIRONMENTAL OFFICER MBARARA CITY	185
APPENDIX 5: LIST OF PEOPLE CONSULTED AND LCI CHAIRPERSON	186
APPENDIX 6: APPROVED TERMS OF REFERENCE (TOR) BY NEMA.....	188
APPENDIX 7: PROOF OF LAND OWNERSHIP.....	191
APPENDIX 8: GEOTECHNICAL INVESTIGATION REPORT	206

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

LIST OF FIGURES

FIGURE 6.1: GOOGLE IMAGE SHOWING LOCATION OF THE PROPOSED SITE FOR EXPANSION AND ITS ENVIRONS49

FIGURE 6.2: GOOGLE IMAGE SHOWING PEARL DAIRY FARMS LTD.....50

FIGURE 6.3: SITE/COMPOST LAYOUT PLAN51

FIGURE 6.4: THE BOILER LAYOUT PLAN.....52

FIGURE 7.1: SHOWING MBARARA DISTRICT ADMINISTRATIVE DIVISIONS.....64

FIGURE 7.2: GEOLOGY MAP EXCERPT OF MBARARA - BIHARWE SHOWING THE AREA OF INVESTIGATION66

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

LIST OF TABLES

TABLE 4.1: IMPACTS SIGNIFICANCE RATING.....	17
TABLE 5.1: LEGAL FRAME WORK.....	20
TABLE 5-2 WORLD BANK ENVIRONMENTAL AND SOCIAL SAFEGUARDS AND THEIR POLICY OBJECTIVES	35
TABLE 5-3 KEY INSTITUTIONS THAT HAVE AN INTEREST IN THE PROJECT	44
TABLE 7.1: ADMINISTRATIVE UNITS OF MBARARA DISTRICT.....	67
TABLE 7.2 CLIMATE IN MBARARA.....	69
TABLE 7.3: MAJOR CROPS IN MBARARA	70
TABLE 7.4: TYPES OF LIVESTOCK IN MBARARA DISTRICT.....	71
TABLE 8-1 IDENTIFIED STAKEHOLDERS	76
TABLE 10-1: CONSTRUCTION PHASE	128
TABLE 10-2: OPERATION AND MAINTENANCE PHASE.....	149
TABLE 10-3: LIST OF STAFF AND THEIR RESPONSIBILITY.....	160
TABLE 10-4: PROPOSED SOCIAL ACTION PLAN.....	164
TABLE 10-5: REPORTING ON ESMP PROGRESS.....	164
TABLE 10-6: ESTIMATED COST.....	165

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

LIST OF ACRONYMS

CIA:	Cumulative Impact Assessment
EIA:	Environmental Impact Assessment
EIS:	Environmental Impact Study
ESIA:	Environmental Social Impact Assessment
IFC:	International Finance Corporation
LC:	Local Council
Ltd:	Limited
NEMA:	National Environment Management Authority
NWSC:	National Water Sewage Corporation
OSH:	Occupational Health and Safety
TOR:	Terms of References
UNBS:	Uganda National Bureau of Standards
UNRA:	Uganda National Roads Authority
VEC:	Valued Ecosystem Component

E.0 EXECUTIVE SUMMARY

E.1 Background

Pearl Dairy Farms Ltd (PDFL) is a dairy processing company in Uganda specializing in the production of pure, nutritious high-quality milk products that appeal to our customers' taste use of modern technology to transform milk into different products that meet the evolving needs of the market. The factory manufactures the following products among others full cream powdered milk, skimmed powdered milk, instant full cream powdered milk, UHT milk, ghee and butter oil. Since inception the company's actions have been driven by success coupled with a deep desire to serve customers with a vision to help provide a platform for processing produce from the local dairy farmers in Mbarara. Pearl Dairy Farms Ltd is also certified with the ISO standards ISO 22000: 2018 certification, ISO 9001:2015, HACCP for Quality Management among others. Pearl Dairy Farms Ltd operating in Uganda under the brand name of LATO milk is proposing to implement an expansion program for their dairy production facility and establish a new effluent treatment plant with a feed rate of 1 million liters/day per 24 hour day. The plant is expanding milk powder capacity from 200,000litres per day to 300,000litres (from daily production of 20 powder tones _30 powder tons per day).The products will be majorly for export market.

According to National Environment Act, 2019 section 157 (a), "it is an offence for one to undertake an activity which requires an environmental and social impact assessment or environmental risk assessment before obtaining a certificate of approval or other approval required in accordance with the applicable law. Therefore, Pearl Dairy Farms Ltd has initiated an environmental assessment for its proposed expansion of dairy production facility and new effluent treatment plant.

E.2 Requirement for Environmental and Social Impact Assessment

The proposed activity requires undergoing Environmental Impact Assessment process before implementation. An Environmental and Social Impact Assessment (ESIA) is being done by independent certified environmental practitioners to evaluate the potential environmental and social impacts of the proposed project. The ESIA is being done in terms of the Environmental Impact Assessment Regulations of 1998, National Environment Act (NEA, 2019) Category 7 of "**Food and beverage industry.**" including (e) "**Processing of dairy products.**" Also, category 22 of "**Waste management facilities**" including (c) **construction of waste management facilities** including (v) **waste water/effluent treatment plant** requires an environmental clearance".

Also, according to World Bank environmental and social safeguard standards, the proposed project is among the projects ranked as Risk Category A Projects requiring a full Environmental Scoping, and full ESIA and a detailed ESMP, regardless of the legislative and regulatory requirements for environmental assessments.

E.3 Who Is Conducting the ESIA?

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

In line with the National Environment Act, 2019, Pearl Dairy Farms Ltd has appointed independent Environmental Practitioners to undertake the Environmental and Social Impact Assessment for this project.

The contracted practitioners have experience in environmental management and assessment and are familiar with the ESIA requirements for dairy investment projects. The practitioners will sign declarations of independence in terms of the EIA regulations, which confirms that they have no vested interest in the proposed project.

E.4 Impetus for the Proposed Project

The need for the dairy expansion arises from the current demand for milk and its products existing in the country. This has to some extent been a natural consequence of the rapidly population growth. In addition, Value Addition to Dairy Products where a dairy processing plant can add value to raw milk by converting it into a range of dairy products such as yogurt, cheese, butter, milk powder, and more creating a higher market value and increased income for farmers and the dairy industry as a whole, Employment Generation for skilled workforce for various operations, including production, quality control, packaging, and distribution thus creating job opportunities and contribute to reducing unemployment rates, Income Diversification for Farmers by selling raw milk to the processing plant at competitive prices providing them with a stable and predictable income, leading to improved livelihoods, Technology Transfer and Innovation due to introduction of advanced processing technologies and practices to improve efficiency, product quality, and safety which contributes to the overall technological development of the country, Improved Milk Quality and Safety by typically adhering to strict quality and safety standards while processing milk in a controlled environment which reduces the risk of contamination and spoilage, ensuring that consumers have access to safe and high-quality dairy products, Market Expansion owing to the fact the processed dairy products often have a longer shelf life, which allows for distribution to a wider geographic area, including urban centers and export markets thus increased market opportunities and revenue for dairy producers, Nutritional benefits due to the production of fortified or enriched products, such as vitamin-fortified milk or probiotic-rich yogurt, Foreign Exchange Earnings through exporting to neighboring countries and beyond, contributing to foreign exchange earnings for Uganda, Reduced Post-Harvest Losses by preventing wastage during peak production of excess milk and reduce post-harvest losses, Rural Development through the development of local infrastructure, transportation networks, and support services, contributing to overall rural development.

In addition, being an Eco-friendly company with environmental responsibility, there is need to send zero waste to the landfill by Re-purposing and recycling as much waste as possible and also convert waste into energy.

The new proposed dairy effluent (Dairy effluent refers to the wastewater generated during milk processing and cleaning operations in dairy facilities) treatment plant will offer the following benefits among others;

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Environmental Protection: Untreated or improperly treated dairy effluent can contain high levels of organic matter, nutrients (such as nitrogen and phosphorus), and potentially harmful pathogens. When released into water bodies or land, this effluent can lead to water pollution, eutrophication (excessive nutrient enrichment), and the spread of diseases. A treatment plant can help mitigate these environmental impacts by removing or reducing contaminants before discharge.

Compliance with Regulations: Uganda has environmental regulations and standards in place that dictate the permissible levels of pollutants that can be discharged into water bodies or onto land. Establishing a dairy effluent treatment plant ensures compliance with these regulations and helps avoid penalties or legal actions.

Water Resource Management: Uganda faces challenges in managing its water resources. Treating dairy effluent before it is released into water bodies can help protect freshwater resources, ensuring they remain available and safe for various uses, such as drinking water, agriculture, and aquatic ecosystems.

Public Health: Dairy effluent can contain pathogens and contaminants that pose risks to public health if not properly treated. By implementing effective treatment processes, the potential for waterborne diseases and health hazards can be significantly reduced.

Agricultural Benefits: Treated dairy effluent can be repurposed as a valuable resource for irrigation and fertilization. Properly treated effluent contains nutrients that can be beneficial for soil fertility and crop production, reducing the need for synthetic fertilizers and promoting sustainable agricultural practices.

Economic Opportunities: Establishing and operating a dairy effluent treatment plant can create employment opportunities and stimulate local economic growth. It can also contribute to the growth of the dairy industry by enhancing the industry's reputation for environmental responsibility and sustainability.

International Trade and Market Access: As global awareness of environmental issues grows, consumers and trade partners increasingly value environmentally responsible practices. Having a functional dairy effluent treatment plant can enhance Uganda's position in international trade by demonstrating commitment to sustainable production practices.

Research and Innovation: The establishment of a treatment plant can foster research and innovation in wastewater treatment technologies, leading to potential advancements that can be applied to other industries and sectors as well.

Therefore, establishing the proposed project will help in production of milk and milk products all year round in an environmentally sustainable manner.

E.5 Project Description, Access and Location

The proposed expansion of the dairy production facility and new effluent treatment plant will be established in Migamba cell, Nyakinengo ward, Mbarara North division, Mbarara city. The project site is geographically referenced within the following approximate coordinates UTM 36 M 244158.93mE 9937732.57mS, 36M

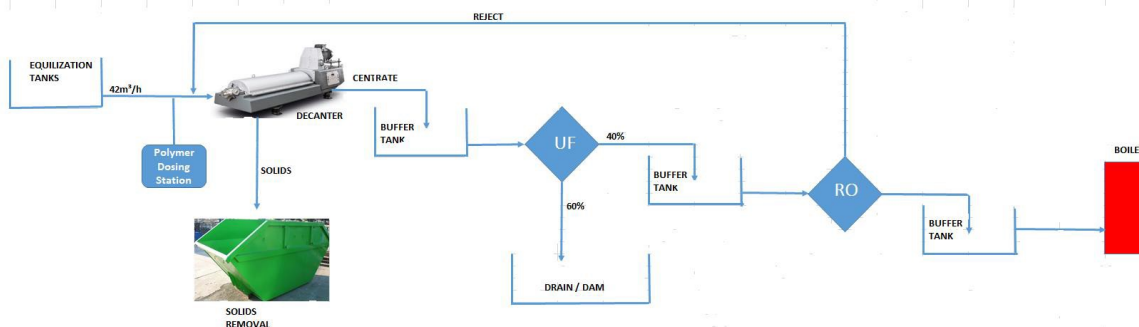
Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

244133.38mE 9937783.91mS, 36M 243990.01mE 9937754.40mS and 36M 244060.34mE 9937666.07mS.

The site can be best accessed off Masaka-Mbarara Highway at Kolanorya trading center 200 meters off the tarmac on your right from Masaka. It is located in a populated residential and commercial neighborhood with shops and residences in close proximity.

The facility's fundamental components are 3 entrance and exit gates at designated areas, Truck Parking Yard, Proposed warehouse with Power storage room, Electrical room, Laboratory room, Control room, Rest room and changing rooms and evaporator area, Assembly point, Visitor and staff paved parking area, Walkways, New Effluent treatment Plant, Powder plant, Internal circulation roads, Green Belts, Perimeter wall; among others.

E.5.1 Effluent waste water Treatment Plant Design



The design proposal is divided up into two sections, namely;

1. Waste Water Pre-treatment
2. Final Water Treatment for Re-use

Waste Water Pre-treatment

- A High Performance, Sludge Decanter will be placed after the “equalization tanks.” The decanter pro 6000 is equipped with the differential drive system. Automatic regulation of the differential speed allows optimum clarification with maximum dry substance values and throughput capacities and high operating safety.
- A polymer dosing station will be installed at the inlet feed to treat the feed conditions to the decanter for optimal results and performance.

Final Water Treatment for Re-use

- This will consist of a Containerized Water Treatment Plant and the feed will be taken from the Centrate after the Separating Decanter.
- The reject stream from the RO will be fed back to the Decanter in the pre-treatment stage.

Flow diagram

- Water is fed from the pre-treating Decanter.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- All waste streams from the containerized UF/RO treatment plant will be returned to the pre-treatment stage.
- The permeate (treated) will pass through the sampling skid to the storage tanks for use in the plant as boiler feed water and wash water.
- Water is fed to the UF Plant via 1 x quarts 1 x sand filter and 1 x carbon filter (upstream pre-filters) to the UF membrane to prevent blocking of the UF membranes.
- It will then pass through the UF membranes and then to the RO plant.
- The UF plant will have its own control system, controlling the operation of the UF skid, including the backwash of the membranes.
- The water will be fed from the UF plant to the RO membranes. The membranes will remove all the impurities in the water.
- The RO system will have a control system controlling all aspects of the operation.

NOTE; Final water quality will be specified to be used as boiler feed water.

- For UF and RO plant - The total electrical load is estimated at 75kW approx. (100 kVA) maximum

- The EC of < 1500 micro siemens as per national standards will be met at the UF and we are expecting EC <500 uS/cm at UF outlet. (These are only standard warnings put in to ensure that the anionic and cationic species list is not exhaustive to put severe loading on the membranes.

- There is no dosing chemicals or polymer dosing at the UF and RO side.

E.5.2 Powder Plant design

Milk evaporating and drying plant

- Skim milk Powder production capacity: 30,000 Kg/Day@3.5%Moisture, (Agglomerated) or, WM.P production capacity: 29,786 Kg/Day@ 2.8% moisture (Agglomerated / Lecithinated) or, Dairy Creamer production capacity: 18,906 Kg/Day @ 2.8% Moisture (Agglomerated / Lecithinated).

Product raw material

- Pasteurized and Standardized milk

Raw material composition

- 8.3% Total Solids for milk for SMP production
- 11% Total Solids for milk for WMP production
- 13% Total Solids for milk for, Dairy Creamer production

Raw milk quality

- Raw Milk Quality : Unacultrated
- Clot-on-boil test : Negative

Finished product

- Skimmed Milk Powder/ Whole Milk Powder/ Dairy Creamer

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Capacity

The plant is expanding milk powder capacity from 200,000litres per day to 300,000litres (from daily production of 20 powder tones _30 powder tons per day).

Level of automation

- Fully Automatic PLC and Scada

0.6 Consultation

Consultation initiatives and meetings were initiated and carried out with stakeholders that are likely to be affected by the proposed project activities. Consultation sessions were sustained with immediate community members and Local council, Mbarara city Authorities, NEMA (the regulatory authority) and among other lead agencies that include Uganda National Bureau of Standards and Dairy Development Authority under Ministry of Agriculture Animal Husbandry and Fisheries (MAAIF) among many others.

0.6.1 Highlights of Findings

Many of the comments made by various stakeholders showed their feelings, thoughts, concerns and expectations regarding the proposed project. They touched a wide range of issues including: Anticipated benefits and positive outcomes, and positive and negative impacts on the environment and livelihoods. Anticipated benefits and positive outcomes pointed out include the following: -

- The project will result into a better developed environment and a more advanced effluent treatment plant thus reducing air pollution in the neighbourhood.
- It will create new employment opportunities. Both skilled & semi-skilled personnel might be needed for different tasks. For instance, Security Officers to guard construction equipment yard, Production and quality control officers among others will be required.
- Businesses in the area may be boosted by the anticipated population increase as a result of the project.
- When the project is finally completed, property value, particularly land and houses in the areas will certainly increase.
- There will be readily available production of milk and milk products all year round in an environmentally sustainable manner.

Concerns raised in respect to anticipated adverse Impacts on the environment due to the project activities and their implementation include the following: -

- Vegetation which currently exists on the site for the proposed project components will be lost during construction phase due to site clearance operations. The wetland area below the proposed site needs to be maintained.
- Poor disposal of waste water from the plant,
- Clearing of vegetation during site opening might lead to generation of surface run offs and cause eutrophication of surface water resources.
- Pollution from wastes generated during and after construction.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- There will be dust and noise nuisance from vehicles and various construction auto machines used during construction and operation phase.
- There could be incidence of Occupational and Safety Risks for workers during and after construction; and

Suggestions and Recommendations made by various stakeholders, ranging from Lead Agencies & Government Ministries to District & Local Authorities & Individual Stakeholders, were as follows: -

- Waste water should be properly discharged;
- The wetland below the proposed site for expansion should be maintained;
- Pearl Dairy Farms Ltd (PDFL) is under the Product Certification Scheme of UNBS and the company is required to ensure that its products consistently conform to applicable national standards;
- The proponent is advised to involve the local community genuinely and more often, so as to enjoy their good will and be able to forestall their opposition or hostility to the project;
- The old effluent treatment plant had issues regarding bad smell and now with the introduction and use of new technology, this will be dealt away with.
- Should acquire all relevant permits and licenses other than NEMA permit. The district physical planning committee requires an approved drawing among others.
- There should be mechanism of air extractors for reducing heat and clean aeration.
- The plant should have access to main grid as main source of power. Boiler house should be in place and able to use an environmental friendly materials such as coffee husks.
- There should be access to National water and sewerage line. Water reservoirs should be constructed to ensure constant supply of water.
- There should be internal lab for platform tests, microbial and other physiochemical parameters separated.
- A closed system for production processes should be used to avoid cross contamination.
- Road for heavy vehicles to the factory should be away from production area to reduce sound and air pollution.
- Materials for walls, paintings and roofing should be water proof and heat resistant to avoid peelings and sweating to avoid cross contamination.
- Drainage flow should be self -draining from high hygiene to low hygiene area.
- Personnel should be in full PPEs (personal protective Equipment), should be with valid medical fitness certificate at all times.
- Operational foot bath should be in place for personnel foot ware disinfection before and after operation.

0.7 Proposed Alternatives

The Integrated Environmental management (IEM) procedure stipulates that an EIA

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

process needs to consider feasible alternatives for any proposed development. Therefore, all concerned lead agencies and other relevant stakeholders require that a number of possible proposals or alternatives for accomplishing the same objectives be considered. The alternatives under which the ESIA team considered include;

- Technological alternatives;
- Location or layout alternatives;
- No-development option,
- Timing alternatives and;
- Strategic alternatives.

Motivation is provided as to the reasoning behind the screening of some alternatives and the selection of a preferred option. Further discussion on the above alternatives is presented in chapter 3 of this report.

E.8 Environmental Receptors and Potential Impacts

During the preparation of this report, a review of baseline information, key environmental sensitivities and an analysis of alternatives has been conducted for the project to assist in planning and scheduling for this and future projects. The review also identified mitigation measures.

The desk studies and site visits revealed that the proposed project areas form part of the land unoccupied by Pearl Dairy Farms that was due for expansion. The land is fallow and occupied with some banana plants, a few trees, shrubs and bushes. The significant sensitive environmental receptors were identified through literature reviews and site visits which is a wetland to the North of the site about 500 metres from the site.

Ecologically, the most sensitive part of the site is the grass type of vegetation at the site with no known conservation concern. Socially, the project area has scattered settlements and Kolanorya trading center trading centre.

It should be noted that some of the potential impacts that have been raised by the public during the consultation process have already been mitigated by the engineering design of the project and the type of technology being used. For example, during stakeholder consultation with NEMA through ToRs, it was raised to address adequately and provide appropriate mitigation actions for impacts on air quality particularly odor arising from the poorly managed waste water and organic waste, particulate matter from the boiler, including details of equipment that will be installed to control air emissions. This has been catered for during the design to avoid such amenities by the new improved technology proposed. This followed the mitigation hierarchy of avoidance, minimisation, and restoration and with minimal consideration of offset in form compensation. A section of people from the community were sceptical about noise generation during construction and impacts on air and water pollution from the plant. It is discussed in the design report that the new proposed plant expansion and effluent treatment plant will dispose little or no effluent from the plant with the new technology, solid waste management and equipment with acceptable noise levels would be recommended to be used by Pearl

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Dairy Farms Limited.

Table E.2: Summary of Environmental Impacts for the Proposed Expansion of Dairy Production Facility and new Effluent Treatment Plant

Ref. No.	Potential Impact	Enhancement / Mitigation Measures
	CONSTRUCTION PHASE	
9.2	Potential Impacts on the Socio-Economic Environment	
9.2.1	Positive Impacts	Impact Enhancement Measures
9.2.1.1	<p><u>Employment opportunities and income</u> Creation of job opportunities during project development and construction will provide a number of employment opportunities for skilled, semi-skilled and unskilled labour. Recruitment of unskilled manual labour should give preference to local people wherever feasible. This impact will be beneficial to both men and women, especially when selling merchandise to workers. Dairy processing plants require a skilled workforce for various operations, including production, quality control, packaging, and distribution.</p>	<ul style="list-style-type: none"> i. During the construction phase the developer should design and implement Human Resources Policy which will include all requirements to hire workers with special treatment locally affected people. This policy should not be politically driven or any kind of discrimination on the grounds of race, ethnicity, religion, gender, and political affiliation; ii. Handling of workers should be in accordance with Uganda labour laws and the World Bank Environment and Social Framework as discussed under standard 2 of Labour and Working Conditions. iii. The workers contracts will be drafted on the backbone of the Constitution of Uganda and relevant laws and regulations such as the Employment Act (2006) and the National Gender Policy (1997) and Penal Code Act (as amended 2007). iv. Promote the local content by giving the first priority to the project area communities to enhance local incomes and project buy-in; v. Prohibit child labour and child sexual abuse through strict scrutiny during the workers recruitment exercise and massive public sensitization campaigns through the project implementation period,

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

		vi. Institute Grievance Redress Mechanism to help address the grievances from workers' and members from immediate communities as they arise.
9.2.1.2	<u>Acquisition/improvement of skills</u> People who have ever worked on similar projects before would improve on their skills. People who have never worked on such projects would acquire such skills which they would use to seek employment in future.	<ul style="list-style-type: none"> i. Provide on job training to enhance workers prospects of advancement within the project workforce and guidance with safe use of machinery for occupational health and safety purposes. ii. Provide kind of certificate, appointment or contract on which workers may use for future reference in the case applying for similar jobs somewhere else.
9.2.1.3	<u>Income to Construction material / equipment suppliers and sub-contractors</u> Construction of the proposed project will require materials such as gravel, aggregate, sand, murram, asphalt, and cement.	<ul style="list-style-type: none"> i. Ensure prompt payment to suppliers; II. Construction materials should be purchased from licenced quarry sites, to reduce on offsite environmental degradation as a result of the project implementation. III. Encourage the sourcing of raw materials locally to support local dairy farmers and reduce the carbon footprint associated with transportation.
9.2.2	Negative Impacts	
9.2.2.1	<u>Occupational Health and Safety Impacts</u> Considering activities involved in the implementation of the proposed project, there is potential to cause health and safety threats to workers and immediate neighborhood and therefore it is anticipated that occupational, health and safety impacts will be high. Activities involving lifting of heavy loads, operating machinery risks may all cause accidents, injuries and possibly loss of life.	<ul style="list-style-type: none"> i. Workers should be provided with appropriate PPE such as safety shoes, overalls, gloves, helmets and other necessary protective equipment, for use. ii. A first aider and first aid boxes should be available on site to handle minor accidents and to administer first aid in case of serious accidents before the victims are transferred to the nearby health facilities for extensive medical attention. iii. Ensure there are firefighting equipment onsite since the project involves use of chemicals. iv. The developer should ensure that at all time there are quick means of ambulating victims to the nearest

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

		<p>health facilities.</p> <p>v. Workers should be trained in safety matters including accident prevention, proper control and maintenance of equipment and facilities.</p> <p>vi. Workers should be provided with adequate public health facilities such as toilets.</p> <p>II. Emergency numbers of the Police (999) and those for nearby health Centre like Mbarara National Referral Hospital should all be with the developer.</p>
9.2.2.2	<p><u>Inadequate Security, Theft of equipment and Vandalism</u></p> <p>Vandalism and theft of project equipment, and other associated materials (cement) and installations could occur, and has been reported on other similar projects under construction or operation. This impact is likely to be at a medium negative since security personnel will be hired to keep materials safe at the storage yard.</p>	<p>i. The number of security personnel on-duty, as well as the time during which shifts change, should vary each day to eliminate a discernible pattern</p> <p>ii. Execute works as agreed with workers to avoid uncalled for strikes</p> <p>iii. Provide workers with work protect gears to avoid chaos originating from poor handling of workers</p>
9.2.2.3	<p><u>Influx of migrant workers</u></p> <p>The implementation of the project is likely to attract workers from different parts of Mbarara and the country at large into the project area - owing to the high rate of unemployment especially among the youths. This could create on the local resources and public services and a rise in social misdemeanor</p>	<p>i. Promotion of local content with involvement of the local leadership in the recruitment exercise</p> <p>ii. Careful scrutiny of workers during the recruitment phase to eliminate those with criminal records,</p>
9.2.2.4	<p><u>Community Hazards</u></p> <p>Risks may arise from unintentional or intentional trespassing, including potential contact with hazardous materials like sharp metals, open trenches and some other project components that are vacant or under construction, or excavations and structures which may pose falling and entrapment hazards</p>	<p>i. Restricting access to the site, through a combination of institutional and administrative controls, with a focus on high risk structures or areas depending on site-specific situations, including fencing, signage, and communication of risks to the local community; and</p> <p>II. Removing hazardous conditions on construction sites that cannot be controlled effectively with site access restrictions, such as covering openings to small confined spaces or locked storage</p>

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

		<p>of hazardous materials</p> <p>III. Ensuring there is no release of chemicals to the environment without prior treatment and ensuring it's nonhazardous at the point of release.</p>
9.2.2.5	<p><u>Gender imbalance</u></p> <p>In most cases, contractors tend to employ more men than women owing to the fact that most of the work is menial field work rather than office work and requires strong people who can withstand rough conditions such as strong temperatures, standing most of the time and working for long hours per day. It is therefore expected that gender distribution at the project site could be skewed, with more men than women in employment on the proposed project</p>	<p>Project developer would ensure to:</p> <ul style="list-style-type: none"> i. Identify those job opportunities where females can best operate during the construction phase, such as flaggers, laboratory technicians, administration, etc., ii. Emphasise equal access to opportunities for both men and women. iii. Announcement notices (in local language) of equal employment opportunities would be posted in visible and popular places in the local communities and that such notices would also reach women and youth leaders. iv. Both men and women would be represented in any information and consultative meetings held at the site and that gender and social issues would be raised and analysed.
9.2.2.6	<p><u>Impacts on Traffic Flow</u></p> <p>The major project activities that will require frequent vehicle movements are the earthworks and civil engineering. Increased transportation of raw materials and finished products to and from the plant can lead to congestion and wear and tear on local infrastructure.</p>	<ul style="list-style-type: none"> i. Transporting materials shall be scheduled for off-peak traffic hours, as far as possible. This will reduce the risk of traffic congestion and road accidents on Mbarara-Masaka road to the site; ii. Flagmen shall also be employed to control traffic and guide vehicles at the point where a wide truck is entering or exiting the premises; iii. Truck drivers should be sensitized on the proper driving code of conduct; iv. All heavy and wide trucks must carry warning sign at the rear of the vehicle as required by the law. v. Develop transportation plans to optimize routes, reduce congestion, and minimize the environmental impact of increased traffic.

9.3	Potential Impacts on the Bio-Physical Environment	
9.3.1	Negative Impacts	
9.3.1.1	<p><u>Impacts of noise emissions</u></p> <p>Noise arising from the implementation of the proposed project is likely to be generated by heavy trucks (material haulage trucks), compactors, excavators, dumper trucks, wheel loaders, standby generators among others. Treatment plant operations can produce noise and visual disturbances, potentially affecting nearby communities. Noise generated could be higher than the national permissible standards. Under the National Environment (Noise Standards and control) Regulations 2003, the recommended maximum permissible noise level for residential, industry or small-scale production and commerce in general environment is 70dBA and 60dBA during the day and night respectively.</p>	<ul style="list-style-type: none"> i. Construction equipment likely to generate high noise levels shall put off when not in use. ii. Regular servicing of all equipment to ensure high operation efficiency and therefore lower noise levels. iii. Construction contractors will be required to comply with the requirements of the IFC (Construction Plant and Equipment) (Permissible Noise Levels) guidelines and the Safety, Health and Welfare at Work (Control of Noise at Work) guidelines as well as national noise regulations.
9.3.1.2	<p><u>Generation of large volumes of Waste</u></p> <p>Waste may include waste water, cut to spoil soil and wood cuttings, More, hazardous waste may include; used oils and lubricants and fuel spills from running equipment, serviced vehicles oily rags and cans. Non-hazardous waste is likely to include excess fill materials from grading and excavation activities, wood cuttings and metallic pieces, culinary waste and small concrete spills. Dairy processing can generate significant amounts of waste, including packaging materials and by-products. This can contribute to solid waste disposal challenges. Treatment processes can generate sludge, which requires proper disposal or management to prevent environmental contamination.</p>	<ul style="list-style-type: none"> i. Prepare a site waste management plan. This should include the designation of appropriate waste storage areas, collection and removal schedule. ii. Equipment to be used on the sites should be well serviced and in sound mechanic condition to prevent cases of oil and fuel spillage into the immediate environs. iii. Locate car workshops and equipment servicing areas away from surface water courses. iv. Oil storage areas shall be constructed with an impervious surface with a bund around it. v. Contract a NEMA licensed waste handler to handle waste collection, transportation and disposal. vi. Implement effective waste management strategies, including recycling and proper disposal of packaging materials, and explore options for by-product utilization. vii. Implement proper sludge management practices, including

		treatment and disposal options, to prevent soil and water contamination.
9.3.1.3	<p><u>Impacts on Air Quality</u></p> <p>Emission of air contaminants may include fugitive dust from ground disturbance and exhaust emissions (Nitrogen Oxide, Carbon Monoxide etc.) from heavy trucks and construction machinery. Some processing activities may release air pollutants, such as odors or volatile organic compounds (VOCs), impacting air quality.</p>	<ul style="list-style-type: none"> i. Stockpiles of fine materials should be wetted or covered with tarpaulin during windy conditions. ii. Exposed ground should be sprayed with water in a manner that effectively suppresses dust. iii. The developer shall ensure that equipment is well-conditioned and serviced at all time. iv. The developer shall source for offsite already mixed concrete that would reduce the use of heavy machinery at the site. v. Identify specific routes and control vehicular speed for material delivery trucks for dust control. vi. Provide appropriate PPE including nose masks to construction workers. vii. Install air pollution control systems to minimize emissions and odors, ensuring compliance with air quality standards.
9.3.1.5	<p><u>Potential loss of biodiversity and modification of habitats</u></p> <p>Limited impact on biodiversity can be expected from clearance of remnant site vegetation. The impact severity is limited by the fact that the vast sections of the site have already been altered by human activities with animal grazing. Loss of vegetation and modification of natural habitat especially for birds and rodent. Establishing a treatment plant may require significant infrastructure and space, potentially impacting local land use.</p>	<ul style="list-style-type: none"> i. Site clearance shall be limited to blue prints of the project to ensure minimal vegetation removal and minimize the area of bare soil exposure to soil erosion. ii. After construction, the developer shall restore the sites affected by construction activities.
9.3.1.6	<p><u>Impact of material sourcing (creation of quarries and borrow pits)</u></p> <p>Sourcing of construction materials earth materials (particularly murram, sand and gravel) needed for the project construction of staff quarters, stores, warehouses, paving of truck parking yard and loading area may create borrow pits and quarry sites in source areas. In case these pits and quarries are not adequately restored, they</p>	<ul style="list-style-type: none"> i. Use existing borrow pits and quarries which have already acquired NEMA approvals wherever possible. ii. Mbarara city Authorities shall ensure that any new borrow pit sites identified for the purpose of the project obtain an approval before material excavation works begin. iii. Where materials are procured from

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	may: impound water becoming breeding grounds for mosquitoes and other disease vectors or pose risk of injury to animals and humans who fall into them.	commercial operators, restoration activities are a responsibility of the third parties. The developer shall however ensure safe excavations (angle of cut) and controlled speed of haulage trucks.
OPERATION AND MAINTENANCE PHASE		
9.4	Impacts on the socio-economic environment	
9.4.1	Positive impacts	
9.4.1.1	<p><u>Employment opportunities and income</u> Creation of job opportunities during project development and operation will provide a number of employment opportunities for skilled, semi-skilled and unskilled labour. Recruitment of unskilled manual labour should give preference to local people wherever feasible. This impact will be beneficial to both men and women, especially when selling merchandise to workers.</p>	<ul style="list-style-type: none"> i. During the operation phase the developer should design and implement Human Resources Policy which will include all requirements to hire workers with special treatment locally affected people. This policy should not be politically driven or any kind of discrimination on the grounds of race, ethnicity, religion, gender, and political affiliation; ii. Handling of workers should be in accordance with Uganda labour laws and the World Bank Environment and Social Framework as discussed under standard 2 of Labour and Working Conditions. iii. The workers labour contracts will be drafted on the backbone of the Constitution of Uganda and relevant laws and regulations such as the Employment Act (2006) and the National Gender Policy (1997) and Penal Code Act (as amended 2007) iv. Promote the local content by giving the first priority to the project area communities to enhance local incomes and project buy-in; v. Prohibit child Labour and child sexual abuse through strict scrutiny during the workers recruitment exercise and massive public sensitization campaigns through the project implementation period, vi. Institute Grievance Redress Mechanism to help address the grievances from workers' and members from immediate

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

		communities as they arise
9.4.1.2	<u>Acquisition/improvement of skills</u> People who have ever worked on similar projects before would improve on their skills. People who have never worked on such projects would acquire such skills which they would use to seek employment in future. Establishing such a plant can contribute to skill development, training, and capacity building, helping to enhance the human capital of the country.	i. Provide on job training to enhance workers prospects of advancement within the project workforce and guidance with safe use of machinery for occupational health and safety purposes, Provide kind of certificate, appointment or contract on which workers may use for future reference in the case applying for similar jobs somewhere else
9.4.1.3	<u>Induced development in the Project Area</u> There is possibility of emerging a new town or trading centre due to establishment of the proposed project.	i. Pearl Dairy Farms Limited should ensure proper maintenance of the plant. ii. The proposed landscaping design should be properly implemented.
9.2.1.4	<u>Value Addition to Dairy Products</u> A dairy processing plant can add value to raw milk by converting it into a range of dairy products such as yogurt, cheese, butter, milk powder, and more. Value-added dairy products have a higher market value and can lead to increased income for farmers and the dairy industry as a whole.	i. Pearl Dairy Farms should adhere to the UNBS standards.
9.2.1.5	<u>Income Diversification for Farmers</u> Dairy farmers can diversify their income sources by selling raw milk to the processing plant at competitive prices. This can provide them with a stable and predictable income, leading to improved livelihoods.	i. Involve local communities in the establishment and operation of the plant to ensure their needs and concerns are addressed, fostering positive relationships.
9.2.1.6	<u>Technology Transfer and Innovation</u> A dairy processing plant can introduce advanced processing technologies and practices to improve efficiency, product quality, and safety. This technology transfer can benefit not only the dairy industry but also contribute to the overall technological development of the country.	i. Implement strict environmental regulations and standards to ensure that processing activities do not lead to pollution or harm to natural resources. ii. Provide training and capacity-building programs to enhance the skills of the workforce, ensuring safe and efficient plant operations. iii. Regularly monitor effluent quality to ensure that treatment processes are effective and meet regulatory standards.
9.2.1.7	<u>Market Expansion</u> Processed dairy products often have a longer shelf life, which allows for	i. Involve local communities in the establishment and operation of the plant to ensure their needs and

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	distribution to a wider geographic area, including urban centers and export markets. This can lead to increased market opportunities and revenue for dairy producers.	<ul style="list-style-type: none"> ii. Educate local communities about the benefits of the treatment plant and involve them in its management and monitoring.
9.2.1.8	<u>Environmental Protection</u> An effluent treatment plant prevents untreated wastewater from entering water bodies, mitigating water pollution and protecting aquatic ecosystems.	<ul style="list-style-type: none"> i. Implement waste minimization practices within the processing plant to reduce the volume and toxicity of effluent generated. ii. Develop contingency plans for potential accidents or incidents to minimize negative impacts on the environment and public health.
9.4.2	Negative impacts	
9.4.2.1	<u>Loss of income among the project after layoff/demobilization of staff</u> Number workers will be reduced to a few people who will handle the operation and maintenance phase.	<ul style="list-style-type: none"> i. Provide financial literacy training to workers to make informed use of their incomes from the project after completion. ii. Provide workers with reference materials for use as future reference when applying for similar jobs elsewhere.
9.5	Impacts on the Bio-Physical Environment	
9.5.1	Negative impacts	
9.5.1.1	<u>Impacts arising from increases in Ambient Noise Levels</u> Treatment plant operations can produce noise and visual disturbances, potentially affecting nearby communities. Noise will mainly result from operation of generator, maintenance operating equipment and machines, loading and offloading trucks among others.	<ul style="list-style-type: none"> i. Selecting equipment with lower sound power levels. ii. Installing vibration isolation for mechanical equipment. iii. Limiting the hours of operation for specific pieces of equipment or operations. iv. Re-locating noise sources to fewer sensitive areas to take advantage of distance and shielding. v. Taking advantage of the natural topography as a noise buffer during facility design. vi. Developing a mechanism to record and respond to complaints.
9.5.1.2	<u>Sludge Generation</u> Treatment processes can generate sludge, which requires proper disposal or management to prevent environmental contamination.	<ul style="list-style-type: none"> i. Implement proper sludge management practices, including treatment and disposal options, to prevent soil and water contamination.

<p>9.5.1.3</p>	<p><u>Unpleasant odours from chemicals/ Resulting Impacts on Air Quality</u></p> <p>The odour characteristics of effluent treatment processes can generate environmental nuisance.</p> <p>Odours can be caused by manures, sludge fertilizers and chemicals, waste disposal sites, composting sites and activities, mulches and waste management equipment.</p> <p>The volatile chemicals when the packaging is destroyed and when stored in concentrated amounts. These volatile chemicals can be released even at low temperatures. These chemicals may have an adverse effect on the amenity of an area. While these chemicals are generally released in low concentration, the odorous nature of the volatiles imposes upon the environment, particularly to persons working with chemicals in stores and transportation when stored in concentrated amounts.</p>	<ul style="list-style-type: none"> i. Storing stockpiles of chemicals, a way from public amenities and the community. ii. The stockpiles of the chemicals should be fully enclosed and kept within enclosures or coverings that extend to ground level to trap volatile release that is associated with colder air currents. Further, the material should only be exposed to the atmosphere when accessing or replacing stock, so as to minimise the time periods where blooms of odour can escape. iii. The amount of chemicals stored on site should be significantly reduced and also ensure that only required chemicals are stocked to serve as samples that assist with orders and placed orders should be delivered directly to the stores. iv. Permanent building should be constructed where larger volumes stockpiles are stored, or where continually being replenished with new stock. The building should be vented through chimney stacks to ensure that the volatiles vapours do not further impact upon the nearby environments. v. Stockpiles of the chemicals should be stored on a sealed surface or on racks above the ground and not be stored on unlined surfaces or exposed to the weather, in pooling water, in areas subject to storm water run-off, or on saturated soils. vi. During transport, all chemicals should be covered in such a fashion as to minimise atmospheric exposure and airflow. vii. The stores should develop and execute “Odour Management Plans” to address the reduction of the potential for chemicals to contribute to environmental nuisance. The Odour Management
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Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

		<p>Plans should include detail of the chemical management Processes employed to manage the odour generated by the freshly treated timber.</p> <p>viii. The following storage structure should also be employed</p> <ul style="list-style-type: none"> • structurally sound to wind and weather especially good roof with no leaks. • fire resistant structure and internal cladding is preferred • wall and roof insulation to moderate storage temperature is desirable. • should have clear access and outward opening doors. • Ventilation must be adequate to prevent build-up of chemical vapours; both lower vents just above the bund and upper vents in the walls or roof are highly recommended. • Workers employed in chemical storage area must be provided with adequate PPE and limited time spent within the stores.
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<p>9.5.1.4</p>	<p>Occupational Health and Safety Brief direct contact with large amounts of chemicals with skin can result in irritation, which when not washed off or when accentuated by sunlight, can result in minor burns. Treatment processes may involve the use of chemicals, which can have environmental implications if not managed properly. Eye contact with chemicals may result in irritation, which can result in effects ranging from minor burns to severe corneal injury, including keratitis, conjunctivitis and corneal abrasion. Overexposure to chemical vapour may result in irritation to respiratory tract. Prolonged exposure in significant excess of permissible air concentrations can result in acute toxic effects, such as dizziness, respiratory difficulty, convulsions and possible cardiovascular collapse.</p>	<ul style="list-style-type: none"> i. All employees should wear long-sleeve shirts and long pants and use gloves impervious to the chemicals when handling the chemicals. ii. The workforce should wear goggles when handling the chemicals, to protect eyes getting in contact with the chemical and should also wash work clothes separately from other household clothing. iii. The site managers should give full regard to occupational health safety and welfare management issues that relate to the handling of the chemicals. iv. Where close contact is essential, following treatment, the following protective clothing should be used by all the employees at the farm: hooded coveralls fastened at neck, ankles and wrist; goggles; gauntlet gloves; impervious boots; a respirator with combined dust/organic vapor cartridge. v. Where close contact is necessary beyond the three-month holding period, the following protective clothing should be used by the workforce: full-length coveralls, impervious boots and gauntlet gloves. vi. Avoid burning wastes contaminated with chemicals in open fires or in stoves, fireplaces, or residential boilers because toxic chemicals may be produced as part of the smoke and ashes. vii. Minimize chemical usage and prioritize environmentally friendly treatment methods to reduce the impact of chemical discharge.
<p>9.5.1.5</p>	<p><u>Possibility of fire outbreak</u> The volatile chemicals readily escape the stores and pose a high risk of fire outbreak as a result of accidental fires.</p>	<ul style="list-style-type: none"> i. A fire-break zone should be created around the storage area with fire-fighting resources readily accessible.

		<ul style="list-style-type: none"> ii. The chemicals should be stored separately from other materials that present a potential fire hazard such as petroleum products. iii. Prepare fire management plan and emergency preparedness management plan and implement them.
9.5.1.6	<p><u>Impacts arising from waste generation and management</u></p> <p>The expected waste includes kitchens and bathrooms and toilet flushing, housekeeping, maintenance, and kitchen departments. Dairy processing can generate significant amounts of waste, including packaging materials and by-products. This can contribute to solid waste disposal challenges.</p> <p>Waste from this project shall be categorized as hazardous and non-hazardous waste. Major wastes would include,</p> <ul style="list-style-type: none"> • Organic Waste: This includes milk solids, whey, cream, and other dairy by-products that are not suitable for direct human consumption. These materials can be generated during processes such as milk separation, clarification, and concentration. • Packaging Materials: Dairy products are often packaged in containers, bottles, cartons, and other materials. These packaging materials contribute to solid waste generation. • Cleaning Waste: Dairy processing equipment and facilities need regular cleaning, leading to the generation of cleaning chemicals, detergents, and wastewater containing residues from cleaning processes. • Sludge: Effluent treatment processes can generate sludge as a by-product. Sludge may contain organic matter, suspended solids, and residual treatment chemicals. 	<ul style="list-style-type: none"> i. Integrate waste management activities in the area into the city-wide waste management system. ii. Companies with experience in handling waste especially desilted sludge should be contracted to dispose of waste material. iii. Waste Segregation and Recycling: Implement proper waste segregation practices to separate different types of waste, making it easier to recycle materials like packaging and cardboard. iv. By-Product Utilization: Explore opportunities to utilize dairy by-products for animal feed, composting, or other value-added applications, reducing organic waste. v. Effluent Treatment and Reuse: Install and maintain an effluent treatment plant to properly treat wastewater generated during processing, reducing the environmental impact of effluent discharge. vi. Lean Manufacturing Practices: Implement lean manufacturing principles to optimize processes, reduce excess production, and minimize waste generation. vii. Sustainable Packaging: Choose eco-friendly packaging materials and design to minimize the environmental impact of packaging waste. viii. Community Engagement: Engage with local communities to raise awareness about waste reduction and proper waste management practices.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

0.11 Environment Management Plan (EMP)

Environmental management is concerned with a planned, integrated Programme aimed at ensuring that identified and unidentified impacts of a project 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.

In keeping with Pearl Dairy Farms Limited environmental and health policy, consideration of the environmental implications of this project began from preliminary study, conceptual design, up to the present stage of Environmental Assessment (EA). This EA report is intended to provide an environmental input into the planning and execution of the project.

Environmental management activities of the facility will be governed by a series of regulations that impose standards and mitigation of environmental hazards. Thus, it is a planned and integrated Programme aimed at ensuring that both identified and unidentified impacts that may arise during the various phases of the project are brought to an acceptable level.

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

- Integrate environment fully into the business;
- Rationalize and streamline existing environmental activities to add value in efficiency and effectiveness;
- Ensure compliance with legislation and environmental and health policy for Pearl Dairy Farms Limited;
- Be applicable throughout the organization.
- Hold early consultations with communities and regulating authorities to ensure hitch free operations;
- Achieve, enhance and demonstrate sound environmental performance built around the principle of continuous improvement;
- 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.

0.12 Recommendations

The most important recommendations are presented below. Of these, some of which are strategic and others require Joint Corporation between lead agencies and authorities

- The developer together with the district Environment Officer, officials from NEMA and other relevant government departments shall carry out regular monitoring to ensure that the recommended mitigation measures are carried out.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- The developer should carry out annual environmental audits for the project as required by law.
- The developer should keep up-to-date records of the project activities with copies at the project premises to ease monitoring by inspectors and other lead agencies.
- The developer is accorded maximum support to realize the anticipated benefits for sustainability of the project.
- The developer adequately complies with the proposed mitigation measures against the identified potential negative impacts and any other conditions that may be stipulated by the regulatory authority (NEMA) and the other key lead agencies.
- Non-compliance with the Recommendations in this ESIA statement and/or NEMA certificate. Many times, Project Contractors do not comply with the recommendations given in the project environmental report and/or NEMA certificate / letter of approval. This could tantamount to violation of the law with possible halting of the whole project by the relevant authorities, including NEMA. A copy of this report would be availed to the Project Contractor. The Project Contractor would ensure that a copy of the certificate / letter of NEMA approval is available and displayed at the project site at all times throughout the construction phase.
- A waste awareness programme should be implemented by the responsible authority to encourage minimizing waste generation, and thereby minimise the potential for waste pollution.
- If the positive impacts to proposed project are to be permanently retained, this will require continuous investment in plant maintenance once the project is complete.

Conclusions

The environmental assessment of the proposed project has not identified any major negative impacts that cannot be successfully mitigated. The critical environmental issues identified by the EIA were related to site drainage, chemical handling, health and safety, biodiversity and habitat modification for fauna and avi fauna, water quality, construction works management, noise and vibrations, sludge management, solid waste management, air quality and emissions, traffic flow and security onsite. Others are accidental and fire risks.

Residual negative impacts are anticipated to be negligible, provided that the mitigative measures recommended are properly implemented and monitored.

The cumulative impacts have been assessed against other activities within the project area that may have similar impacts as those of the proposed project onto the same receptor. The proposed recommendations could successfully mitigate all the cumulative impacts to acceptable levels.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

0.13 Opinion of a Team of Environmental Assessment Practitioners

The contracted team of certified environmental practitioners wishes the proposed Expansion of Dairy Production Facility and new Effluent Treatment Plant to be granted Environmental Authorization subject to implementation of the recommendations provided in this Environmental and social impact Statement. This opinion is based on environmental practitioners understanding of the project scope, familiarity with the issues and concerns, insight into the current and future environmental impacts, and experience undertaking EIAs.

1.0 INTRODUCTION

1.1 Background

This document is an Environment & Social Impact Assessment (ESIA) report seeking for an environmental clearance for establishment of the Proposed Expansion of Dairy Production Facility and Effluent Treatment Plant. Pearl Dairy Farms Ltd (PDFL) is a dairy processing company in Uganda specializing in the production of pure, nutritious high-quality milk products that appeal to our customers' taste use of modern technology to transform milk into different products that meet the evolving needs of the market. The factory manufactures the following products among others full cream powdered milk, skimmed powdered milk, instant full cream powdered milk, UHT milk, ghee and butter oil. Since inception the company's actions have been driven by success coupled with a deep desire to serve customers with a vision to help provide a platform for processing produce from the local dairy farmers in Mbarara. NEMA granted Pearl Dairy Farms Ltd a licence to manage waste on 15th April 2021 under license number TR/ST/WT/WD /021/2021 for Classification and categorization of waste: B3060 and B3065.

According to National Environment Act, 2019 section 157 (a), "it is an offence for one to undertake an activity which requires an environmental and social impact assessment or environmental risk assessment before obtaining a certificate of approval or other approval required in accordance with the applicable law. Therefore, Pearl Dairy Farms Ltd operating in Uganda under the brand name of LATO milk is proposing to implement an expansion program for their dairy production facility and establish a new effluent treatment plant with a feed rate of 1 million liters/day per 24 hour day as well as expanding milk powder capacity from 200,000litres per day to 300,000litres (from daily production of 20 powder tones _30 powder tons per day) and has initiated an environmental assessment.

The proposed project is a regulated activity which requires undergoing Environmental Impact Assessment process before implementation. The proposed activity is a regulated activity which requires undergoing Environmental Impact Assessment process before implementation. It is an activity listed under schedule 5 of NEA, 2019, Category 7 of **"Food and beverage industry."** including (e) **"Processing of dairy products."** Also, category 22 of **"Waste management facilities"** including (c) **construction of waste management facilities** including (v) **waste water/effluent treatment plant** requires an environmental clearance.

Also, according to World Bank environmental and social safeguard standards, the proposed project is among the projects ranked as Risk Category A Projects requiring a full Environmental Scoping, and full ESIA and a detailed ESMP, regardless of the legislative and regulatory requirements for environmental assessments.

1.2 Requirement for Environmental and Social Impact Assessment

The proposed activity requires undergoing Environmental Impact Assessment

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

process before implementation. An Environmental and Social Impact Assessment (ESIA) is being done by independent certified environmental practitioners to evaluate the potential environmental and social impacts of the proposed project. The ESIA is being done in terms of the Environmental Impact Assessment Regulations of 1998, National Environment Act (NEA, 2019) fifth schedule and also World Bank Environmental Safe Guards.

It is an activity listed under schedule five of NEA, 2019, schedule 5 of NEA, 2019, Category 7 of **“Food and beverage industry.”** including (e) **“Processing of dairy products.”** Also, category 22 of **“Waste management facilities”** including (c) **construction of waste management facilities** including (v) **waste water/effluent treatment plant** requires an environmental clearance.

By the enactment, the project proponent (Pearl Dairy Farms Ltd) is required to submit an Environment and Social Impact Assessment (ESIA) to the regulatory authority (NEMA) for approval before commencing implementation of the project. This compiled EIA report provides information on the proposed project and an overview of the potential significant environmental effects during construction and operation/maintenance phases.

1.3 Objectives of Pearl Dairy Farms Ltd (PDFL)

The overall project objective is to provide milk and milk products of uncompromising quality and demonstrate “due diligence” during production and distribution of safe and quality milk and milk products in Uganda and globally. Others include;

- i. Fully satisfy customers and other interested parties by meeting their needs and expectations.
- ii. Comply with all applicable National and International Legislations and Regulations about Quality and Food Safety as well as mutually agreed customer requirements.
- iii. Maintain a Quality and Food Safety Management System according to ISO 9001:2015 and ISO 22000:2018 covering production processes, storage and distribution of dairy products.
- iv. Ensure continual improvement of Integrated Management System and compliance with all relevant standards through setting up and reviewing annual Food Safety and Quality Objectives.
- v. Employ and retain competent staff related to Quality and Food Safety.
- vi. Prevent pollution to the environment, minimizing generation of waste and disposing it in a responsible manner to reduce the risk of product contamination.
- vii. Committed to provide quality and safe products while enhancing environmental awareness, personal and product safety among employees through training and development.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- viii. Ensure effective management of corrective and preventive actions for non-conformances.

1.4 The EIA Premises

The key premises that affect EIA process were established from the initial stage of the project and have provided the general guidance, framework, and commitment to standards acceptable nationally and internationally. The premises shall be retained and variations allowed only in certain circumstances with supporting evidence to do so.

The premises include;

- The area is within the exclusive jurisdiction of the republic of Uganda. Therefore, national laws, including the environmental laws apply;
- The project recognizes the laws, and regulations of the republic of Uganda as represented by the Uganda Bureau of Standards, National Environment Management Authority (NEMA) and other related and relevant lead agencies that insist that best options will be adopted for the project execution;
- The agreements and understanding reached with government officials during the course of the EIA process will be respected and honored;
- Extensive consultations have and will the host communities and concerned Non-Governmental Organizations (NGOs); and
- An environmental management plan (EMP) will be developed as part of the EIA process. The implementation of this plan will be the responsibility of Pearl Dairy Farms Ltd (PDFL) or its contractors depending on contractual obligations;

1.5 Environmental and Social Impact Assessment

It is a systematic study of impacts of proposed project activities on the Physio-chemical, biological, ecological, Socio-Economic and health components of the environments. Pearl Dairy Farms Ltd has undertaken this Environmental and Social Impact Assessment (ESIA) study, to predict the impacts of the proposed development on the environment and propose mitigation measures that will be incorporated into the project environmental management plan.

The ESIA covers the project description, baseline studies, consultation and public disclosure programmes and procedures, social and health impact assessment, environmental quality assessment and impact quantification and an Environmental Management Plan (EMP).

The ESIA study will make an input into the conceptual design of the project, to ensure that any identified adverse impacts are addressed at the early stage of the project and mitigated during the activity stages, involving site preparation, machinery installation, commissioning, operation, maintenance and abandonment (completed project life span).

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

1.5.1 Purpose of the ESIA

The purpose of this ESIA is to establish the environmental sensitivities, impact and mitigation measures with respect to the project. These will effectively and adequately enable the followings:

- Assessment of the state of the environment and establishment of environmental issues and factors associated with the proposed project.
- Assessment and prediction of all possible and potential impacts of the project on components of the environment in terms of magnitude and importance;
- Evaluation of alternatives and identification of the best options that is both cost effective and with least potential environmental impact.
- Incorporation of EIA recommendations into the project detailed design as well as other stages of the project.

1.5.2 Benefits of the ESIA

The benefits of the ESIA will, among other things, include:

- Obtaining authorization; this is required by regulatory authorities before the commencement of any major development;
- Providing a forward planning tool; when environmental implications are taken into account with other design considerations at the conceptual design stage. It allows for important decisions to be built into the project while avoiding undue damage to the environment;
- Providing a designing tool that would allow a systematic evaluation of potential environmental problems from the proposed development and identification of key issues which require special consideration for effective environmental management and controls;
- Involving all stakeholders through consultation so as to address common problems, impacts, and mitigating measures that might be proposed in order to obtain a social acceptance for the project;
- Informing and assisting management with a view to establish and achieve long term management objectives in order to minimize associated financial and environmental risks; and
- Confidence building by Pearl Dairy Farms Ltd.

1.6 Declaration

Pearl Dairy Farms Ltd in its capacity as the promoter and operator of the project hereby declares its intention to abide by the existing international and national laws and regulations regarding environmental protection during the construction and operation of the proposed project. Pearl Dairy Farms Ltd is committed to the implementation of the Environment Management Plan (EMP) proposed in this EIA report. It avows that it 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 project is being implemented by PEARL DAIRY FARMS LIMITED

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Table 1.1: Full particulars of the developer

Contract Title:	Environmental and Social Impact Assessment Report for Expansion of Dairy Production Facility and new Effluent Treatment Plant
Developer	PEARL DAIRY FARMS LIMITED
Contact Person	Mr. Rakesh Jha 0707591566 Environment, Health and Safety Manager
Contact Address	P.O Box 7420, Kampala-Uganda latomilk.com info@latomilk.com
Project Cost	27,342,000

1.8 Structure of the Report

This report is presented in Eleven (11) Chapters which include the following;

- Chapter one (1) is an introduction with the Background, the ESIA premises, ESIA, the Purpose of the ESIA, Benefits of the ESIA and Declaration.
- The Second (2) chapter discusses the project justification (the need of the ESIA) and presents the need/value of the project.
- Chapter Three (3) gives the analysis of alternatives for proposed project.
- Chapter Four (4) describes the approach of methodology used during environment assessment.
- Chapter Five (5) provides a concise description of both national and international policies and legislation relevant to the project;
- The Sixth (6) chapter describes the proposed project, location, project activities/components, and the project schedule.
- Chapter Seven (7) describes baseline condition of the study area. Information on Physical, Biological and socioeconomic status of the area is contained in this chapter.
- Chapter Eight (8) discusses Public disclosure and stakeholder consultations carried out for the proposed facility. The chapter also contains information consultation activities with Stakeholders-Government Agencies and departments, the public and the host communities within the project;
- Chapter Nine (9) discusses the Associated and Potential Environmental Impacts of the proposed project and the Mitigation Measures for the identified adverse impacts.
- Chapter Ten (10) recommends a cost-effective Environmental Management Plan to adopt throughout the project cycle. It also recommends an environmental monitoring and wastes management programme and outlines the plans for site restoration and remediation after closure/abandonment.
- Chapter Eleven (11) gives Recommendations and conclusion.

References and appendices are also included in this report.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

2.0 PROJECT JUSTIFICATION

2.1 Need for the Project

Pearl Dairy Farms Limited observed a gap with a pivotal need to change the livelihoods of smallholder farmers in the East African region whilst creating a resilient next generation for Africa by catering to the nutrition needs of today's children. The need for the dairy expansion arises from the current demand for milk and its products existing in the country. This has to some extent been a natural consequence of the rapidly population growth. In addition, Value Addition to Dairy Products where a dairy processing plant can add value to raw milk by converting it into a range of dairy products such as yogurt, cheese, butter, milk powder, and more creating a higher market value and increased income for farmers and the dairy industry as a whole, Employment Generation for skilled workforce for various operations, including production, quality control, packaging, and distribution thus creating job opportunities and contribute to reducing unemployment rates, Income Diversification for Farmers by selling raw milk to the processing plant at competitive prices providing them with a stable and predictable income, leading to improved livelihoods, Technology Transfer and Innovation due to introduction of advanced processing technologies and practices to improve efficiency, product quality, and safety which contributes to the overall technological development of the country, Improved Milk Quality and Safety by typically adhering to strict quality and safety standards while processing milk in a controlled environment which reduces the risk of contamination and spoilage, ensuring that consumers have access to safe and high-quality dairy products, Market Expansion owing to the fact the processed dairy products often have a longer shelf life, which allows for distribution to a wider geographic area, including urban centers and export markets thus increased market opportunities and revenue for dairy producers, Nutritional benefits due to the production of fortified or enriched products, such as vitamin-fortified milk or probiotic-rich yogurt, Foreign Exchange Earnings through exporting to neighboring countries and beyond, contributing to foreign exchange earnings for Uganda, Reduced Post-Harvest Losses by preventing wastage during peak production of excess milk and reduce post-harvest losses, Rural Development through the development of local infrastructure, transportation networks, and support services, contributing to overall rural development.

In addition, being an Eco-friendly company with environmental responsibility, there is need to send zero waste to the landfill by Re-purposing and recycling as much waste as possible and also convert waste into energy.

The new proposed dairy effluent (Dairy effluent refers to the wastewater generated during milk processing and cleaning operations in dairy facilities) treatment plant will offer the following benefits among others;

Environmental Protection: Untreated or improperly treated dairy effluent can contain high levels of organic matter, nutrients (such as nitrogen and phosphorus), and

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

potentially harmful pathogens. When released into water bodies or land, this effluent can lead to water pollution, eutrophication (excessive nutrient enrichment), and the spread of diseases. A treatment plant can help mitigate these environmental impacts by removing or reducing contaminants before discharge.

Compliance with Regulations: Uganda has environmental regulations and standards in place that dictate the permissible levels of pollutants that can be discharged into water bodies or onto land. Establishing a dairy effluent treatment plant ensures compliance with these regulations and helps avoid penalties or legal actions.

Water Resource Management: Uganda faces challenges in managing its water resources. Treating dairy effluent before it is released into water bodies can help protect freshwater resources, ensuring they remain available and safe for various uses, such as drinking water, agriculture, and aquatic ecosystems.

Public Health: Dairy effluent can contain pathogens and contaminants that pose risks to public health if not properly treated. By implementing effective treatment processes, the potential for waterborne diseases and health hazards can be significantly reduced.

Agricultural Benefits: Treated dairy effluent can be repurposed as a valuable resource for irrigation and fertilization. Properly treated effluent contains nutrients that can be beneficial for soil fertility and crop production, reducing the need for synthetic fertilizers and promoting sustainable agricultural practices.

Economic Opportunities: Establishing and operating a dairy effluent treatment plant can create employment opportunities and stimulate local economic growth. It can also contribute to the growth of the dairy industry by enhancing the industry's reputation for environmental responsibility and sustainability.

International Trade and Market Access: As global awareness of environmental issues grows, consumers and trade partners increasingly value environmentally responsible practices. Having a functional dairy effluent treatment plant can enhance Uganda's position in international trade by demonstrating commitment to sustainable production practices.

Research and Innovation: The establishment of a treatment plant can foster research and innovation in wastewater treatment technologies, leading to potential advancements that can be applied to other industries and sectors as well.

Therefore, establishing the proposed project will help in production of milk and milk products all year round in an environmentally sustainable manner.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

2.2 Project Activities

The activities of the Proposed Project are as follows:

Project activity	Status	Expected Delivery
1. Land Acquisition/Land take/ Compensation	Completed	Landownership
2. Environmental and Social Impact Assessment (underway)	Underway	NEMA Certificate
3. Engineering Design	Complete	Approved drawings
4. Material Procurement and Transportation	Undergoing	Unspecified
5. Site clearing	Not yet	Unspecified
6. Structural establishment	Not yet	Unspecified
7. Equipment Installation	Not yet	Unspecified
8. Major Project works	Not yet	Unspecified
9. Commissioning	Not yet	Unspecified
10. Decommissioning (removal of facility structures, scrap metals, industrial refuse and grease).	Not yet	Unspecified

2.2.1 ESIA Activities

In the course of executing the ESIA, an assessment involving literature review, document review, field reconnaissance survey, as well as consultations were carried out. These formed the basis for the ESIA report.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

3.0 ANALYSIS OF PROPOSED ALTERNATIVES

3.1 Introduction

This chapter identifies and describes the alternatives which were examined during the development of the project proposal. The concept of alternatives is aimed at ensuring that the best among all possible options is selected. In this case alternatives including not developing the proposed project are discussed in order to demonstrate environmental conditions without the project.

Dairy processing investment and effluent treatment plants activities need proper and adequate management in terms of safe chemical usage, noise and vibration control, occupation health and safety, solid waste management, water quality control, air quality, biodiversity management plans, socio-economic issues and community safety issues.

The developer did not involve this ESIA team during engineering designs and site selection. The environmental considerations were crucial in the process. The developer has further prepared an environment and social Impact Assessment report which would be submitted and approved by NEMA.

Therefore, the project site may or may not be suitable for the proposed project as far as environment protection is concerned—the discussion of this Chapter.

3.2 Proposed Alternatives

The Integrated Environmental management (IEM) procedure stipulates that an ESIA process needs to consider feasible alternatives for any proposed development. Therefore, all concerned lead agencies and other relevant stakeholders require that a number of possible proposals or alternatives for accomplishing the same objectives be considered. The alternatives under which the ESIA team considered include;

- Technological alternatives;
- Location or layout/alignment alternatives;
- Timing alternatives;
- Strategic alternatives; and
- No-development option

Motivation is provided as to the reasoning behind the screening of some alternatives and the selection of a preferred option.

3.2.1 Alternatives to the Proposed Layout Design

The ESIA team was presented with a lay out plan on behalf of Pearl Dairy Farms Ltd. The proposed lay-out plan is detailed to show an aerial view of the locations of the facility's components i.e. the boiler layout and Composite plant layout. Some

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

alternatives are discussed below that may need serious considerations by the developer and relevant stakeholders before implementation.

3.2.1.1 Accessibility and Security

As presented in Fig 6.3, the Composite plant layout includes all the facility components. It also shows the main access to the site.

For security, Fig 6.3 indicates that the proposed plant will have a boundary or perimeter wall enclosing the all sides of the site apart from the frontage which would be used for accessibility (in and out of the plant). In addition to the boundary wall, the plant management will hire a specialised security company (guard) to be onsite at all times. This is to protect all facility components from vandalism and also protecting the immediate neighbours from any emergency fire outbreak or any security hazard from the facility. This is the best alternative suitable as access will be through the main gate then drive through to the other entrance gate into the proposed new site for expansion.

3.2.1.2 Provide sanitary facilities

From Fig 6.3, on the Composite plant layout, it is indicated how human waste is going to be managed i.e. Urinals and water borne toilets managed with septic tanks. Furthermore, sewage management systems like a soak pit will be located at the site as indicated on the layout in Fig 6.3.

3.2.1.3 Management of facility portable contaminated and storm water

There is national piped water within the project supplied by NWSC as an authorised Authority. In the lay-out plan, an oil interceptor is not indicated to manage oil spills mixed with storm water. Furthermore, the storm and roof water generated by facility structures and run off from outside and within the facility premises, the EIA team proposes that it will be reduced to the minimum through:

- * Harvesting rain water from the all the roofs of the facility structures i.e., office block. Harvested water should be used for cleaning some plant facilities like floors and toilets among others; and
- * Maximizing green cover through planting grass (thus maximizing rain water infiltration).

A new effluent waste water treatment plant is to be constructed to minimise discharge into the environment. The alternative settled for by Pearl Dairy Farms Ltd is to construct a new effluent waste water treatment plant that uses modern technology and is environmentally friendly.

3.2.2 Timing Alternatives

There is a definite need to overcome the potential current need of milk products among others full cream powdered milk, skimmed powdered milk, instant full cream

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

powdered milk, UHT milk, ghee and butter oil locally and globally. Because of limited quality supply, other products of low quality have been supplied thus the proposed project is timely.

With current demand of quality milk products within the country and across the globe, the proposed project area urgently requires Pearl Dairy Farms Ltd to plan and execute goals well in advance in order not to be inconvenienced by the wet/ rainy season. It is therefore necessary to ensure environmental sustainability in the medium to long-term. Furthermore, the proposed project will be brought into operation at the time when all the relevant required environmental permits and licenses are obtained. It is however necessary to secure the necessary legal authorizations and associated environmental permits beforehand and to construct the necessary infrastructure to ensure that developer's long-term needs can be met.

3.2.3 Technological alternatives and Design

Some of the technological designs discussed where, effluent treatment plant processes, foundation requirements, ease of machining, ease of Installations, cost saving and environmental impact.

During waste water pretreatment, Pearl Dairy Farms Ltd has proposed a High Performance, GEA bio solids Decanter pro 6000 for dewatering sludge after the "equalization tanks." The decanter pro 6000 is equipped with the differential drive system. Automatic regulation of the differential speed allows optimum clarification with maximum dry substance values and throughput capacities and high operating safety.

Legend:

- F.C. - frequency converter
- MID - inductive flow meter
- FHM - flocculent
- V2A - stainless steel (1.4301 / AISI 304)
- V4A - stainless steel (1.4404 / AISI 316)
- o. equiv. - or equivalent

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city



Technical specifications:

- Bowl diameter: 530 mm
- Bowl length: 2120 mm
- l/d ratio: 4
- Bowl speed: 3250 rpm
- G-force: 3130
- weight: approx. 4200 kg

Drive motor (bowl drive by frequency converter):

- operating voltage: 380 - 420 V
- rating: 45 kW with VFD (400 V / 50 Hz)
- speed: 1500 rpm (400 V / 50 Hz)

Secondary motor (scroll drive by frequency converter):

- operating voltage: 380 - 420 V
- frequency: VFD range 17 - 87 Hz
- rating: DOL 11 kW at 50 Hz

Materials:

- rotating product-contacting parts: 1.4470-B1, 1.4462, 1.4571, 1.4404
- stationary product-contacting parts: 1.4571, 1.4404
- all other parts: painted steel (paint: green RAL 6026 structure)

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Process and design conditions (Feed)

- pH >6,5
- Chlorides < 1000ppm
- Temp < 60°C

3.2.4 “No Project” Option at the Proposed Site

The relevant lead agencies, NEMA in particular emphasizes that the no-go option should be considered in cases where the proposed development could have a significant negative impact that cannot be effectively or satisfactorily mitigated.

Instead of building a new processing plant and effluent treatment plant, the alternative would be considering utilizing existing processing facilities at the plant. This would mean no improvement in technology from the old effluent treatment plant thus the air quality would stay the same and quality of discharge of effluent would continue to deteriorate. This would also mean setting up of decentralized co-operatives where multiple small dairy farms collaborate to share processing equipment and facilities thus reducing the quality of processed dairy products and increasing contamination. Notwithstanding, it is important to note that the directors of Pearl Dairy Farms own this big chunk of land of about 0.20230 hectares and 0.9500 hectares for a very long time and no other land was available to be used for this project within the project area.

From the above “for” and “against”, the “No-project at the proposed site” option cannot be supported technically.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

4.0 APPROACH AND METHODOLOGY

The methodologies adopted for conducting this ESIA are as follows:

4.1 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.

4.2 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 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 informant's interviews was used to obtain information on the Socio-Economic conditions of the area.

4.3 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, Uganda National Bureau of Standards and Dairy Development Authority (DDA) under the Ministry of Agriculture Animal Husbandry and Fisheries (MAAIF). Local Government and Local authority consulted includes Mbarara city representatives. Affected individuals consulted include village

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

members and village leaders.

4.4 Environmental Noise

The team based on the National Environment (Noise Standards and Control) Regulations, 2003 as stated in Part II and regulation 6 and all the schedules stated therein for guidance on the assessment of noise from different points. Construction noise can have disturbing effects on the surrounding neighborhood.

All sound level measurements were taken with TES 1350A Sound Level Meter. It has a numerical Display 4-digit digital LCD with 0.1dB resolution and a display period of 0.5 seconds, Measuring Level Range between Lo - 35 to 100dB; Hi - 65 to 130dB, Frequency Range of 31.5Hz to 8Hz and accuracy of ± 2.0 dB with time Weighting: Fast (125ms), Slow (1s). The meter meets all requirements to measure noise levels and be compared with schedules set forth in National Environment (Noise Standards and Control) Regulations, 2003.

All instrumentation was calibrated as per instructions in the user manual recommendations. For all measurement sessions the microphone was fitted with an environmental windscreen to negate the effect of air movement and hand held at a height of about 1 meter above the ground, and measurements were made away from any vertical reflecting surfaces.

4.5 Methodology of Assessing Fauna and Flora Species

An inventory of biological diversity occurring within the project area was compiled during the assessment. Lists of plants and fauna species that were observed during the assessment are presented herein. The area is characterized by anthropogenic interventions that have to a great extent influenced the vegetation cover within the proposed project area.

4.5.1 Biological Diversity Inventorying

Given the small area of the project site, the inventorying involved moving on foot within the site observing, searching and recording species encountered. The walks were done in such a way that the representative diversity of the area is captured.

4.5.1.1 Plants

During the walk observations and searching of new species of plants (i.e. trees and shrubs) were done. The frequencies of occurrence and relative densities were also taken note of. Most of the plants were identified in the field.

4.5.1.2 Birds

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Walk counts to inventory birds employed observation methods over a period of time. Observations were done using 10x40 binoculars and an effort was made to capture as much as possible the birds that visit the site.

4.6 Impact identification, prediction, evaluation and mitigation

Project activities were linked with environmental baseline conditions in the study area to identify the potential impacts. A rating criterion (based on nature, extent, duration, magnitude and probability of occurrence of an impact) was then developed and used to evaluate the significance of the impacts so that relative comparisons between the impacts could be done.

4.6.1 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.

4.6.2 Extent of the Impact

The extent of each impact was rated as being one of the following:

- (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. Mbarara city),
- (4) Regional (i.e. Western region),
- (5) National (i.e. Uganda), or
- (6) International (i.e. Eastern Africa and beyond).

4.6.3 Duration of Impact

The 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 project operation stops)
- (5) Permanent (no mitigation measure of natural process will reduce the impact after construction).

4.6.4 Magnitude of the Impact

The intensity of severity of each impact was rated as being one of the following:

- (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),

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- (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).

4.6.5 Probability of Occurrence

The likelihood of the impact actually occurring was indicated 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).

4.6.6 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.

Cumulative impacts and reversibility were also identified and assessed.

Table 4.1: Impacts Significance Rating

SP	Negative Rating	Definition	Positive Rating
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Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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 localised and temporary. Impacts result in minor alterations to the environment and can easily be alleviated by the implementation of effective mitigation/enhancement measures.	[+] VERY LOW - LOW
31-60	MEDIUM [- 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/enhancement measures.	[+] MEDIUM
>60	HIGH [-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

4.7 Cumulative Impacts

IFC defines Cumulative impacts as those that result from the successive, incremental, and/or combined effects of an action, project, or activity when added to other existing, planned, and/or reasonably anticipated future ones. Cumulative impacts are changes to the environment caused by an action (project or project activity) in combination with other past, present, and future human actions. Cumulative impacts occur as interactions--between actions, between actions and the environment, and between components of the environment. These pathways between a source and an effect are often the focus of an assessment of indirect or cumulative impacts.

Cumulative impacts for the proposed greenhouse project were assessed, and a Cumulative Impact Assessment (CIA) developed. CIA was based on assessing the Valued Ecosystem Components (VECs) which define any part of the environment that is considered important by the proponent, public, scientists, and government involved in the assessment process.

The main objective of CIA is (a) to analyze the potential impacts and risks of proposed project in the context of the potential effects of other human activities and natural

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

environmental and social external drivers on the chosen VECs over time, and (b) to propose concrete measures to avoid, reduce, or mitigate such cumulative impacts and risk to the extent possible.

While such projects have provided significant impetus to growth, it is well known that such projects present a number of economic, environmental and social concerns. The methodology for CIA analysis was same as described in section 4.6 above.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

5.0 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

Key legislations governing the conduct of EIA in Uganda are the National Environment Act, (Cap. 153) 1995 as amended in 2019 and the Environmental Impact Assessment Regulations of 1998. The National Environment Act established the National Environment Management Authority (NEMA), and entrusts it with responsibility to ensure compliance with the EIA process in planning and execution of development project likely to impact on the environment. The salient laws and policies that were reviewed during the study are provided in the table 5.1 below.

This section provides overview of the environmental legal requirements that are likely to have direct or indirect bearing or influence on the proposed project, and which need to be taken into consideration during the EIA process and the design, construction and operation of the project. The framework also includes international guidelines, namely the Equator Principles, World Bank Environmental Safe guards and IFC Performance Standards; and identifies the institutions responsible for monitoring and enforcement of national legal requirements.

Table 5.1: Legal Frame work

Regulatory Assessment for the establishment of proposed expansion of Dairy Production Facility and Effluent Treatment Plant			
No	Ref/Chapter	Description	Application to the project
5.1 Policies			
5.1.1 The National Environment Management Policy (NEMP), 1994			
		NEMP aims at promoting intergenerational equity and sustainable development. It seeks to enhance health and quality of life of the people of Uganda by the integration of good environmental practice and behavior into development policies, plans and activities. The policy also aims at conservation and restoration of the environment, raising public awareness, and ensuring individual and community participation in environmental and development activities. It provides the doctrine of	Developer to carry out ESIA in consideration of the nature of the project in relation to its receiving environment. Developer has submitted an Environmental and Social Impact Statement in this regard

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	Chapter II	sustainable environmental management nationally. Provides for sustainable economic and social development through a number of strategies that include environmental and social impact assessment.	
5.1.2 The National Policy on HIV/AIDS			
	Chapter 2, section 2.2	A national policy on HIV/AIDS and the world of work was adopted in July 2007. The policy emphasizes health education and preventive measures against the spread of HIV/AIDS at the workplace. It also promotes equal treatment, non-discrimination and access to treatment and counseling services for persons living with HIV/AIDS at the workplace.	The project should contribute to significantly minimizing the spread of HIV/AIDS within the proposed project area.
5.1.3 The National Water Policy, 1999			
		Manage and develop the water resources of Uganda in an integrated and sustainable manner. To control pollution of water resources and promote safe storage, treatment and disposal of waste, which could have adverse effects on public health.	Contamination of watercourses especially surface water resources during development or operation of the project would conflict with this policy.
5.1.4 The Land Use Policy, 2004			
	Chapter 2, section 2.2	A transformed Ugandan society through optimal use and management of land resources for a prosperous and industrialized economy with a developed service sector. Achieve sustainable and equitable social and economic development through land utilization in Uganda. The	Sustainable and equitable social and economic development of the land.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

		specific objective of the policy is to promote land use activities that ensure sustainable utilization of natural resources for national Socio-Economic development.	
	Chapter 2.3.1	Physical Development Plan guides orderly physical and sustainable development of the city over the next decade through a participatory process.	
5.2 Laws			
5.2.1 The Constitution of Uganda, 1995			
	Chapter XXVII	The State shall promote sustainable development and public awareness of the need to manage land, air and water resources in a balanced and sustainable manner for the present and future generations.	The operations must comply with the national constitutional provisions especially the right of all Ugandans to a clean and healthy environment.
5.2.2 The National Environment Act, 2019 (Cap 153)			
	Part X:	Outlines Process of undertaking Environmental and Social Impact Assessments.	Developer to carry out an environmental assessment in consideration of the nature of the project in relation to its receiving environment. ESIS to be submitted to NEMA for authorization prior to implementing the project.
5.2.3 The Investment Code Act, 1999			
	section 18	The Investment Code Act, 1991 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	The developer will ensure the operations of the project do not cause injury to the environment and there is need for an investment

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

		provides implied terms and conditions of an investment license. 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.	license.
	Section 18 (d)	Requires that an investment license may also contain an understanding by the investor to take measures to ensure that the operations of his/her business do not cause injury to the ecology or environment.	
5.2.4 The Workers' Compensation Act, 2000			
	Part II Part III, section 24	<p>Provides for compensation to workers for injuries suffered in course of their employment.</p> <p>Under this Act, compensation is automatic. 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.</p> <p>Where an accident occurs entitling the worker to compensation under this Act, the employer shall defray the reasonable costs incurred by the worker –</p> <p>(a) in respect of medical expenses; and</p> <p>(b) in respect of transport and incidental expenses, in each case arising out of and in connection with the accident.</p>	<p>All project activities and structures will be adequately monitored to ensure that the workers and the general public are protected from the risky health hazards that would be caused due the proposed project activities.</p> <p>However, in case any injuries suffered by the worker onsite during operation phases, the developer shall compensate for the damages and loss incurred.</p>
	Part IV, Chapter 29	Subject to subsection (5), compensation shall be payable by the employer who last employed the worker during the period of twenty-four months referred to in section 27(1)(b)	

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

		unless that employer proves that the disease was not contracted while the worker was in his employment.	
5.2.5 The Local Government Act of 1997			
		The Act provides for decentralization and devolution of government functions, powers and services from the central to local governments and sets up the political and administrative functions of local governments of the latter. The local governments are responsible for the protection of the environment at the district level. This therefore, implies that Mbarara city authorities should be consulted before implementation of the project.	Mbarara city authorities were and will still be consulted for further guidance on environmental sustainability throughout the project implementation.
5.2.6 The Physical Planning Act, 2010			
	Section 33: (1)	A person shall not carry out a development within a planning area without obtaining permission from the physical planning committee. This is the principal Act that regulates physical development in Uganda. It provides for the making and approval of physical development plans, applying for development permission and other related matters.	The developer should submit the plan for the project and other ancillary facilities to the district authorities for approval.
	Section 37	The Act states that the approving authority may grant preliminary approval of a development application for which an EIA is required, subject to an applicant obtaining an EIA certificate, in accordance with the National Environmental Act. Pursuant to the provisions of this Act, the developer is supposed to submit his building plans Mbarara city Physical Planning Committee for approval.	Approval of the application subject to the applicant obtaining an environmental impact certificate in accordance with the national Environment Act.
5.2.7 Public Health Act, Cap 281 and Drainage and Sanitation Rules			
	Section 7	Provides local authorities with administrative powers to take all lawful, necessary and reasonable measures for preventing the occurrence of, or for dealing with any	The developer will take all lawful, necessary and reasonable measures to ensure the general public safety

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

		outbreak or prevalence of any infectious communicable or preventable diseases.	in relation to any likely negative impacts that may arise as a result of the project.
	Section 105	Imposes a duty on the Local Authority to take measures to prevent any pollution dangerous to the health of any water supply that the public has a right to use for drinking or domestic use.	
5.2.8 The Occupational Safety and Health Act, 2006			
		The Occupational Safety and Health Act of 2006 consolidate, harmonize and update laws relating to occupational safety and health. It provides for the health, workplace safety and welfare of employees.	All project activities and structures will be adequately monitored to ensure that the workers and the general public are protected from the risky health hazards that would be caused due the proposed project activities.
	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 are undertaking at his or her own cost.”	Developer (through project contractors) will implement adequate controls to protect workers and general public from any potential injury or harm during project construction and occupational phase.
5.2.9 The Land Act, Cap 227			
	Section 43	A person who owns or occupies land shall manage and utilize the land in accordance with the Forests Act and the National Environment Act, the Water Act, the Uganda Wildlife Act and any other law.	All project activities will be conducted in accordance with the laws and regulations of Uganda.
5.2.10 Land Acquisition Act, Cap 226			

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	Section 2 (1)	This Act makes provision for procedures and methods of compulsory acquisition of land for public purposes whether for temporally or permanent use. The Minister responsible for land may authorize any person to enter the land, survey it, dig or bore the subsoil or any other thing necessary for ascertaining whether the land is suitable for a public purpose.	The land is owned by the developer
	Section 2 (2)	The Government or developer should then compensate any person who suffers damage as a result. The Act also requires that adequate, fair and prompt compensation be paid before taking possession of land and property. Any dispute arising from compensation to be paid should be referred to court for decision if the Land Tribunal cannot handle.	
5.2.11 Dairy Industrial Act, 2000			
	The Dairy Industrial Act, 2000 (Chapter 85)	<p>This gave birth to the Dairy Development Authority (DDA) and gave them powers to monitor the dairy processing companies, issuing licenses, supervising production and ensuring that the quality of the products on the market are outstanding.</p> <p>The Main Objectives of DDA are to provide proper coordination and efficient implementation of all Government policies which are designed to achieve and maintain self-sufficiency in the production of milk in Uganda by promoting production and competition in the dairy industry and monitoring the market for milk and other Dairy products.</p>	Pearl Dairy farms will adhere to the standards in this act.
5.2.12 The Agricultural Chemicals (Control) Act, 2006.			

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	The Agricultural Chemicals (Control) Act, 2006.	Regulations (18). (1) The Minister may in consultation with the Board make regulations prescribing (k) the types and standards of protective clothing which shall be worn and any other precautionary measures which shall be taken during the manufacture, sale, use, application or handling of agricultural chemicals; (1) the disposal and safe destruction of obsolete agricultural chemicals or unregistered, or unauthorized agricultural chemicals;	The developer to adhere to the act provisions
5.2.13 The Investment Code, 1991			
	The Investment Code, 1991	The Uganda Investment Authority (UIA) is empowered by this Code to inter alia, attract and coordinate all local and foreign investments in the country in order to enhance economic development. Section 19 of the code requires every investment license to take necessary steps to ensure that the operation of its business enterprise does not cause any injury to the ecology or the environment. The Code therefore requires that an investor takes due diligence to ensure that investment projects do not pollute the environment.	The developer should ensure that all activities do not cause significant pollution to the environment.
5.2.14 Food and Drug Act, 1964			
	Food and Drug Act, 1964	This act, administered by the Uganda National Bureau of Standards (UNBS), sets standards for food safety, quality, and labeling. Dairy processing plants must adhere to these standards to ensure the safety and quality of dairy products.	Pearl Dairy farms will adhere to the standards in this act.
5.2.15 Uganda National Bureau of Standards (UNBS) Act, 1983			

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	Uganda National Bureau of Standards (UNBS) Act, 1983	This act establishes the UNBS as the national standards body responsible for formulating and promoting standards for products, including dairy products, to ensure consumer safety and promote fair trade practices.	Pearl Dairy farms is UNBS certified for its products.
5.3 Regulations			
5.3.1 The National Environment (Environmental and Social Assessment) Regulations, 2020			
	These Regulations together with the National Environment Act require that the potential impact on the environment and socio- economic conditions of activities that require authorization or permission by law, and which may significantly affect the environment must be considered, investigated and assessed prior to implementation.		Developer to carry out ESIA in consideration of the nature of the project in relation to its receiving environment. ESIA to be submitted to NEMA for authorization prior to implementing the project.
5.3.2 The National Environment (Waste Management) Regulations, SI No 49, 2020			
	Section 31.	Waste generated at commercial premises or establishment. A person who owns or operates a commercial premise or establishment shall ensure that— (a) waste generated at the premise or establishment is segregated; (b) waste receptacles are provided at the premises or establishment for the various waste streams; (c) the waste receptacles are emptied in a timely manner; (d) the waste is transported to a designated disposal site in accordance with these Regulations; and (e) the commercial premise or establishment is clean and free of vermin and offensive odour.	The developer shall liaise with NEMA and District Authorities for advice on the best practical manner of handling all generated waste onsite.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	Section 46	(2) A person who generates waste or a waste handler shall not mix or dilute hazardous waste with other material or substances for the purpose of reducing the concentrations of hazardous substances to avoid classification or characterisation as hazardous waste.	
	Section 47	Responsibility of a person who generates hazardous waste. A person who generates hazardous waste, not being a person referred to under regulation 26(1), shall – (a) provide for proper storage of the waste in accordance with regulations 54 and 55; (b) maintain sufficient information on the source, content and properties of the waste to ensure that the waste is managed in a responsible manner; (c) ensure that the waste is managed by a waste handler authorised to manage that waste if the person generating the waste is not licensed to handle the waste;	The developer shall liaise with NEMA and District Authorities for advice on the best practical manner of handling all generated waste onsite.
5.3.3 The National Environment (Noise Standards and Control) Regulations, 2003			
	Regulation 8,	The regulations are aimed at ensuring the maintenance of a healthy environment for all people in Uganda, the tranquility of their surroundings and their psychological well-being by regulating noise levels. This is done through prescribing the maximum permissible noise levels from a facility or activity to which a person may be exposed and the provision for control of noise and mitigating measures for the reduction of noise.	Noise levels should not exceed the permissible levels. The backup generator in case it is installed should be installed with a silencer.
	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. It is the duty of the owner of a	

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

		facility or premises to use the best practicable means to ensure that the emission of noise from his/her premises does not exceed the permissible noise levels.	
5.3.4 Uganda Dairy Development Authority (UDDA) Regulations			
	Uganda Dairy Development Authority (UDDA) Regulations	These regulations provide more specific guidelines for various aspects of the dairy industry, including the establishment, operation, and management of dairy processing plants. These regulations cover issues such as licensing, inspection, and quality control.	Pearl Dairy farms will adhere to the provisions of these regulations.
5.3.5 The Water (Waste Discharge) Regulations, No. 32/1998			
	Regulation 4 (1)	No person shall discharge effluent or waste on land or into the aquatic environment contrary to the standards established under regulation 3 unless he or she has a permit in the format specified in the First Schedule issued by the Director.	All waste water will be directed into the septic tank which will be emptied when full.
5.3.6 The Water Act (cap 152) and the Water Resources Regulations, 1998			
		The Act provides for use, protection and management of water resources and supply; to provide for the constitution of water and sewerage authorities; and to facilitate the devolution of water supply and sewerage undertakings.	Under Section 31 (1) of the Act, a person commits an offence who, unless authorized under this part of the Act, causes or allows wastes to come in contact with, or be discharged into water or allows water to be polluted.
5.3.7 The National Environment (Standards For Discharge Of Effluent Into Water Or Land) Regulations, 2020			
	Regulation 6 (2)	Regulation 6 (2), A person who intends to discharge effluent into water or land shall ensure that the effluent meets the standards for general chemicals and micro-biological	The facility should not discharge of Effluent into Water or on Land

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

		discharge set out in Schedule 2 to these Regulations.	
5.3.8 National Environment (Management of Ozone Depleting Substances and Products) Regulations, 2020			
	National Environment (Management of Ozone Depleting Substances and Products) Regulations, 2020	<p>Section 22. “Adoption of ozone and climate friendly alternatives”.</p> <p>(1) The Authority shall, in consultation with the relevant lead agency, put in place measures for the adoption of ozone and climate friendly substances, products, equipment, technologies and practices.</p> <p>(2) The ozone and climate friendly alternatives referred to in sub-regulation (1) shall –</p> <p>(a) minimize environmental impacts, in particular impacts on the ozone layer and climate; and</p> <p>(b) meet other health, safety and economic considerations, including national, regional or international energy efficiency standards.</p>	The developer not to use substances likely to impact Ozone Layer

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

5.4 International Best Practice

This ESIA is being conducted to conform to regulations and standards of the Government of Uganda and against the International best practice standards set by the World Bank and the International Finance Corporation (IFC) – the Equator Principles.

5.4.1 IFC Environmental, Health, and Safety Guidelines; Occupational Health and Safety in agriculture Sector.

Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. This section provides guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety. Although the focus is placed on the operational phase of projects, much of the guidance also applies to 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 be introduced according to the following order of priority:

- a. Minimizing the hazard through design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc.
- b. Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE.
- c. The application of prevention and control measures to occupational hazards should be based on comprehensive job.

Occupational health and safety (OH) issues associated with agriculture sector include the following:

- Physical hazards
 - Operational and workplace hazards
 - Machinery and vehicles
 - Confined and restricted space entry
 - Risk of fire and explosion
- Biological Hazards
- Chemical hazards

5.4.2 NEBOSH International General Guidelines: Management of International Health & Safety Systems Planning, Principles and Practice of Risk Assessment.

Legal requirements for NEBOSH focus on ILO Convention, C155 Article 15, imposes a

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

duty to ensure that a workplace is so far as is reasonably practicable, without risk to employees. This has long been accepted to imply the need for risk assessment, as the concept of the 'reasonably practicability' which requires the evaluation of the cost (in time, effort and money) versus the risk of harm. The aim of risk assessment is to ensure that hazards are eliminated or risks are minimized by the correct application of relevant measures. The objectives of risk assessment are to prevent:

- Death and personal injury;
- Other types of loss incident; the direct and indirect costs that follow on from accidents;
- The occurrence of breaches of statute law which might lead to enforcement action and/or prosecution.

5.4.2.1 Criteria for a suitable and sufficient assessment

A risk assessment should be suitable and sufficient. In others words, it should be good enough to fulfill legal requirement and prevent foreseeable injuries and ill-health from happening. In particular, it should;

State the name and competence of the assessor (and any additional specialist help obtained in carrying out the assessment).

- Identify the significant hazard and risks arising out of or connected with work, i.e. those which are most any remaining risks being at an acceptable low level;
- Identify all those persons and others such as visitors. Vulnerable people such as young persons should also identify;
- Evaluate the effectiveness of current controls.
- Identify other protective measures that are required to control the risk to an acceptable level;
- Enable the employer to identify and prioritize the measures that must be taken to protect people from harm, including complying with any relevant legal provisions;
- Record the significant findings of the risk assessment;
- Be appropriate to the nature of the work and remain proportionate to the risks;
- State the period of time for which it is likely to remain valid

In other words, the assessment should be proportionate to the risks in the workplace.

5.4.3 World Bank Group General EHS Guidelines and Guidelines

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice (GIIP). When one or more members of the World Bank Group are involved in a project, the EHS Guidelines are applied as required by their respective policies and standards. The industry sector EHS guidelines are designed to be used together with the General EHS Guidelines document, which provides guidance to users on common EHS issues potentially applicable to all industry sectors.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Environmental issues during the construction phase specific to the industry sector include the following:

- Terrestrial habitat alteration,
- Aquatic habitat alteration,
- Waste disposal and Management,
- Hazardous materials and oil spills associated with heavy equipment operation and fuelling activities, and
- Socio-Economic issues.

Avoidance of critical habitats has been emphasized in the design phase, especially through utilisation of site

Most occupational health and safety issues during the construction, operation, maintenance of such projects is common to those of large facilities and their prevention and control is discussed in the General EHS Guidelines. These impacts include, among others, exposure to physical hazards from use of heavy equipment and cranes; trip and fall hazards; exposure to dust and noise; falling objects; work in confined spaces; exposure to hazardous materials; and exposure to work hazards from the use of tools and machinery.

The developer will implement the recommended mitigation measures during the construction phase of the project, and the system operator to address impacts during the operations and maintenance phase.

5.4.4 World Bank Operational/Safe guard Policies

World Bank many times in collaboration with IFC strives for positive development outcomes in the private sector projects it finances in the emerging markets. An important component of positive development outcomes is the social and environmental sustainability of projects, which World Bank expects to achieve by applying a comprehensive set of social and environmental performance standards. The Performance Standards consist of the following:

- ✓ Performance Standard 1: Social and Environmental Assessment and Management System
- ✓ Performance Standard 2: Labor and Working Conditions
- ✓ Performance Standard 3: Pollution Prevention and Abatement
- ✓ Performance Standard 4: Community Health, Safety and Security
- ✓ Performance Standard 5: Land Acquisition and Involuntary Resettlement
- ✓ Performance Standard 6: Biodiversity Conservation and Sustainable Natural Resource Management
- ✓ Performance Standard 7: Indigenous Peoples

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

✓ Performance Standard 8: Cultural Heritage

These Performance Standards help World Bank and its clients manage and improve their social and environment performance through an outcomes-based approach. The desired outcomes are described in the objectives of each Performance Standard, followed by specific requirements to help clients achieve these outcomes through means that are appropriate to the nature and scale of the project and commensurate with the level of social and environmental risks (likelihood of harm) and impacts. Central to these requirements is a consistent approach to avoid adverse impacts on workers, communities, and the environment, or if avoidance is not possible, to reduce, mitigate, or compensate for the impacts, as appropriate. The Performance Standards also provide a solid base from which clients may increase the sustainability of their business operations.

The safeguard policies and implementation guidelines contain comprehensive requirements for prevention and mitigation of undue harm to people and the environment. World Bank's main safeguard related policies include OP-703 Environmental Safeguards and Compliance Policy, OP-710 Involuntary Resettlement, OP-765 Indigenous Peoples, OP-704 Disaster Management Policy, and OP-102 Access to Information Policy.

Environmental Safeguards and Compliance Policy require screening and integrated environmental and social assessments of projects with potential impacts. Safeguards framework is supported by its access to Information Policy and its accountability mechanism, the Independent Consultation and Investigation Mechanism.

The World Bank has 10 environmental and social Safeguard Policies that it uses to examine the potential environmental risks and benefits associated with Bank lending operations. The safeguard policies operationalize the 'do good' approach to the Bank investment lending operations and are fundamental in meeting the three pillars of the World Bank Environment Strategy:

- ✓ Improving the quality of life
- ✓ Improving the quality of growth
- ✓ Protecting the quality of the regional and global commons.

The objective of the World Bank's environmental and social safeguard policies is to prevent and mitigate undue harm to people and their environment in the development process. They are a cornerstone of its support to sustainable poverty reduction and are detailed in table 6.2 below. These cut across as good management practices for best industrial practice.

Table 5-2 World Bank Environmental and Social Safeguards and Their Policy Objectives

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Safeguard	Policy objectives	Applicability to this project
Environmental Assessment	Help ensure the environmental and social soundness and sustainability of investment projects. Support integration of environmental and social aspects of projects in the decision-making process.	Yes
Natural Habitats	Promote environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions.	Yes
Pest Management	Minimize and manage the environmental and health risks associated with pesticide use and promote and support safe, effective, and environmentally sound pest management.	Yes
Physical Cultural Resources (PCR)	Assist in preserving PCR and in avoiding their destruction or damage. PCR includes resources of archeological, paleontological, historical, architectural and religious (including graveyards and burial sites), aesthetic, or other cultural significance.	No
Involuntary Resettlement	Avoid or minimize involuntary resettlement and, where this is not feasible, assist displaced persons in improving or at least restoring their livelihoods and standards of living in real terms relative to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.	No
Indigenous Peoples	Design and implement projects in a way that fosters full respect for indigenous peoples' dignity, human rights, and cultural uniqueness and so that they (1) receive culturally compatible social and economic benefits, and (2) do not suffer adverse effects during the development process.	No
Forests	Realize the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development, and protect the vital local and global environmental services and values of forests.	Yes

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Safeguard	Policy objectives	Applicability to this project
Safety of Dams	Ensure quality and safety in the design and construction of new dams and the rehabilitation of existing dams, and in carrying out activities that may be affected by an existing dam.	No
Projects on International Waterways	Ensure that the international aspects of a project on an international waterway are dealt with at the earliest possible opportunity and that riparians are notified of the proposed project and its details.	No
Projects in Disputed Areas	Ensure that other claimants to the disputed area have no objection to the project, or that the special circumstances of the case warrant the Bank's support of the project notwithstanding any objection or lack of approval by the other claimants.	No

5.4.4.1 Environmental Assessment

World Bank requires that a range of EA instruments be used depending on the project. Projects are categorized according to type, location, sensitivity and scale of the project and the nature and magnitude of its potential environmental impacts. Consultations and public project disclosure is emphasized and developers of category A and B projects should consult the project-affected groups and local nongovernmental organizations (NGO) about the project. The policy also requires that relevant material be provided in timely manner prior to consultation and in a form and language that is understandable by groups being consulted. Before the project can be upraised by the bank, an EA report for such project (category A and B) has to be disclosed to the affected persons and the public. Furthermore, the developer is required to report on compliance monitoring of the EMP.

This project is under category A considering the impacts are readily identified, mitigated and managed.

5.4.4.2 Cultural Property- Physical Cultural Resources

These procedures assist in preserving physical cultural resources (PCR) and held in avoiding the destruction or damage. PCR includes resources of archeological, paleontological, historical, religious (including grave yards and burial sites), or other cultural significance.

- It defines Physical Cultural Resources as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- Physical cultural resources may be located in urban or rural settings, and may be above or below ground, or under water.
- Their cultural interest may be at the local, provincial or national level, or within the international community.
- Physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices.

The Bank assists countries to avoid or mitigate adverse impacts on physical cultural resources from development projects that it finances. The impacts on physical cultural resources resulting from project activities, including mitigation measures, may not contravene either the borrower's national legislation, or its obligations under relevant international environmental treaties and agreements.

Archeological sites, historical and burial sites were not found at the site. Additional consultations with the local communities will be undertaken during ESMP implementation.

5.4.4.4 Natural Habitats

The policy promotes environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions. The policy limits the circumstances under which projects can damage natural habitats. Specifically, it prohibits projects which would lead to significant loss or degradation of any critical natural habitats, while in Non-Critical Natural Habitats feasible alternatives can achieve the projects potential overall net benefits.

The natural habitats at the site include trees, shrubs and grass, but from the baseline survey findings, these will be marginally affected as per design.

5.4.4.5 Forests:

This safeguard policy provides measures for protection of forests through impact evaluation and conservation of forest during project development.

This policy has been triggered because the proposed project main raw materials are trees. However, this has been assessed as of low ecological sensitivity.

5.4.4.6 World Bank Safeguard Policy - Public Disclosure

This policy encourages Public Disclosure (PD) or Involvement as a means of improving the planning and implementation process of projects. This procedure gives governmental agencies responsibility of monitoring and managing the environmental and social impacts of development projects particularly those impacting on natural resources and local communities. The policy requires that effective PD is carried out by

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

project proponents and their representatives. The Bank Policy requires that Public Involvement should be integrated with resettlement, compensation and indigenous peoples' studies. Monitoring and grievances address mechanism should also be incorporated in the project plan.

In the conduct of the environmental assessment for this project, public participation and stakeholders' consultation has been undertaken, and the views the local communities and their leaders, as well as government lead agencies, incorporated in the project mitigation plan. Stakeholder engagement will continue throughout the construction and operations phases, and a Grievance Management Mechanism will be proposed.

5.5 International Conventions to which Uganda is a Party

Uganda has signed and /or ratified a range of international agreements relating to the environment, both regionally and globally. The National Environment Act provides for the implementation of the international Conventions on environment ratified by Uganda. The relevant conventions for the proposed project are discussed below:

5.5.1 Convention for the Protection of the Ozone Layer and Its Montreal Protocol

This protocol to the Vienna Convention for the Protection of the Ozone Layer is an international treaty designed to protect the ozone layer by phasing out the production of a number of substances believed to be responsible for ozone depletion. The treaty was opened for signature in January 1987 and was last revised in 1999 at Beijing. It has been ratified by 96 countries including Uganda.

The ozone depleting substances are Chlorofluorocarbons (CFCs) and Hydro fluorocarbons (HCFCs). The ozone shield is important because it protects plants and animal life on land from the sun's ultraviolet rays, which can cause cancer, cataracts, and damage to the immune system. Thinning of the ozone layer may also alter the DNA of plants and animals. They also act as greenhouse gases, with several thousand times the per-molecule greenhouse potential of carbon dioxide.

The signatory is required to;

- Recognize that worldwide emissions of certain substances can significantly deplete and otherwise modify the ozone layer in a manner that is likely to result in adverse effects on human health and the environment.
- Determined to protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it, with the ultimate objective of their elimination on the basis of developments in scientific knowledge.
- Acknowledge that special provision is required to meet the needs of developing countries.
- Accept a series of stepped limits on CFC use and production.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- Uganda has put a law in place to guide in adherence to this protocol; The National Environment (Management of Ozone Depleting Substances and products) Regulations 2020. Requirements under this convention should be borne in mind during selection of equipment and machinery for running the project.

5.5.2 United Nations Framework Convention on Climate Change (UNFCCC)

The convention on climate change sets an overall frame work for intergovernmental efforts to tackle the challenge posed by climate change. It recognizes that the climate system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases. The convention encouraged industrialized countries to stabilize greenhouse gases while the Kyoto protocol commits them to do so. Uganda signed the Kyoto protocol in June 1992, ratified it in September 1993 and its enforcement was in March 1994. Uganda ratified the convention in March 2002 while entry into force was February 2005. Greenhouse gases are gases in atmosphere that absorb and emit radiation within the thermal infrared range and greatly affect the temperature of the earth. In Uganda, climate change unit in the Ministry of Water and Environment is responsible for the implementation of the strategies to meet the conventions requirements.

The emission of greenhouse gases especially carbon dioxide is limited to vehicles, generators and equipment during construction and detailed mitigation measures to control such emissions have been proposed in this project report.

5.5.3 Rio Declaration (Or Agenda 21)

The concept of public participation in development planning project is a key aspect in this convention. From the most important conventions and declarations, one should note the Rio World Conference on Environment and Development in 1992 (in Brazil), followed by the Aarhus Convention in 1998 (in Denmark), public participation in environmental matters became like a human right.

“Free access to information for the public and active participation in development project processes” Moreover, the World Commission encourages stakeholders’ involvement to be ensured by government s in all stages of projects starting from early planning.

The public was and will continue to be involved right away from the planning stage for the project and will be engaged throughout the different phases of the project development.

5.5.4 The Convention on Biological Diversity 1992 (CBD)

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

The convention on biodiversity was one of the major outcomes of the 1992 United Nations Conference on Environment and Development - termed the “Earth summit”-in Rio de Janeiro. The three main goals of the convention on Biological Diversity (CBD) are the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from utilization of genetic resources. Uganda signed the convention on biodiversity in June 1992, and ratified it in September 1993. On ratification Uganda became a contracting party to CBD.

Baseline conditions at the site were determined and will be used as the basis for future monitoring.

5.5.5 The Convention on Wetlands of international importance (RAMSAR Convention)

The convention’s main objective is to ensure the wise use and conservation of wetlands owing to their richness in species therein, their high economic value and the fact that they are a source of livelihood for local communities.

Uganda signed the convention on wetlands in 1971 and ratified it in 1988. Even before ratifying the convention on wetlands in 1988, Uganda had already taken measures to prevent the degradation of wetlands. In 1986 the government banned the large-scale drainage on wetlands until the policy on wetlands had been developed.

This was followed by the formulation of the National Wetlands conservation and management programme in 1989. The programme embarked on developing a policy on wetlands that was established in 1995. Functioning of the wetlands programme has since followed a path of implementing Uganda’s obligations to the conventions on wetlands.

Wetlands are now legally protected under the 1995 constitution, The National Environment Statute (1995), and the Land Act 1997. According to these laws it is an offence for a person to significantly alter or change any wetland without written permission from NEMA. This applies even when a wetland is a personal possession.

The convention on wetlands contributes to the conservation and wise use of wetlands in Uganda in the following ways;

- Uganda stands to benefit from technical assistance provided by the development partners to prevent changes that are detrimental to wetlands.
- Special attention is being given to Uganda as a member state to the convention in the management and conservation of listed sites which may undergo ecological change as a result of technological development, pollution or other human interference.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- Uganda stands to benefit from the RAMSAR small grants that are given to assist in management of wetlands.
- Uganda can benefit from information gathered by the Ramsar Bureau since the Bureau maintains links with organizations and institutions involved in conservation training and education throughout the world and passes on information to the convention member states.
- As a contracting party to the convention, Uganda stands to benefit from the wetland conservation fund or through contacts with the development agencies running training programmes. The Ramsar Bureau recognizes the need for adequate financial resources for training programmes, particularly in developing countries, and provides help in soliciting funds.

5.5.6 African Convention on the Conservation of Nature and Natural Resources-1982

Under this convention in article 11, the contracting states shall undertake to adopt the measures necessary to ensure conservation, utilization and development of soil, water, flora, and faunal resources for the present and future welfare of mankind, from an economic, nutritional, scientific, educational, cultural and aesthetic point of view.

5.5.7 The International Labour Organization (ILO) Convention

The International Labour Organization (ILO) is a United Nations agency dealing with labour problems, particularly international labour standards, social protection, and work opportunities for all. By 2011, ILO had adopted 189 conventions and ILO conventions are considered international labour standards regardless of ratification. When a convention comes into force, it creates a legal obligation for ratifying nations to apply its provisions.

Every year the International Labour Conference's Committee on the Application of Standards examines a number of alleged breaches of international labour standards. Governments are required to submit reports detailing their compliance with the obligations of the conventions they have ratified. Conventions that have not been ratified by member states have the same legal force as recommendations.

In 1998, the 86th International Labour Conference adopted the Declaration on Fundamental Principles and Rights at Work. This declaration contains four fundamental policies and these included;

1. The right of workers to associate freely and bargain collectively
2. The end of forced and compulsory labour
3. The end of child labour
4. The end of unfair discrimination among workers

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

The ILO asserts that its members have an obligation to work towards fully respecting these principles, embodied in relevant ILO conventions. The ILO conventions which embody the fundamental principles have now been ratified by most member states.

Furthermore, ILO is the leading Organization providing Labour statistics across the globe, it advocates for Training and teaching units at work, does not tolerate Child labour, exceptions in indigenous communities, forced labour, minimum wage law, HIV/AIDS sensitization, Migrant workers and Domestic workers.

5.5.8 The Stockholm Convention, 2004

The Stockholm Convention is a global treaty to protect human health and the environment from persistent organic pollutants (POPs). POPs are chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of living organisms and are toxic to humans and wildlife. POPs circulate globally and can cause damage wherever they travel. In implementing the convention, parties to the convention are required to take measures to eliminate or reduce the release of POPs into the environment.

The Stockholm Convention focuses on eliminating or reducing releases of 12 POPs including: Aldrin, Chlordane, DDT, Dieldrin, Dioxins, Endrin, Furans, Hexachlorobenzene, Heptachlor, Mirex, PCBs and Toxaphene. The Stockholm Convention sets up a system for tackling additional chemicals identified as unacceptably hazardous. It recognizes that a special effort may sometimes be needed to phase out certain chemicals for certain uses and seeks to ensure that this effort is made. It also channels resources into cleaning up the existing stockpiles and dumps of POPs that litter the world's landscape. Ultimately, the Convention points the way to a future free of dangerous POPs and promises to reshape our economy's reliance on toxic chemicals.

In summary, The Stockholm Convention has five essential aims;

- Eliminate dangerous POPs, starting with the 12 worst.
- Support the transition to safer alternatives.
- Target additional POPs for action.
- Cleanup old stockpiles and equipment containing POPs
- Work together for a POPs-free future.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

5.6 INSTITUTIONAL FRAMEWORK

Table 5-3 Key institutions that have an interest in the project

Institution	Role
Mbarara city Local Government	<p>The local government is mandated to provide services that enable residents, businesses and institutions operating in the district to function in an environment that supports development.</p> <p>It is also responsible for planning the development of functional rural and urban design, infrastructure and administration of land management within the district.</p> <p>Enforce planning regulations.</p> <p>It is also the lead agency for the initiation and implementation of the project ESIA.</p> <p>Permits: Structural development plans; Occupational permits for structures.</p>
Ministry of Gender Labour and Social Development, (MoGLSD)	<p>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 in the work place including educational institutions.</p> <p>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.</p> <p>Permits: The department of Occupational Health & Safety issues occupation permits and certificates for all new development activities that require employees during construction and operation phases.</p>
Ministry of Trade, Industry and Cooperatives	<p>Ministry of Trade, Industry and Cooperatives is a Government Ministry responsible for promoting trade and industry and cooperatives for the development of the country.</p> <p>This Ministry is to ensure expansion and diversification of trade, cooperatives, environmentally</p>

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

		<p>sustainable industrialization, appropriate technology, conservation and preservation of other tradable national products. The roles above are targeted at generating wealth to benefit the country socially and economically.</p> <p>This Ministry has affiliated institutions like Uganda Commodity Exchange Limited (UCE), Management Training and Advisory Centre (MTAC), Uganda National Bureau of Standards (UNBS), Uganda Industrial Research Institute (UIRI), Uganda Export Promotion Board (UEPB) and Uganda Development Corporation (UDC) to carry out its role.</p> <p>Permit: Operation license</p>
National Management (NEMA)	Environment Authority,	<p>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 the environment. In accordance with its functions stipulated under section 6, subsection (1) of the National Act Cap 153, the Authority will ultimately decide whether or not to approve the proposed project based on the assessment of its potential environmental and social impacts. NEMA also supervises the implementation of the project ESMP both during the construction and operation phases together with the district local government authorities.</p> <p>Permits: ESIA Certificate.</p>
Directorate of Water Resource Management; Ministry of Water and Environment, (MoWE).		<p>The Directorate of Water Resources Management (DWRM) is responsible for developing and maintaining national water laws, policies and regulations; managing, monitoring and regulation of water resources through issuing water use, abstraction and wastewater discharge permits; Integrated Water Resources Management (IWRM) activities; coordinating Uganda's participation in joint management of trans-boundary waters resources and peaceful cooperation with Nile Basin riparian countries. The directorate comprises three departments namely Water Resources Monitoring and Assessments, Water Resources Regulation and Water Quality</p>

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	<p>Management.</p> <p>Permits: Underground Abstraction Permit</p>
Ministry of Agriculture, Animal Industry and Fisheries (MAAIF)	<p>The role of the Ministry of Agriculture, Animal Industry and Fisheries is mainly to increase agricultural production in Uganda. In ensuring increased agricultural productivity, the ministry's central roles include putting in place relevant policies, guidelines, standards and provision of technical support. The ministry also plays a supervisory and resource mobilization role for the districts. The ministry provides for local authorities to implement activities at the local and community levels.</p> <p>Furthermore, the ministry formulates, 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.</p> <p>Control and manage epidemics and disasters, and support the control of sporadic and endemic diseases, pests and vectors.</p> <p>Regulate the use of agricultural chemicals, veterinary drugs, biological, planting and stocking materials as well as other inputs;</p> <p>Support the development of infrastructure and use of water for agricultural production along livestock, crop and fisheries value chains.</p> <p>Establish sustainable systems to collect, process, maintain and disseminate agricultural statistics and information.</p> <p>Support provision of planting and stocking materials and other inputs to increase production and commercialization of agriculture for food security and household income</p> <p>Develop public infrastructure to support production, quality / safety assurance and value-addition along the livestock, crop and fisheries commodity chains.</p> <p>Monitor, inspect, evaluate and harmonize activities in</p>

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	the agricultural sector including local governments.
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Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

6.0 THE PROJECT DESCRIPTION

This section describes project components, project design among other support facilities of the project. Pearl Dairy Farms Ltd operating in Uganda under the brand name of LATO milk is proposing to implement an expansion program for their dairy production facility and establish a new effluent treatment plant with a feed rate of 1 million liters/day per 24 hour day. This section describes project components, project design among other support facilities of the project.

6.1 Project Location and Extent

The proposed expansion of the dairy production facility and new effluent treatment plant will be established in Migamba cell, Nyakinengo ward, Mbarara North division, Mbarara city. The project site is geographically referenced within the following approximate coordinates UTM 36 M 244158.93mE 9937732.57mS, 36M 244133.38mE 9937783.91mS, 36M 243990.01mE 9937754.40mS and 36M 244060.34mE 9937666.07mS.

The site can be best accessed off Masaka-Mbarara Highway at Kolanorya trading center 200 meters off the tarmac on your right from Masaka.



Figure 6.1: Google Image Showing location of the proposed site for expansion and its Environs

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city



Figure 6.2: Google Image showing Pearl Dairy Farms Ltd

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

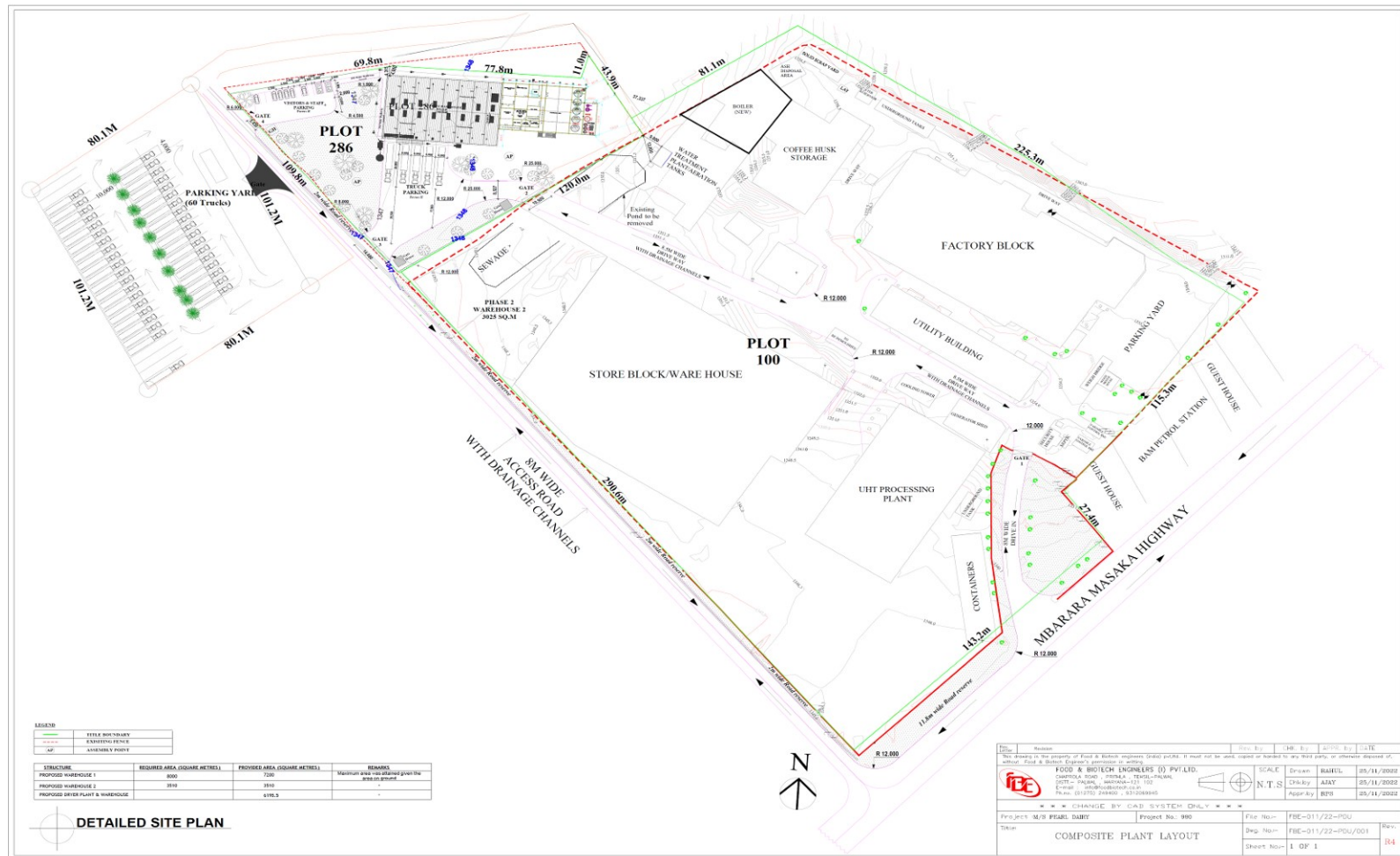


Figure 6.3: Site/Compost Layout Plan

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

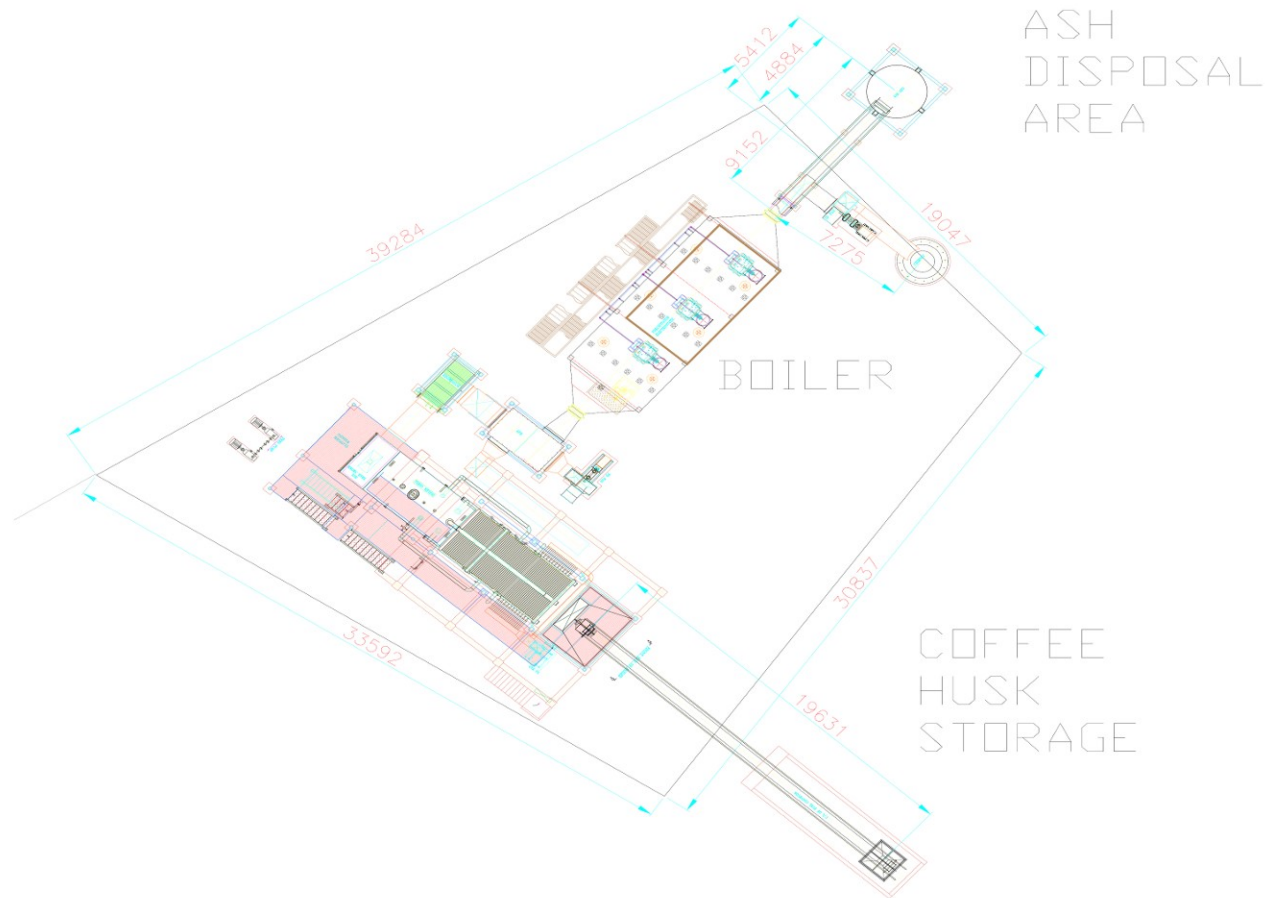


Figure 6.4: The Boiler layout Plan

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city



Plate 1: The current effluent treatment plant



Plate 2: The effluent treatment tanks

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city



Plate 3: Control room at the treatment plant



Plate 4: Proposed site for the new plant for Pearl dairy

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Plate 7: Vegetation and shrubs occupying the site area



Plate 6: Proposed site

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

6.2 Project Components and Implementation Phases

The project will involve two main phases that is construction/Mobilization/Equipment Installation and operation (production phase). Construction works will be followed by equipment installation and production will take place. Works of ground leveling of the yard are necessary.

Project proposed Components	<ul style="list-style-type: none"> ❖ 3 entrance and exit gates at designated areas ❖ Truck Parking Yard ❖ Proposed warehouse with Power storage room, Electrical room, Laboratory room, Control room, Rest room and changing rooms and evaporator area. ❖ Assembly point ❖ Visitor and staff paved parking area ❖ Walkways ❖ New Effluent treatment Plant ❖ Powder plant ❖ Internal circulation roads ❖ Green Belts ❖ Perimeter wall; among others
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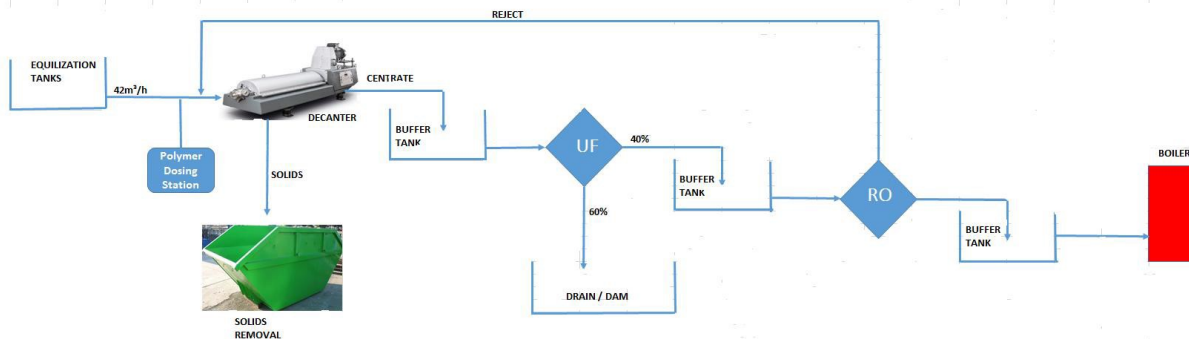
6.3 Project Description

6.3.1 Dairy Effluent Waste Water Treatment

Feed Rate: - 1 million liters/day per 24 hour day.

Annual water production = 1000 m³/day (1 million litres per day). X 340 days production per annum, = 340 000 m³ per annum.

Proposed layout schematic



The proposed treatment plant will be designed in two phases;

- i. Waste Water Pre-treatment
- ii. Final Water Treatment for Re-use

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

The wastewater will be collected from different sources (cooling water which is discharged into the storm water piping system, the system for run-off water from rain etc., sanitary waste water normally piped direct to the sewage treatment plant with or without first having being mixed with industrial waste water and Industrial waste water which emanates from spillage of milk and products thereof, and from cleaning of equipment that has been in contact with milk products) and will be collected joining in an equalization tank. The equalization tank is an important part of the dairy waste water treatment plant because dairy effluents often fluctuate quality wise and quantity wise. As dairy wastewater is highly biodegradable, the equalization tank is an aerated balancing tank so that anaerobic conditions are avoided.

A polymer dosing station will be installed at the inlet feed to treat the feed conditions to the decanter for optimal results and performance. From the equalization tank, Pearl Dairy farms proposes a High Performance, Sludge Decanter. High-performance decanters effectively and efficiently thicken and dewater effluent, making it possible for municipal sewage treatment plants to achieve a considerably reduced sludge volume. Water is fed from the pre-treating Decanter. All waste streams from the containerized UF/RO treatment plant will be returned to the pre-treatment stage. The permeate (treated) will pass through the sampling skid to the storage tanks for use in the plant as boiler feed water and wash water.

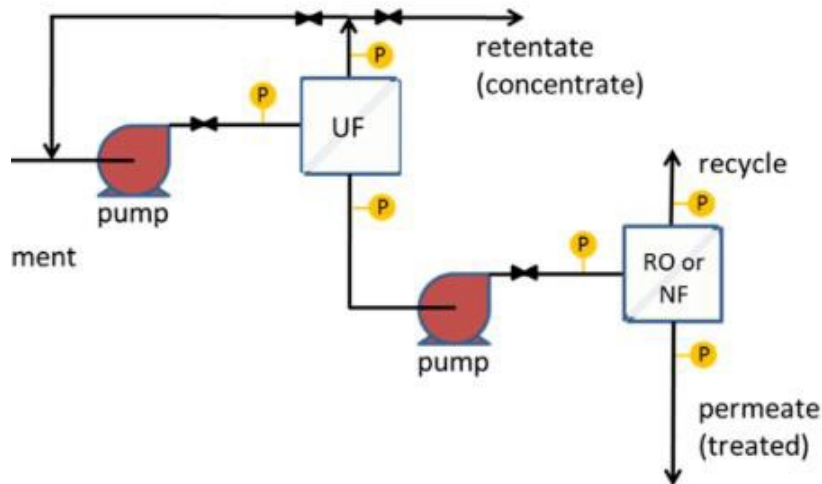


GEA biosolids Decanter pro 6000 for dewatering sludge

During final water treatment for re-use, this will consist of a Containerized Water Treatment Plant and the feed will be taken from the Centrate after the Separating

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Decanter. The reject stream from the RO (Reverse Osmosis) will be fed back to the Decanter in the pre-treatment stage.



Water is fed to the UF (Ultra-Filtration) Plant via 1 x quarts 1 x sand filter and 1 x carbon filter (upstream pre-filters) to the UF membrane to prevent blocking of the UF membranes. It will then pass through the UF membranes and then to the RO plant. The UF plant will have its own control system, controlling the operation of the UF skid, including the backwash of the membranes.



Complete containerized UF plant.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

The water will be fed from the UF plant to the RO (Reverse Osmosis) membranes. The membranes will remove all the impurities in the water. The RO system will have a control system controlling all aspects of the operation.



Complete containerized RO plant

Note;

- Final water quality was specified to be used as boiler feed water.
- For UF and RO plant - The total electrical load is estimated at 75kW approx. (100 kVA) maximum
- The EC of < 1500 micro siemens as per national standards will be met at the UF and we are expecting EC <500 uS/cm at UF outlet.
- There is no dosing chemicals or polymer dosing at the UF and RO side

6.3.2 Milk evaporating and drying plant

Skim milk Powder production capacity: 30,000 Kg/Day@3.5 % Moisture, (Agglomerated) Or, WM.P production capacity: 29,786 Kg/Day@ 2.8% moisture (Agglomerated / Lecithinated) Or, Dairy Creamer production capacity: 18,906 Kg/Day @ 2.8% Moisture (Agglomerated / Lecithinated)

Product raw material

- Pasteurized and Standardized milk

Raw material composition

- 8.3% Total Solids for milk for SMP production
- 11% Total Solids for milk for WMP production
- 13% Total Solids for milk for, Dairy Creamer production

Raw milk quality

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- Raw Milk Quality: Unacidulated
- Clot-on-boil test: Negative

Finished product

- Skimmed Milk Powder/ Whole Milk Powder/ Dairy Creamer

Capacity

The plant is expanding milk powder capacity from 200,000litres per day to 300,000litres (from daily production of 20 powder tones _30 powder tons per day).The products will be majorly for export market.

Level of automation

- Fully Automatic PLC and Scada

6.3.2.1 Process of manufacturing skimmed milk powder

Skimmed milk powder is obtained by removing the fat from milk and then drying the resulting skim milk to create a powder.

Milk Reception and Testing

Raw milk is collected from dairy farms and transported to the processing plant. Incoming milk is tested for quality and safety factors such as temperature, acidity, and contaminants. Milk that meets the required standards is accepted for processing.

Clarification and Separation

The milk is clarified to remove any impurities or solid particles. The milk is then separated using a centrifuge or separator to remove the cream, which contains the majority of the milk fat.

Standardization

The skim milk is standardized to achieve a consistent composition, usually by adjusting the fat content. This step ensures that the resulting skim milk powder has a predictable and uniform composition.

Pasteurization

The standardized skim milk is pasteurized to eliminate harmful bacteria and pathogens while preserving the nutritional quality of the milk.

Concentration

The pasteurized skim milk is concentrated to increase its solids content. This can be achieved through methods such as evaporation or ultrafiltration.

Spray Drying

The concentrated skim milk is sprayed into a drying chamber where it comes into contact with hot air. The rapid evaporation of moisture from the milk droplets

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

results in the formation of fine powder particles. The dried skim milk particles are collected and separated from the air.

Cooling and Packaging

The skimmed milk powder is cooled to room temperature to prevent moisture absorption and caking. It is then packaged in appropriate containers, such as bags or cartons, for distribution and storage.

Quality Control and Testing

The skimmed milk powder undergoes quality control tests to ensure it meets the required standards for moisture content, particle size, flavor, and microbiological safety.

Storage and Distribution

The packaged skimmed milk powder is stored in a dry and cool environment to maintain its quality. It is distributed to wholesalers, retailers, or other food manufacturers for use in various food products.

6.4 Solid Waste Management

The dairy manufacturing plant will practically generate waste i.e. waste water from cleaning the machinery, fermentation process, packaging material (off cuts) among other solid waste like office waste like small strips of paper. However an effluent treatment plant is recommended for effective management of waste water from manufacturing processes. The only common waste is waste water, spoilt milk, damaged paper waste meant for packaging.

6.5 Emergency/safety support systems

Fire detection and alarm system will be installed in the facility premises along with fire extinguishers i.e. Carbon dioxide, powder and water type. Brake Glasses will be installed as well. All built structures especially in the warehouse will be interconnected providing easy escape from anywhere in case of emergency. Fire Assembly point will be branded along with other fire signage.

6.6 Chemicals used during dairy processing at the plant

Sanitizers and Disinfectants

Chlorine-based sanitizers: These are used to clean and disinfect equipment, surfaces, and utensils to prevent the growth of harmful microorganisms.

Quaternary ammonium compounds (quats): These are effective against a wide range of microorganisms and are used for sanitation purposes.

Acids and Bases

Citric acid: Used for cleaning and descaling equipment.

Phosphoric acid: Used for cleaning and adjusting pH levels in dairy products.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Enzymes

Enzymes may be used for various purposes, such as coagulation in cheese production or to enhance specific reactions during processing.

Antioxidants and Preservatives

Ascorbic acid (vitamin C): Used as an antioxidant to prevent oxidation and maintain the color and quality of dairy products.

Sorbic acid and potassium sorbate: Used as preservatives to extend shelf life by inhibiting the growth of molds and yeasts.

Emulsifiers and Stabilizers

Mono- and diglycerides: Used to stabilize emulsions and improve texture in products like ice cream.

Colorants

Natural or synthetic colorants may be used to enhance the appearance of dairy products.

Flavor Enhancers

Natural or artificial flavor compounds may be added to enhance the taste of dairy products.

Nutrient Fortification

Vitamins and minerals may be added to dairy products to enhance their nutritional content.

6.7 Decommissioning of the Plant

After the life span of the project, it may be necessary to uninstall and remove the structure. A detailed decommissioning plan shall be prepared separately at the time of decommissioning.

7.0 ENVIRONMENT AND SOCIAL BASELINE CONDITIONS

7.1 Overview

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. The parameters/receptors identified include:

- Physical environment;
- Land use and economy;
- Geology and Hydrology;
- Biodiversity;
- Air Quality and Noise;
- Infrastructure and Utilities; and
- Socio-Economic conditions.

The baseline data collection assessment of the proposed site was based on site visits by the 'ESIA Team' which aimed to characterize the topography, drainage and visual character of the project site. The altitude was determined using the Global Position Satellite (GPS) which gave the coordinates of the site and the altitudes of the same points (coordinates). Secondary data was also considered to get more information about the project area.

7.2 Location and Physical Environment

Key Geographical information (soils, geophysical features, land Use and vegetation) Mbarara District is located in south Western Uganda and it is bordered by Ibanda District to the north, Kiruhura District to the east, Mbarara City to the southeast, Rwampara to the southwest, Sheema District to the west and Buhweju District to the northwest.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

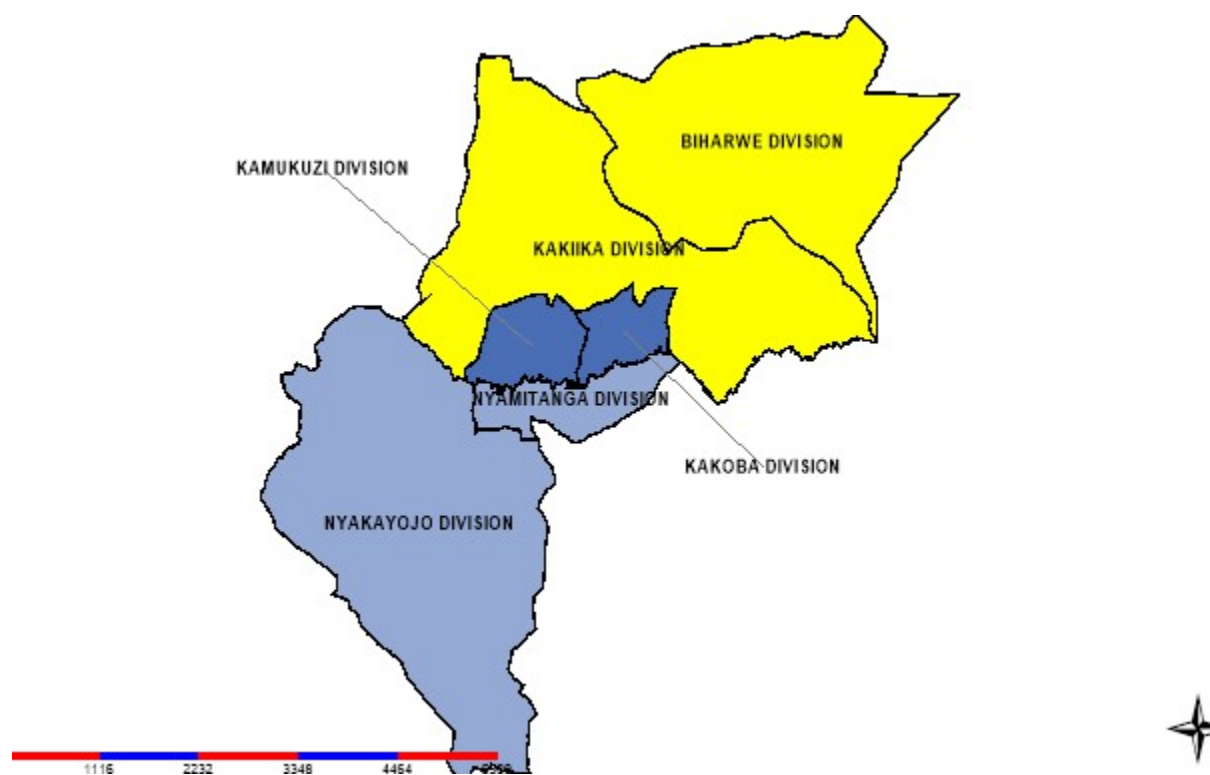


Figure 7.1: Showing Mbarara District Administrative divisions

The proposed expansion of the dairy production facility and new effluent treatment plant will be established on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division, Mbarara city. The project site is geographically referenced within the following approximate coordinates UTM 36 M 244158.93mE 9937732.57mS, 36M 244133.38mE 9937783.91mS, 36M 243990.01mE 9937754.40mS and 36M 244060.34mE 9937666.07mS. At the time of the assessment, the site was under agricultural use also occupied with shrubs, vegetation and bushes as shown in the below.

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Proposed site occupied with Banana plants, maize, trees, shrubs and Bushes

Geographical Features and Geology: The District has topography of a mixture of shallow valleys and flat land. It has average annual rainfall of 1200mm and temperatures in the range of 17°C to 30°C. Its soils are loamy fertile laterite soils, suitable for cultivation. The DCP tests were conducted at 1.0 and 3.0m depth of the excavated trial pits in order to estimate the in-situ bearing strength of the ground over the different depths. Results indicated that across the site, the subsoil profile is generally characterized of both medium dense to Very dense clayey SAND and soft to hard sandy CLAY to a depth of 8.5m.

According to the Geological map of Uganda, the area of investigation is underlain by Rwamasha granite and neighbouring Alluvium, swamp, lacustrine deposits as shown in Figure 7.2 below. (Source: Geology Map_NA_36_1, June 2012).

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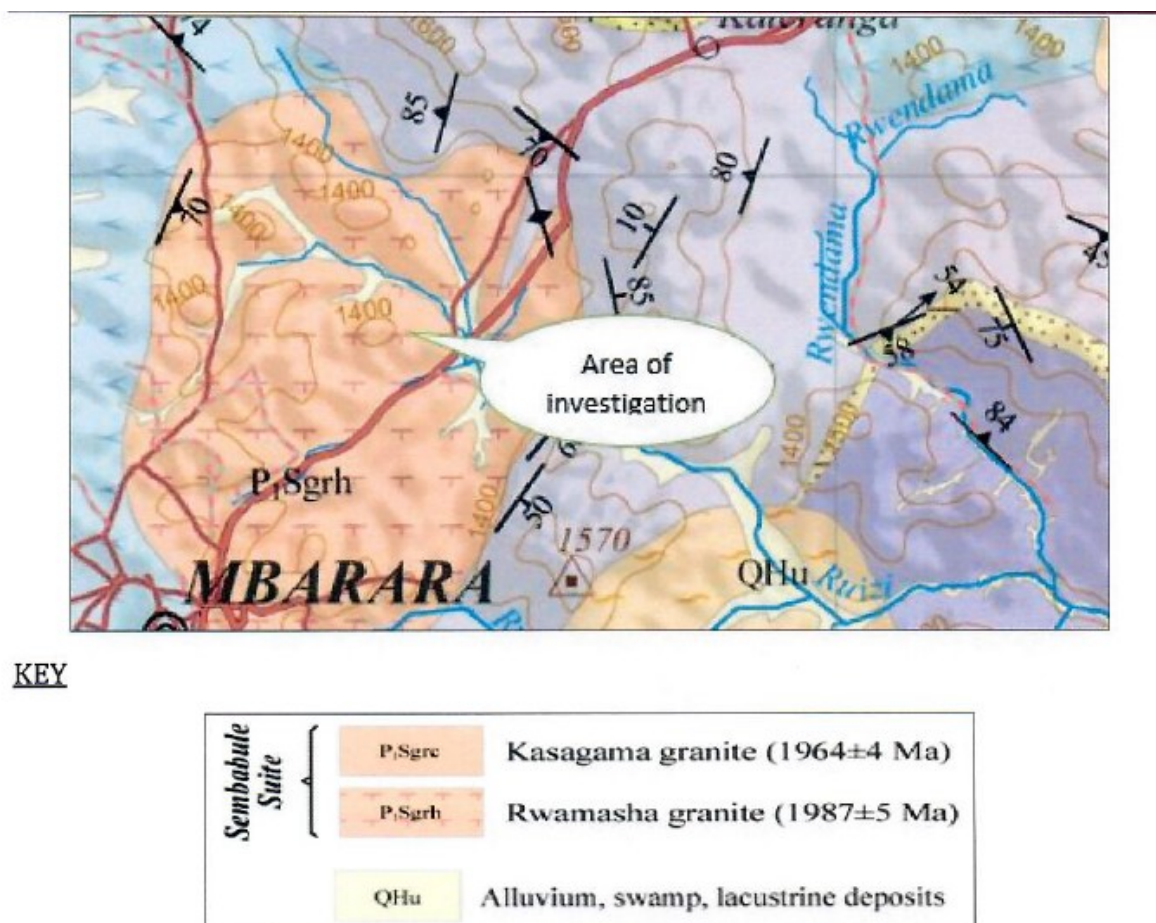


Figure 7.2: Geology map excerpt of Mbarara - Biharwe showing the area of investigation

Vegetation: Generally, the vegetation comprises of grasslands and woodland savannah with patches of forest resources. The proposed site is currently occupied with shrubs, bushes, crops like matooke and a number of trees.

Soils

Teclab Ltd undertook and completed geotechnical investigations for proposed dryer plant and evaporator to be built on plot 286, Kashari block 7, along Mbarara-Masaka road Biharwe in Mbarara District which included; Two (2) exploratory Borehole drillings, Two (2) Trial pit excavations, profiling subsoil conditions, in-situ tests - Standard Penetration Test (SPT) and Dynamic Cone Penetration (DCP) and laboratory testing in accordance with the agreed scope of works.

This soil investigation report summarizes the results of the site investigation and laboratory testing carried out on behalf of our client, Pearl Dairy Farms Limited. (see appendix 8)

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Results

The boreholes were drilled using Terrier Dando percussion rig and Trial pits were excavated with use of hand tools to maximum depths of 8.5 and 3.0m respectively.

The investigation established the nature of subsoil strata at the proposed site and determined the bearing capacities and soil index properties.

Ground water strike was encountered in TPI, BHI and BH2 at 2.9, 5.2 and 5.6m of the investigation depth respectively.

From soil investigation, the subsoil profile is characterised with medium dense to very dense clayey SAND and soft to very stiff sandy CLAY. The underlying horizons exhibited a range (30kPa - >500kPa) of Estimated Allowable Safe Bearing Pressures with depth. Moisture content ranged between 9.3% and 18.7% for the entire site. According to the sampled soil material, the site is both comprised of coarse and fine-grained soils with Plasticity Index (PI) values ranging between 16.9% - 24.2%, while Linear Shrinkage (LS) values ranged from 3.7% - 10.7%. LS values above 8.0% are considered to be problematic for moisture-related heave and shrinkage.

Basing on the chemical test results, the soils are considered to be of negligible effect on concrete material. The one-dimensional consolidation test results confirm the presence of clay due to the high rate of consolidation.

The shear strength results, cohesion and angle of internal friction are ranging between 20.1kPa - 29.6kPa and 23.5° - 31.8° respectively for the entire site.

7.3 Administrative Structure (LGs and Administrative Units)

With Mbarara Municipality having been alleviated to City status with effect from 1st July 2020, Mbarara District now has 1 county of Kashari, 6 Sub counties, 5 Town councils, 46 Town wards/Parishes and 359 Cells/villages. The Table 7.1 below shows the Town Councils and Sub counties.

Table 7.1: Administrative Units of Mbarara district

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	Sub county/Town Councils	Number of Parishes/Wards	Number of Villages/Cells
1	Bubaare	6	32
2	Bukiro	1	11
3	Kagongi	6	62
4	Kashare	4	46
5	Rubaya	5	41
6	Rubindi	3	37
7	Rwanyamahembe Town Council	4	20
8	Bwizibwera–Rutooma Town Council	5	28
9	Rubindi-Ruhumba Town Council	5	39
10	Nyabisirira Town council	4	21
11	Bukiro Town council	3	22
	Total	46	359

7.4 Demographic Characteristics

The population projection for Mbarara district for 2019 stands at 166,000 comprising of 85,600 females and 80,400 males and is projected to increase to 200,000 by 2030. In terms of percentage, females constitute 52 % while males constitute 48%. The growth rate average is 2.2 percent which is lower than the national one of 3 percent.

The proposed area is in a densely populated Kolanorya trading centre with a number of residential homesteads.

7.5 Historical Background

The current Mbarara District Local Government comprises of Kashari County. This has been a result of continuous reduction of the district from the Greater Mbarara and most recently by taking away of Rwampara County which became an independent district effective 1st July 2019 and Mbarara Municipality that has been elevated to a city status beginning 1st July 2020.

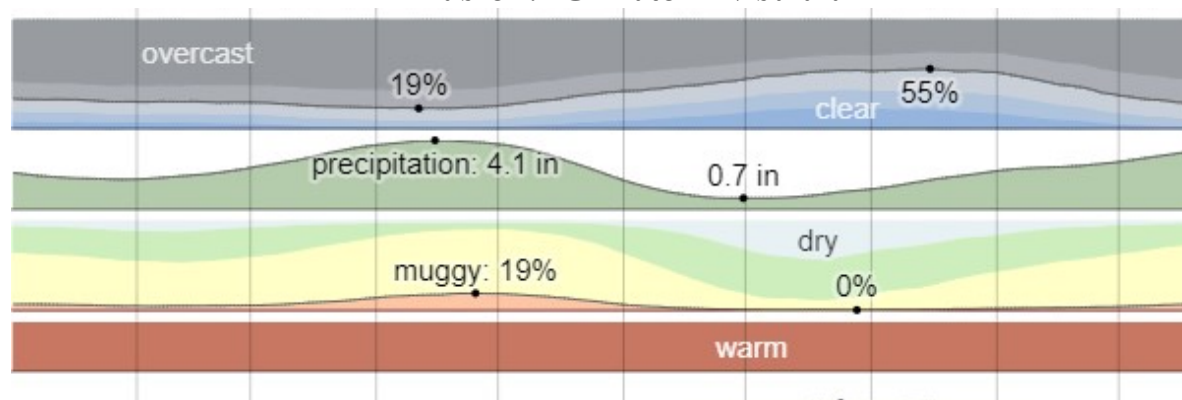
7.6 Natural Endowments (Natural resources and their rate of exploitation)

7.6.1 State of the Environment

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

The climate in Mbarara is warm and overcast. Over the course of the year, the temperature typically varies from 58°F to 82°F and is rarely below 56°F or above 88°F. The district receives a bimodal rainfall that is favourable for both crop growing and animal rearing.

Table 7.2 Climate in Mbarara



The sources of Water in the district are mainly Gravity Flow Schemes, Boreholes, Shallow wells and man-made dams such as Mabira, Kashare, Kariro and Nombe. About 95 % of the population depends on firewood and charcoal for cooking which is leading to destruction of forests and increasing emission of GHG thus leading to climate change.

In the previous District Development Plan, mainstreaming of environment and sustainable use of natural resources in departmental plans was emphasized. Projects such as Irrigation, tree planting, agro forestry have been implemented.

7.6.2 Forestry

Forest cover in the district has reduced from 20% to 8 % as a result of opening up land for farming (crops and cattle) and the dependence of 90% of the district population on fuel wood and charcoal.

7.6.3 Existing Rivers, Wetlands, and other drainage options

Mbarara District according to the drainage system classification has 2 drainage wetland systems namely River Rwizi wetland system in the sub-counties of Bubare, Bukiro, Rwanyamahembe and Lake George drainage system in the sub-counties of Rubindi, Kagongi and Kashare. Wetland coverage is 7,580 Hectares out of which 2,300 hectares have been lost through encroachment representing a 30% wetland coverage loss.

7.6.4 Water

Mbarara District has various water sources for her population. These include shallow wells, protected springs, Boreholes, rain water tanks, piped water, dams and valley

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

tanks. Currently, accessibility is at 78.1% and the functionality of the water sources is at 94.2%. The proposed plant will be supplied by NWSC Mbarara and rainwater harvesting systems will be put in place.

The water sampled from the selected source complied with the Uganda drinking water and ASTM C94 standards for both Chlorides and Sulphates concentrations. The pH of the water does not comply with the stipulated treated drinking water standards (6.5-8.5) and natural potable water standards (5.5-9.5). However, the pH is such that (pH>3, used as a surrogate for the acidity of the water) it will not create handling problems. On observation, the water sample exhibited a brown colouration with visible clay soil at the bottom. Whereas the suspended solids concentrations in this sample was not measured, it is likely that this is <2000mg /L (ASTM C94 standards) and not likely to impact the strength of the concrete. Considering the colour of the water, there may be need to ascertain the true colour of the water sources, to ascertain whether organic material (natural organic matter) is the cause of the brown colouration observed in these (This brown colouration remained even after filtration of the water sample prior to analysis). The presence of organic material can impact the strength of the concrete. The determined water quality parameters of the sampled source suggest that the water may be of negligible effect to concrete. However, there is need to ascertain the true colour given the aforementioned to ascertain whether they are with high levels of dissolved organic material (if at all).

7.7 Social – economic infrastructure

7.7.1 Local economy analysis;

The economy of Mbarara district is based mainly on agriculture with Matooke growing and cattle keeping being the dominant activities. Animal rearing accounts for 10%, Crop Farming 75.6%, Fishing 0.1%, Employment Income 6.0%, Trading in Agricultural Produce 4.8%, Trading in non-agricultural products 2.6% and Others 0.9%.

7.7.1.1 Agriculture;

The major crops in Mbarara district are mainly Matooke and coffee. The production levels as of December 2018 are as follows: -

Table 7.3: Major crops in Mbarara

Crop	Productivity in metric tones	Acreage/ Hectares
Bananas	712,600	81,044
Coffee	13,681	46,133Ha
Beans	8,200	74,000Ha
G.nuts	823	1200Ha

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Coffee has one major store and processing plant of Banyankore coffee hurry located in Mbarara town while other small processing plants are mainly in Ndeija sub-county.

Table 7.4: Types of Livestock in Mbarara District

Livestock	Numbers
Exotic cattle	80,300
Indigenous cattle	117,045
Exotic goats	65,480
Indigenous Goats	175,600
Indigenous sheep	13,450
Broilers	35,420
Layers	26,750
Indigenous	423,900

7.7.2 Human settlement patterns

Settlement Patterns:

Mbarara district population is unevenly distributed with the settlements under one county of Kashari after the removal of Rwampara and Mbarara City. Some settlements in kagongi, bukiro, Rubindi and bubare are densely populated while others (Rubaya and Kashare) are sparsely populated. The residents are mostly sparsely populated with homesteads scattered simply because of cattle rearing.

Urban settlements:

Densely populated: Rubindi-Ruhumba and Bwizibwera-Rutoma and less dense town councils; Nyabisirira, Bukiro and Rwanyamahembe which are the most recently gazetted Town councils.

Rural settlements:

These are mainly in the sub counties of Rubaya, Kashare, Bubare, Kagongi and Bukiro. Sparsely populated ones are Rubaya and Kashare which dominantly cattle keepers and their homesteads are on farms.

The sub counties which have a bigger population are Kagongi, Bubare and Bukiro of which mainly are crop farmers. The other homesteads are along the main Mbarara-Ibanda highway.

7.7.3 Labor market and welfare

Labour market in Mbarara district is not well developed. The only formal institution that is available for providing employment opportunities is the District Service Commission. The district lacks private labour organizations and accessibility of information of employment opportunities is limited. Currently the district does not have Labour Officer and the local job linkage initiative that had been developed is

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

inactive. Due to the current curriculum of education, most of the un-employed youth lack the re-requisite skills demanded in labour market.

On welfare, the district has small scale businesses with small capital and therefore the welfare for the workers is not adequate. There is need to build capacity of the employers to improve and expand their businesses so that they can take care of labourers' welfare.

Pearl Dairy Farms Limited helps local dairy farmers through their Farmers' Community through the Pearl Dairy Farmers' community in collaboration with IFC. This is a not for profit initiative to support dairy farmers through the provision of best in class training to improve their cattle rearing skills and knowledge. Pearl Dairy Farms Limited is complementing this training by establishing Model farms to set the standards for others to follow and have an extensive dairy development program with over 50 Dairy development officers deployed in the region. Finally, to complete this cycle, Pearl Dairy Farms Limited established Milk collection centres to ensure that farmers have ready customers for their produce.

7.7.4 Agriculture

The Agriculture department aims to ensure sustainable and market-oriented production, food security and household incomes in the district. It is comprised of three subsectors, namely Crop, Animal and Fisheries Resources. Agriculture is the most common economic activity in the district contributing almost 80% to the household incomes. The majority of farmers are subsistence small holders who grow both perennial and annual crops. The perennial crops include Banana, Coffee, and Tea, while the annuals include maize, sweet potatoes, beans, cassava and groundnuts. The major livestock in the district include; cattle, goats, sheep, pigs, chicken, ducks and turkeys. Fish farming is also practiced with Tilapia ponds dominating across the fish farmers in the district. Bee keeping also contributes to the household incomes with over 192 bee farmers with in Mbarara district. The major potentials include; availability of arable soils with willing and hardworking farmers that have the opportunity of supporting government policies, availability of research Institutions and demonstration farms. The major constraint is poor quality Agro-inputs, Chemical and acaricides while the challenges include Intense dry spells fluctuating prices of the agricultural produce as most of them are sold in a raw unprocessed form, unpredictable climatic changes such as droughts and use of un mechanized equipment suitable for only subsistence farming. It should be noted that the level of value addition in this sector is still at the lowest level and there is need for demonstrations and training on value addition and provision of the necessary equipment and credit facilities.

7.7.5 Tourism

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

The tourism sector aims at contributing to the employment pool by creating jobs as well as becoming one of the revenue source bases for Mbarara district.

The performance of major tourism indicators compared to the national standards is below average with tourism promotion performing at 40%, product development at 5% and classification and inspection at 62% of which the most tourist attractions were in the municipality which has been elevated to the city status. The major constraint is lack of departmental equipment to aid tourism activities such as binoculars, cameras, vehicles and hiking gadgets while the challenges are poor service delivery in the hotel and accommodation industry and wrong population perception of inclining tourism to the traditional sites which are not many in Mbarara District. Mbarara district has potentials such as cultural diversity and other physical sites such as Omugabe cultural home in Kariro parish in Rubindi, Kyanyabulemu Lake in Kariro and Kibingo caves in kagongi and bukiro and kagongi hills which are the only sites. Commitment of Government to promote tourism is an opportunity which has been reflected through training of tourism officers and elevation of Nyakasharara air strip to an airport to ease transport of the tourists.

The tourism sector is advocating for development of new tourist attractions incorporating Agriculture e.g. Rearing Ankole long horned cattle as tourist attractions, Rubyerwa demonstration farm in Rwanyamahembe among others. Celebration of the cultural day is also in plan aiming at increasing awareness about the importance of tourism and also to generate local revenue for the district.

7.7.6 Education services

Education plays a major role in the development drive of the local economy through human capital development especially through development of appropriate knowledgeable, skilled and ethical labour force (with strong emphasis on science and technology, TVET) and promotion of sports, recreation and physical education.

Currently Enrolment of UPE is at 30,639 with females at 15,385 and males at 15,254 USE are at 3,762 with girls at 2,217 boys at 1,545. The staffing levels are at 90% with teacher pupil ratio of 1:53. The pupil pit latrine stance is at 1:40, the classroom to pupil ratio is at 1:50 in relation to the national standard indicators.

HIV/AIDS is addressed through talking compounds for pupils and implementation of the HIV/AIDS policy among staff. Tree planting is encouraged for both fruit and non-fruit trees at a minimum of 50 trees per school as a mitigation measure to climate change as well as inclusion of environmental restoration costs during project implementation in schools.

Partnerships were formed with implementing partners to improve on the nutrition status and food security in schools through awareness campaigns to parents and other stakeholder and encouraging creation of back yard gardens in schools as a source of a variety of foods. Human rights and social protection have been emphasized through various ways which include abolition of corporal punishments, ensuring accessibility to

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

facilities by PWDs and washrooms for girls constructed in schools. Although most of these crosscutting issues are being addressed, there are still more gaps for the national targeted standards to be achieved.

The major potentials within the department include enhanced staffing levels, availability of safe water sources in schools and willingness of parents to send their children to school and at the same time contribute financially towards some school programs. Opportunities include funding from the center to cater for wages, UPE/USE capitation and infrastructure development. Major constricts include conflicts in school committees (PTA&SMC), inability of some parents to provide basics in form of scholastic materials and food for their children while the challenges are declining central government funding for capital projects like Construction of teachers houses(70% of teachers do not stay at schools) and classroom blocks.

7.7.7 Water and Sanitation services

The Water and Sanitation department is responsible for ensuring availability and access to safe and clean water and hygienic sanitation facilities in rural and urban areas, as well as delivering viable Sewerage/Sanitation systems for domestic, industrial and commercial use. Currently safe water coverage of Mbarara district is at 68% with 94% of the water sources functional. Gender composition of the water committees is at 85% though equity of distribution of the water sources is still low at 18%. The level of sanitation is at 54% with the given grants and support from the different implementing partners as the major opportunity. The department is constrained by limited transport means and limited local revenue allocations and yet the O&M costs are high. Extended droughts, encroachment on water sources and high compensation costs/encumbrances are the major challenges in the department.

District Safe and clean water coverage has stagnated at 68% due to limited technology options and small grant from the central government that has stagnated at around 500 million shillings. The district requires around 800 million shillings annually to meet the water needs of our population.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

8.0 STAKEHOLDER CONSULTATION

8.1 Introduction

Consultation, as defined by the World Bank, is the 'soliciting of peoples' views on proposed actions and engaging them in a dialogue'. It is an interactive 2-way flow of information and engagement, ideas and opinions between stakeholders and project proponents. Lee and Wood (1995) defined consultation as a process of seeking information about the environmental implication of a development project or activity.

Consultation is an act of meeting with a person or a group of persons with an objective of seeking people's views on a proposed project. Stakeholders may include project affected people such as individuals and families living near the project site or indigenous groups and Communities, regulators, Non-Governmental Organizations (NGOs), Community Based Organization's (CBOs) business associations among others.

Consultation with relevant stakeholders and regulators for the project shall be a continuous process from concept through development to operational phases and abandonment. The objective has been to acquire and disseminate information, identify and address legislative, community and environmental concerns and to proffer appropriate mitigation options for all identified negative impacts.

8.2 Objectives

The objectives of embarking on the consultations process for the project are:

- ✓ 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;
- ✓ Learn through local knowledge and understanding, particularly for environmental and social baseline feedback;
- ✓ Dissemination of information on the project;
- ✓ Promote ownership and enhance social acceptability;
- ✓ Build trust amongst the various stakeholders;
- ✓ Evaluate alternatives and seek solutions;
- ✓ Resolve and avoid conflicts.

8.3 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. Pearl Dairy Farms Ltd has maintained a steady consultation process with all relevant parties, to ensure that all issues of concern are rationalized and

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

sorted out prior to implementation of its projects including the proposed project.

The proposed site is located in Migamba cell and consultation is identified as a key issue, on which the entire ESIA process could depend. This issue was approached in the following ways: -

- ✓ Issuance of notice of intent to carry out an ESIA for the proposed development to the to the local council (L.C.1) chairman (local council committee);
- ✓ With terms of reference to regulatory Agencies and potential stakeholders;
- ✓ Sustaining consultation with stakeholders with explanations on key issues as they arise and affect the people;
- ✓ Maintaining effective communication with communities;

8.3.1 The primary stakeholders are:

- ✓ The Local leaders and community members of Migamba cell;
- ✓ The Local Government authorities of Mbarara city and Local Village Councils (LC1);

Table 8-1 Identified Stakeholders

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Category	Stakeholder	Mandate/Interest	Mode of engagement
	National Environment Management Authority	National Environment Management Authority (NEMA) was established in May 1995 under the National Environment Act Cap. 153 as the principal agency in Uganda charged with the responsibility of coordinating, monitoring, regulating and supervising environmental management in Uganda. In this context, NEMA is responsible for regulating the impact of renewable energy investments on the environment.	Formal Meeting
	Ministry of Gender Labour and Social Development.	Operational Health and Safety, Labour and Gender issues concerning workers.	Formal meeting
Government-Local	District Local Governments (Environment, Natural Resources, Physical Planning, Community Development Department)	The 1997 Local Government Act provides for decentralization and devolution of government functions, powers and services from the central to local governments and sets up the political and administrative functions of local governments. The local governments are responsible for the protection of the environment at the district level. Local governments shall be consulted on projects to be located within their jurisdiction and on matters that affect their environment.	Formal Meetings at District Headquarters with Technical Staff and Political Leaders
	Affected Sub Counties, Parishes		Formal Meetings at Sub county/Parish Headquarters with Technical Staff and Political Leaders
	Villages affected, LC1s		Formal Meetings and Focus Group Discussions with Community and Political Leaders

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

8.3.2 Highlights of Findings

Many of the comments made by various stakeholders showed their feelings, thoughts, concerns and expectations regarding the proposed project. They touched a wide range of issues including: Anticipated benefits and positive outcomes, and positive and negative impacts on the environment and livelihoods. Anticipated benefits and positive outcomes pointed out include the following: -

- The project will result into a better developed environment with the new improved technology that is going to be used at the new effluent treatment plant.
- It will create new employment opportunities. Both skilled & semi-skilled personnel might be needed for different tasks. For instance, Security Officers to guard construction equipment yard will be required.
- Businesses in the area may be boosted by the anticipated population increase as a result of the project.
- Greater prospects for employment of both semi-skilled labour and technical personnel.
- When the project is finally completed, property value, particularly land and houses in the areas, will certainly increase.

Concerns raised in respect to anticipated adverse Impacts on the environment due to the project activities and their implementation include the following: -

- Vegetation which currently exists on the site for the proposed project components will be lost during construction phase due to site clearance operations,
- The bad smell arising from the old Effluent treatment plant,
- Clearing of vegetation during site opening might lead to generation of surface run offs and cause eutrophication of surface water resources,
- Pollution from wastes generated during and after construction,
- Employment of the local community members in Mbarara,
- There will be dust and noise nuisance from vehicles and various construction auto machines used during construction phase, and
- There could be incidence of Occupational and Safety Risks for workers during and after construction;

Suggestions and Recommendations made by various stakeholders, ranging from Lead Agencies & Government Ministries to District & Local Authorities and Corporate & Individual Stakeholders, were as follows: -

- Provision for adequate and suitable sanitary facilities;
- Proper containment of chemicals;
- Protective gear for workers handling sanitary facilities;

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- It is advisable for the proponent to collaborate with the lead agencies and local authorities for easy implementation of the project as well as adhere to the Uganda National Bureau of standards for product quality;
- The proponent is advised to involve the local community genuinely and more often, so as to enjoy their good will and be able to forestall their opposition or hostility to the project;
- Use appropriate and recommended technology at the new effluent treatment plant;
- The plant should have access to main grid as main source of power. Boiler house should be in place and able to use an environmental friendly materials such as coffee husks.
- There should be access to National water and sewerage line. Water reservoirs should be constructed to ensure constant supply of water.
- There should be internal lab for platform tests, microbial and other physiochemical parameters separated.
- A closed system for production processes should be used to avoid cross contamination.
- Road for heavy vehicles to the factory should be away from production area to reduce sound and air pollution.
- Materials for walls, paintings and roofing should be water proof and heat resistant to avoid peelings and sweating to avoid cross contamination.
- Drainage flow should be self -draining from high hygiene to low hygiene area.
- Personnel should be in full PPEs (personal protective Equipment), should be with valid medical fitness certificate at all times.
- Operational foot bath should be in place for personnel foot ware disinfection before and after operation.

8.4 Future Consultations

Both the developer (Pearl Dairy Farms Ltd) and contractor shall maintain continuous consultation with all relevant parties (host community, Ministry of Gender, labor and Social Development (MoGLSD), MAAIF through the regulators-NEMA concerned with or likely to be affected by the proposed project at all stages of the development.

8.5 Grievance Mechanism

All complaints concerning the activities at the project site shall be addressed to Project Manager. A Grievance form could be provided to those who wish to submit a question, a comment or a complaint about the facility and management of the premises should endeavor to react to the concerns raised in the shortest time possible.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

9.0 ANALYSIS OF POTENTIAL IMPACTS & MITIGATION MEASURES

This section assesses impacts that are likely to result from the different stages of project development. It also identifies alternative approaches and/or mitigation measures that need to be implemented to address the negative impacts and actions to enhance the potential benefits. This section of the report describes and evaluates the impact of the development on the specific sensitivities. It is intended to;

- Identify the major environmental, social and public health issues of concern; and
- Indicate their relative importance to the design of the project and the intended activities, taking full consideration of the effectiveness and acceptability of any proposed mitigation measures in the protected area context.

9.1 Introduction

Several impacts have been identified for this development, which include both negative and positive impacts. Consideration has been given to the scale of the impacts (major or minor), and the permanency of the impacts (reversible or irreversible).

The environmental aspects likely to be impacted on by this development, a description of the main impacts and the proposed mitigation measures have been described for the natural and the Socio-Economic environment.

In addition of the EIA Methodology described in section 4 of this report, this section further highlights methodology used for identifying impacts, classifying and evaluating them and determining of their significance.

CONSTRUCTION PHASE

9.2 POTENTIAL IMPACTS ON SOCIO-ECONOMIC ENVIRONMENT

9.2.1 Positive Impacts

The Socio-Economic impacts have been assessed according to how much human receptor gains or lose due to implementation of the proposed project. Impacts that have been considered include creation of employment opportunities, improvement of skills, value addition to dairy products, possibility of area development, Income diversification for farmers, technology transfer and innovation, Environmental protection, Market expansion, socio drift in the project area and other social impacts that might be attributed to project establishment.

Methodology

Baseline demographic data for the project area was reviewed and analyzed in relation to the proposed project in order to estimate the magnitude of the Socio-Economic impact of the project. Data relating to age, gender, education level, employment rates and source of income, economic activities, and other Socio-Economic indicators were collected. This information was collected through review of UBOS 2014 population

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

results and other related studies undertaken in the same project area. This information was interpreted with professional understanding of the project and possible receptors on scale of duration, magnitude, extent and possibility of occurrence of the impact.

9.2.1.1 Employment opportunities and income

On a short-term, the project will bring about creation of jobs during the construction phase (people in the project areas are likely provide labor force etc.). This impact will benefit the local retail business owners who would mainly benefit from secondary effects of increased incomes and the spending power of construction workers. Currently the estimated number of people required to work on the project are not yet known but it is evident that some people are already benefiting such as the consultants undertaking this environmental assessment and design engineers.

Creation of job opportunities during project development and construction will provide a number of employment opportunities for skilled, semi-skilled and unskilled labour. Recruitment of unskilled manual labour should give preference to local people wherever feasible. This impact will be beneficial to both men and women, especially when selling merchandise to workers.

Note that, during the construction stage, preference for employment opportunities for appropriate skills will be given to the local community as far as it is possible. The use of appropriate labour-intensive methods for some of the construction activities (e.g. excavation) would present employment opportunities for local people (including women) and generate direct income benefits to local households. In addition, some people could be employed in the sand and stone quarries; sale of earth materials to the proposed project; and in the service sector (restaurants, lodges, clinics, shops, etc.) around the project site.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Employment opportunities and income	No	Positive	2	1	4	5	40	Medium
	Yes	Positive	4	2	6	5	60	High

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Enhancement Measures	<ul style="list-style-type: none"> During the construction phase the developer/contractor should design and implement Human Resources Policy which will include all requirements to hire workers with special treatment locally affected people. This policy should not be politically driven or any kind of discrimination on the grounds of race, ethnicity, religion, gender, and political affiliation; Handling of workers should be in accordance with Uganda labour laws and the World Bank Environment and Social Framework as discussed under standard 2 of Labour and Working Conditions. The project contract will be drafted on the backbone of the Constitution of Uganda and relevant laws and regulations such as the Employment Act (2006) and the National Gender Policy (1997) and Penal Code Act (as amended 2007). The contractor should avoid use of child labour. Provide on job training to enhance workers prospects of advancement within the project workforce and guidance with safe use of machinery for occupational health and safety purposes Create Grievance Mechanism of which workers have to follow in reporting and problem solving Provide kind of certificate, appointment or contract on which workers may use for future reference in the case applying for similar jobs somewhere else.
Cumulative Impact	No
Reversibility	No

9.2.1.2 Acquisition/improvement of skills

People who have ever worked on similar projects before would improve on their skills. People who have never worked on such projects would acquire such skills which they would use to seek employment in future. As a benefit from the capacity building incorporated in the program, the implementing authorities would have adequate capacity for managing the environmental and social assessment and permitting processes. The Project would provide grassroots management opportunities for the local people to both manage the channel and protect their local environment.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Acquisition/improvement	No	Positive	2	1	4	5	40	Medium

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	Yes	Positive	3	2	6	5	55	Medium
Enhancement Measures	<ul style="list-style-type: none"> • Provide on job training to enhance workers prospects of advancement within the project workforce and guidance with safe use of machinery for occupational health and safety purposes, • Provide kind of certificate, appointment or contract on which workers may use for future reference in the case applying for similar jobs somewhere else. 							
Cumulative Impact	No							
Reversibility	No							

9.2.1.3 Income to Construction material/ equipment suppliers and Sub contractors

Construction project infrastructure components will require materials such as gravel, aggregate, sand, murram, asphalt, and cement. This presents financial benefit for local and foreign suppliers; a short-term but significant socio-economic benefit.

Impact	Enhancement	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Income to material/ equipment suppliers and contractors	No	Positive	5	1	2	4	32	Medium
	Yes	Positive	5	2	6	5	65	High
Enhancement Measures	<ul style="list-style-type: none"> • Ensure prompt payment to suppliers; and • Construction materials should be purchased from licenced quarry sites, to reduce on offsite environmental degradation as a result of the project implementation. 							
Cumulative Impact	Yes: it is anticipated that continuous income will improve people's livelihood							
Reversibility	No							

9.2.2 Negative Impacts

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

9.2.2.1. Occupational Health and Safety Impacts

Most of the activities involved in such projects may pose occupational health and safety risks to employees. Therefore, in order to assess the effects of the proposed development in terms of health and safety aspects, occupational health and safety analysis was undertaken considering the possible sources, risks involved, how to prevent and control them and risk hazard assessment for each task to be undertaken at the site.

Methodology

There was no specific method that was used for these impacts. However, the Team utilized the existing guidelines provided by the Uganda government and IFC standards on Environmental, Health, and Safety (EHS) Guidelines on Construction and Decommissioning. Sections 13, 55 and 58 of Occupational Health and Safety Act, 2006 emphasize on protecting employees, provision of PPE and installation of firefighting systems while IFC Environmental, Health, and Safety General Guidelines were reviewed and compared in reference to the proposed project.

Because no much activity is already taking place, all impacts were predicated by identifying all possible sources, machinery to be used, working on heights or closed spaces, exposure to chemicals, then a risk assessment was undertaken with estimation of the magnitude, duration and possibility of occurrence of the expected impact.

Existing relevant policies and standards were reviewed to assess the standards as applied in establishment of the proposed project.

Discussion

Considering activities involved in the implementation of the proposed project, there is potential to cause health and safety threats to workers and immediate neighborhood and therefore it is anticipated that occupational, health and safety impacts will be high. Activities involving lifting of heavy loads, working at heights, operating machinery risks may all cause accidents, injuries and possibly loss of life.

Impact Description

Activities involved during construction of the proposed project could injure workers if appropriate safety measures are not in place. The major injuries at the site may result from following;

- Over-exertion such as repetitive motion and manual handling may cause injuries and fatigue during construction;
- Chemical hazard caused by exposure to chemicals. Exposure to chemicals can cause acute or long-term detrimental health effects.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- Falls from higher elevations and slips associated with poor housekeeping, such as excessive waste debris, loose construction materials and liquid spills.
- Construction activities may pose significant hazards related to the potential fall of materials or tools, as well as ejection of solid particles from abrasive or other types of power tools which can result in injury to the head, eyes, and extremities;
- Vehicle traffic and use of lifting equipment in the movement of machinery and materials on a construction site may pose temporary hazards, such as physical contact, spills, dust, emissions, and noise. Heavy equipment operators have limited fields of view close to their equipment and may not see pedestrians close to the vehicle;
- Working in confined spaces may be present at the construction site include ditches and trenches.
- Biological hazard due to exposure of any biological substance that poses a threat to the health of an employee such as microorganism, virus or toxin.

Injuries could range from minor ones to possible loss of life. However, if caution and personal protection gadgets are 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	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Occupational Health and Safety Impacts	No	Negative	2	4	6	5	60	High
	Yes	Negative	1	2	4	2	14	Low

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Mitigation Measures	<ul style="list-style-type: none"> • Priority should be given to engineering and administrative safety controls to eliminate or minimize exposure to risks. • Workers should be provided with appropriate PPE such as safety shoes, overalls, gloves, helmets and other necessary protective equipment, for use. • A first aider and first aid boxes should be available on site to handle minor accidents and to administer first aid in case of serious accidents before the victims are transferred to the nearby health facilities for extensive medical attention. • The developer/contractor should ensure that at all time there are quick means of ambulating victims to the nearest health facilities. • Workers should be trained in safety matters including accident prevention, proper control and maintenance of equipment and facilities. • Workers should be provided with adequate public health facilities such as toilets, • Emergency numbers of the Police (999) and those for nearby health Centre and the Mbarara Referral Hospital should all be with the developer. • All equipment must be operated by qualified and authorized personnel. • Chemicals should be stored in a dedicated store building well raised above the ground, well aerated with pervious floor for easy clean up.
Cumulative Impact	No
Residual Impact	Yes
Reversibility	Yes

9.2.2.2 Inadequate Security, Theft of equipment and Vandalism

The EIA team assessed how the project will affect security and safety of the project area including community impact on the project. Though the proposed project will not be susceptible to theft and strikes, there will be potential causes of those crimes at the site. If adequate precautions are not taken to prevent the crimes, people in the area will be at risks which might arise from inadequate security and safety.

Discussion

Local community theft of project construction equipment such as hoes, pangas, and fuel among others can put the health and safety of the public at risk such as fire outbreaks. If stolen fuel is inappropriately stored it can trigger fire outbreak leading to loss of

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

property and live. Whereas loss of property can be compensated, loss of life is not. Such vandalism also impacts on the benefits of channel construction progress pace.

Also strikes and theft present a safety risk to people. These may arise when there is a disagreement among community members, project workers or between project workers and community workers. This will cause chaos and in the long run theft of property may arise. It was predicted that the security and safety impacts during the construction of the project will mainly arise from lack of adequate security precautions, disagreement between workers and project management. Comprehensive security determines the degree to which people and environment are protected against the risks such as loss of life and property which may arise from inadequate security and safety.

Impact Description

Vandalism and theft of project equipment, and other associated materials (cement) and installations could occur, and has been reported on other similar projects under construction or operation. This impact is likely to be at a medium negative since security personnel will be hired to keep materials safe at the storage yard but not necessarily at all points of the site. Such incidents will delay works and the benefits of project to the community and developer, and increase costs of construction.

Lack of security personnel and protecting equipment during construction can lead to insecurity and crime as theft itself is already a crime. This is a negative impact with a **Medium** significance but with implementation of the suggested mitigation measures, it can be reduced to **Low Negative**.

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Inadequate Security and Safety	All Alternatives	No	Negative	3	1	8	4	48	Medium
		Yes	Negative	1	1	4	3	18	Low
Mitigation Measures	<ul style="list-style-type: none"> – Execute works as agreed with workers to avoid uncalled for strikes. – Provide workers with work protect gears to avoid chaos originating from poor handling of workers. – The number of security personnel on-duty, as well as the time during which shifts change, should vary each day to eliminate a discernible pattern. 								
Cumulative	No								

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ve Impa ct	
Resi dual Impa ct	No
Reve rsibil ity	Yes

9.2.2.3 Influx of migrant workers

The implementation of the project is likely to attract workers from different parts of Mbarara and the region at large into the project area - owing to the high rate of unemployment especially among the youths. This could create on the local resources and public services and a rise in social misdemeanor. The negative effect associated with influx of migrant workers is changes in society, introduction of different values and norms. Note that most often these workers will not come with their families and some may be single. This will encourage the formation of new social networks and sexual fraternisation with the resident community, increasing the risk of prostitution and the spread of HIV/ AIDS and STDs.

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Influx of migrant workers	All Alternatives	No	Negative	3	1	8	4	48	Medium
		Yes	Negative	1	1	4	3	18	Low
Mitigation Measures	<ul style="list-style-type: none"> Promotion of local content with involvement of the local leadership in the recruitment exercise, and Careful scrutiny of workers during the recruitment phase to eliminate those with criminal records. 								
Cumulative Impact	No								
Residual Impact	No								
Reversibility	Yes								

9.2.2.4 Community Hazards

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Implementation of the project may expose the community to a number of hazards normally associated with sites under construction/operation. The proposed site is surrounded by farms and residential areas. Therefore, risks may arise from unintentional or intentional trespassing, including potential contact with hazardous materials like sharp metals, open trenches and some other project components that are vacant or under construction, or excavations and structures which may pose falling and entrapment hazards.

Implementation of the suggested mitigation measures can reduce the significance of the impact from **MEDIUM NEGATIVE** to **LOW NEGATIVE**.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Community Hazards	No	Negative	1	2	10	4	52	Medium
	Yes	Negative	1	2	2	2	10	Low
Mitigation Measures	<p>Restricting access to the site, through a combination of institutional and administrative controls, with a focus on high risk structures or areas depending on site-specific situations, including fencing, signage, and communication of risks to the local community; and</p> <p>Removing hazardous conditions on construction sites that cannot be controlled effectively with site access restrictions, such as covering openings to small confined spaces or locked storage of hazardous materials.</p>							

9.2.2.5 Gender imbalance

In most cases, contractors tend to employ more men than women owing to the fact that most of the work is menial field work rather than office work and requires strong people who can withstand rough conditions such as strong temperatures, standing most of the time and working for long hours per day. It is therefore expected that gender distribution at the project site could be skewed, with more men than women in employment on the proposed project. This would result in gender imbalance, which could result in inconsideration of gender sensitive issues related to the proposed project. In addition, this could result in harassment and sexual assaults of the few women that could be employed at the project site. It must also be noted that the prevalence of male labour gangs during the construction phase of the proposed project and their interaction with local communities could increase the incidence of

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

communicable diseases, including HIV/AIDS and STDs in the project area. This is a negative impact with a **High** significance but could be reduced to **Low** significance if the proposed mitigation measures are implemented appropriately.

This impact applies to both construction and operation phases.

Impact	Alternative	Enhancement	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Gender imbalance	All Alternatives	No	Negative	5	4	8	5	85	High
		Yes	Negative	1	4	4	2	18	Low

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Mitigation measures	<p>The Project Contractor would prepare a Gender Management Plan which would include details of measures he/she proposes to adopt in a bid to encourage the recruitment of men and women as well as addressing their specific gender working and living needs at the project site, including the camp. The Project Contractor's Management Plan would include a description of recruitment policy and procedures, awareness raising meetings, gender sensitive working conditions and facilities to be provided at the workplace, and participatory gender sensitive monitoring. In this case, the Project Contractor would ensure to:</p> <ul style="list-style-type: none"> – Identify those job opportunities where females can best operate during the construction phase, such as flaggers, laboratory technicians, administration, etc., – Emphasise equal access to opportunities for both men and women. – Announcement notices (in local language) of equal employment opportunities would be posted in visible and popular places in the local communities and that such notices would also reach women and youth leaders. – Both men and women would be represented in any information and consultative meetings held at the site and that gender and social issues would be raised and analysed – Equal payment would be made to men and women for similar work and that payment of wages would be made to the workers and not to their representatives/ spouses. – Flexible working hours would be introduced to the extent possible to take account of multiple roles of women and cultural norms. – Prevent the risk of sexual harassment at the project site. – The Project Contractor would submit (to the proponent) monthly reports of labour attendance disaggregated by gender, and he/she would use gender compliance monitoring and evaluation forms to assess and report how gender concerns are addressed in recruitment, promotion, payment, provision of gender sensitive facilities, on-the-job training, etc.
Reversibility	Yes

9.2.2.6 Physio-Cultural Resources/Chance Finds

During excavation and construction activities, there could be chances of unexpected discovery of historical remains, antiquities or any other object of cultural or archaeological importance. When such a discovery occurs, the following procedures shall be adopted by the contractors:

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- The initial and very first step is to stop the activity immediately after identifying any of the chance findings
- Map out the area of concern and demarcate it or blockade it;
- Secure the site to prevent any damage or loss of removable objects. In case of removable antiquity or sensitive remains, a night guard shall be deployed at the site until a responsible authority take over the site for protection and preservation;
- The responsible authorities would take over the charge of protecting and preserving the site or area further;
- The Ministry of Energy and Mineral Development, Ministry of Tourism, Wildlife and Antiquities or relevant archaeological departments will perform an evaluation of the finding. The significance and importance of the findings will be assessed according to various criteria and laws relevant to cultural and archaeological heritage including historic, social, cultural and economic values by the concerned authorities;
- Decision on how to handle the finding will be made on the basis of assessment and could include changes in the project site, relocation, layout (in case of finding an irrevocable remain of cultural or archaeological importance), conservation, preservation, restoration or salvage;
- Decision of the concerned authority will be implemented regarding the management of discovery;
- Excavation and construction work on the site shall be resumed after permission is given from the relevant authorities, whichever is applicable; and
- In case of relocation of the site, the contractor will decide to acquire alternate location.

Impact	Miti gatio n	Impact					Significanc e	
		Nature	Extent	Duration	Magnit ude	Probabili ty		
Physico- Cultural Resources /Chance Findings	No	Negative	4	4	6	4	54	Medium
	Yes	Negative	1	1	4	2	12	Low

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Mitigation Measures	<ul style="list-style-type: none"> • A Chance Finds Procedure has been developed as part of the Environmental and Social Management and Monitoring Plan, to guide the handling of any chance finds during project implementation. The Chance Finds Procedure, has been presented under station 10.12: • Further still, the contractor shall develop and implement avoidance procedures. In the event of human remains, there shall be no further excavations or disturbance of the site until the responsible police authorities have been informed. • In areas not covered by this ESIA, such as quarry sites and borrow pits, Project Briefs or ESIA will be conducted in line with NEMA requirements. The presence of any PCRs in such sites will investigated during these studies.
Reversibility	No

9.2.2.7 Socio-cultural Drift and Spread of Sexually Transmitted Diseases

The negative aspect of the proposed project is related with expected influx of workers, often single men, who do not come from the locality, can lead to changes in society, introducing different values and norms. Note that most often these workers will not come with their families and some may be single. This will encourage the formation of new social networks and sexual fraternisation with the resident community, increasing the risk of prostitution and the spread of HIV/AIDS and STDs. Increased crime rates were discussed during stakeholder consultation. It was also pointed out that the contractor may source workers from the local communities for unskilled where possible to limit influx of workers from other communities.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Socio-cultural Drift and Spread of Sexually Transmitted Diseases	No	Negative	4	3	8	4	60	High
	Yes	Negative	2	3	4	2	18	Low

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Mitigation Measures	<ul style="list-style-type: none"> The contractor in liaison with the developer should carry out the HIV/AIDS sensitization and awareness campaign within the project area. During campaign free HIV/AIDS testing, counseling and condom distribution for both workers and local community can be done; The contractor will be required to have an approved HIV/AIDS policy and should be adequately implemented during Project execution. The policy must include orientation and sensitization framework about responsible sexual behavior with Project area communities and inherent health risks associated with HIV/AIDS and other sexually transmitted diseases.
Reversibility	No

9.2.2.8 Impacts on Traffic Flow

The establishment of the proposed project has the potential to disrupt traffic flow at the turn of Mbarara-Masaka road to the site. The traffic flow during construction phase will be affected by the civil works that require construction material delivery.

Discussion

Considering traffic characteristics of the project area, the environmental sensitivity of the location and the characteristics of any potential impacts including factors such as the existing and additional project traffic flows, road infrastructure quality, vehicle types and respective operating speeds and the proximity of communities/residential premises, the anticipated impact on traffic flow will be High.

The major project activities that will require frequent vehicle movements are the earthworks, civil engineering and the installation of equipment.

Impact Description

During construction phase, the major effects that may be brought about by traffic interruption include;

- Delays to road users. If cars entering and leaving the site are not properly management, then there will be likelihood of delays in car movement;
- There is likelihood of compromised safety to road users resulting from increase in construction traffic. Accidents could occur between vehicles, pedestrians and vehicles and other factors during overtaking over slower trackers that would be turning to the site, parked along the road near the site or construction material delivery.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- Another anticipated effect is increased levels of noise, vibration and air Pollution. It is anticipated that increased traffic flow, vehicle types, operating speeds as well as proximity to receptors are key determinants of these effects. The major source of noise during construction phase would be from construction activities, including ground clearance, piling, concreting and equipment installation.
- Another expected effect is degradation of other existing murram roads though quantification of how much traffic is needed to degrade a portion of murram road is not known for this project.

Mitigation Measures

The identified effects of traffic disruption due to project construction were assessed to be High which could be mitigated to low significance if the proposed mitigation measures were implemented properly.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Disruption of Traffic Flow	No	Negative	2	2	8	5	60	High
	Yes	Negative	1	2	2	3	15	Low
Mitigation Measures	<ul style="list-style-type: none"> • Develop and implement a traffic management plan for all the roads likely to be affected by the project activities and submit to the relevant authorities for approval; • Transporting construction materials shall be scheduled for off-peak traffic hours, as far as possible. 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; • Truck drivers should be sensitized on the proper driving code of conduct; • All heavy trucks must carry warning sign at the rear of the vehicle as required by the law and, • Warn road users about traffic disruption by using signage. 							
Cumulative Impact	Traffic disruption will be as result of additive effect caused by construction project trucks to the existing cars using Mbarara-Masaka road.							
Residual Impact	Due to construction of the project, there is likelihood of minor residue negative impact even after implementation of the proposed mitigation measures.							
Reversibility	Yes							

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

9.3 IMPACTS ON BIO-PHYSICAL ENVIRONMENT

9.3.1 Negative Impacts

9.3.1.1. Impacts of noise emissions

Noise arising from the implementation of the proposed project is likely to be generated by heavy trucks (material haulage trucks), compactors, excavators, dumper trucks, wheel loaders, standby generators among others. Noise generated could be higher than the national permissible standards. Under the National Environment (Noise Standards and control) Regulations 2003, the recommended maximum permissible noise level for residential, industry or small-scale production and commerce in general environment is 70dBA and 60dBA during the day and night respectively.

The expected noise to be generated by the development is between 70dBA and 90dBA and if it is to reduce by about 5dBA by each 10 metres from the site, it will reach 45dBA in 50 metres from the site. It was observed that the nearest receptors are over a kilometer away from the site though the site boundaries stop within a radius of 100 metres.

Impact Description

The major source of noise during construction phase would be from construction activities, including ground clearance, excavation, piling, leveling, land cutting and landscaping. Ground breaking (Earthworks and civil works construction) is expected to last for 10 (Ten) months.

The assessment identified that the main receptors of the noise will be construction workers, who will be equipped with suitable gears to protect them from any harmful noise levels. Major effects due to exposure to high levels noise may include irritation and discomfort.

Mitigation Measures

The identified effects of the anticipated noise generated are considered medium during construction and it is recommended that the following mitigation measures are implemented. With the implementation of the suggested mitigation measures, the significance of the impact can be maintained low or left negligible.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Generation of	No	Negative	2	4	2	5	40	Medium

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	Yes	Negative	1	2	2	2	10	Low
Mitigation Measures	<ul style="list-style-type: none"> • Construction equipment likely to generate high noise levels shall put off when not in use; • Regular servicing of all equipment to ensure high operation efficiency and therefore lower noise levels; • Construction contractors will be required to comply with the requirements of the IFC (Construction Plant and Equipment) (Permissible Noise Levels) guidelines and the Safety, Health and Welfare at Work (Control of Noise at Work) guidelines as well as national noise regulations. • Contractors must adhere to the code of Practice for Basic Information and Procedures for Noise Control) and will include the following mitigation measures <ul style="list-style-type: none"> ▪ Training of site staff in the proper use and maintenance of tools and equipment; ▪ The positioning of machinery on site to reduce the emission of noise and to site personnel; ▪ Sources of significant noise will be enclosed where practicable; ▪ Machines that could be in intermittent use will be shut down between work periods or will be throttled down to a minimum; ▪ Equipment known to emit noise strongly in one direction will, when possible, be orientated so that the noise is directed away from noise sensitive areas; and ▪ Equipment and/or methods of work causing significant levels of Noise at sensitive premises will be replaced by other less intrusive equipment and/or methods of working where practicable. • Regular measurement and monitoring of noise levels to make sure threshold levels are not exceeded. • Provide workers with PPE who are exposed to higher levels of noise 							
Cumulative Impact	<p>If both national and International standards on occupational Health and safety as well as noise minimization program are adopted, the cumulative noise impacts would be reduced to permissible levels.</p> <p>Noise from speeding vehicles along access Roads.</p>							

Residual Impact	<p>Though the impact will be reduced to low by the proposed mitigation measures, it is recognized that there may be some increases in noise levels locally during parts of the construction period due to cumulative activities from the project area.</p> <p>Therefore, the following factors should be considered in determining the residual impacts:</p> <ul style="list-style-type: none"> • The noise impacts are not predicted to significantly affect health or cause loss of life; • The predicted impacts are short term, temporary and reversible; • Impacts are localised and not of international and regional importance; • The geographic extent of the adverse impacts is confined to small areas around the works sites only and would not unduly affect the welfare of the local community or adjacent business activities; • The mitigation measures proposed will reduce the overall levels of impacts; and • The study area has not shown itself to be fragile or undisturbed. • As such, given the benefits of the project to the local community and the very short-term nature of the residual impacts predicted, the residual impacts associated with the construction phase exceedances for the project works would be considered minor and acceptable <p>However much the residual impact is assessed to be low, it is recommended that construction phase environmental monitoring and audit (EM&A) is undertaken to ensure that impacts do not occur beyond unavoidable levels. It is noted that during the construction process, episodes of noise higher levels may occur and it will be the function of the EM&A process to identify these events and take the necessary action such as, for example, temporarily adjustment of the number of plants to be used or an equivalent measure as necessary.</p>
Reversibility	Yes

9.3.1.2 Generation of large volumes of Waste

Solid waste in Mbarara city is managed using garbage skips bunkers, waste collection trucks and temporally dumping site. The district still has a challenge in solid waste management especially in Mbarara city and rural growth centers. There is still urgent need to establish garbage collection points in these urban centers. The assessment of this impact therefore emphasized on identifying different types of wastes that will arise during construction, operation and decommissioning phases.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Methodology

In order to analyze the impact of waste generation properly the EIA Team drafted a simple inventory of likely wastes; assessed existence and distribution of local waste management facilities; possibility of reuse /recycle opportunities and waste transportation and disposal and immediate ecological receptors. The impact was analyzed and estimated considering factors of magnitude, duration extent and possibility of occurrence of the expected impact. These factors were used to quantify the impact to either Low, Medium or High significance.

Discussion

Solid (non-hazardous) wastes generally include any garbage and refuse. Examples of such waste include domestic trash and garbage; inert construction / demolition materials; refuse, such as metal scrap and empty containers (except those previously used to contain hazardous materials which should, in principle, be managed as a hazardous waste); and residual waste.

Hazardous waste shares the properties of a hazardous material (e.g. ignitability, corrosivity, reactivity, or toxicity), or other physical, chemical, or biological characteristics that may pose a potential risk to human health or the environment if improperly managed. Wastes may also be defined as “hazardous” by local regulations or international conventions, based on the origin of the waste and its inclusion on hazardous waste lists, or based on its characteristics.

Waste streams generated during construction of the project are likely to consist of the following:

- Excavation spoil;
- Construction waste;
- Transportation and storage of materials;
- Construction waste disposal;
- Contamination from oil drippings;
- General waste; and
- Sewage and wastewater.

Impact Description during Construction

Non-hazardous solid waste generated at construction sites includes excess fill materials from grading and excavation activities, scrap wood and metals, and small concrete spills. Other non-hazardous solid wastes include office, kitchen, and dormitory wastes when these types of operations are part of construction project activities. Hazardous solid waste includes contaminated soils, which could potentially be encountered on-site due to previous land use activities, or small amounts of machinery maintenance

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

materials, such as oily rags, used oil filters, and used oil, as well as spill cleanup materials from oil and fuel spills.

Construction activities may pose the potential for release of petroleum-based products, such as lubricants, hydraulic fluids, or fuels during their storage, transfer, or use in equipment. Also, construction activities may include the generation of sanitary wastewater discharges in varying quantities depending on the number of workers involved. Adequate portable or permanent sanitation facilities serving all workers should be provided at the construction site. Land contamination may be encountered in sites under construction due to known or unknown historical releases of hazardous materials or oil, or due to the presence of abandoned infrastructure formerly used to store or handle these materials, including underground storage tanks. Actions necessary to manage the risk from contaminated land will depend on factors such as the level and location of contamination, the type and risks of the contaminated media, and the intended land use.

Mitigation Measures

The identified effects of waste generation due to project construction were assessed to be High which could be mitigated to low significance if the proposed mitigation measures were implemented properly.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Waste Generation	No	Negative	2	4	6	5	60	High
	Yes	Negative	1	2	4	3	21	Low

- Prepare a site waste management plan. This should include the designation of appropriate waste storage areas, collection and removal schedule.
- Equipment to be used on the sites should be well serviced and in sound mechanic condition to prevent cases of oil and fuel spillage into the immediate environs.
- Locate car workshops and equipment servicing areas away from surface water courses.
- Oil storage areas shall be constructed with an impervious surface with a bund around it.
- Control against the spillage of bitumen into water courses.
- Contract a NEMA licensed waste handler to handle waste collection, transportation and disposal.

Special attention should be given to minimizing and reducing quantities of waste generated through the following strategies;

Waste Minimisation

- Reduce waste or surplus materials on site by avoiding over-estimation of purchasing requirements, minimizing packaging materials and buying environmentally approved and recycled content products;
- Ensure materials are not delivered to site damaged and unusable;
- Where possible, establish a 'take back' system with suppliers;
- Where possible, purchase environmentally approved and recycled content products; and
- Limit the amount waste going to landfill by reusing and recycling where possible.

Waste Storage & Segregation

- Ensure all wastes are handled and stored correctly; This should be the matter to be discussed in the Waste Management Plan (WMP) to be developed by the contractor to include the quantities of excavated waste from the channel which will mainly include wet silt, mud and clay soils that may be wet and soupy. The amount of waste that is likely to be generated cannot be quantified now. The contractor must develop a thorough WMP which must be approved by Mbarara city authorities and NEMA and implemented.
- All wastes will be segregated and labeled appropriately. Storage and collection provisions will be made for recyclable materials including cardboard, cement bags, and other materials.
- Provisions will be made for collection of rubbish the construction

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Reuse & Recycling | 101

- Provisions will be made for the re-use or recycling of any timber, paper, cardboard and other materials, where appropriate.

Waste Removal & Disposal

- All waste (materials that cannot be reused or recycled) from the site will be removed off site by a suitably approved and licensed waste

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Cumulative Impact	No
Reversibility	Yes
Residual Impact	Yes

9.3.1.3 Impacts on Air Quality

It is expected that few vehicles will be accessing the site. About 2-5 trucks delivery construction materials on a daily basis are expected to access the site and about 20 public cars. This number of vehicles is relatively small during construction phase to generate considerable air emissions from exhaust and fuel combustion. It is stated in the UK Highways Agency guidance document “Design Manual for Roads and Bridges” that greater than 200 additional heavy vehicle movements per day are required in order to have a significant impact on air quality. Therefore, project phases will have low significant impact on air quality.

Emissions of dust will arise from the site during construction activities, primarily as a result of earth moving activities and the passage of vehicles over open ground. Emissions of dust are primarily associated with nuisance issues at nearby sensitive receptors, due to the deposition of dust on surfaces, such as window sills, washing, vehicles etc. along the access roads.

Impact Description

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 neighbourhoods. 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.

ANTICIPATED DUST SOURCES AT PROPOSED CONSTRUCTION SITE

Vehicle and Equipment Use	Wind Exposures	Contractor Activities
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Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Land clearing • Earthwork including soil excavation, filling, soil compaction, rough grading and final grading • Materials handling including material stockpiling
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Mitigation Measures

The identified effects of air emission due to project construction were assessed to be **Medium** which could be mitigated to **Low** significance if the proposed mitigation measures were implemented properly.

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Air Quality Impacts	All Alternatives	No	Negative	2	2	6	5	50	Medium
		Yes	Negative	1	1	2	2	8	Low

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Mitigation Measures	<ul style="list-style-type: none"> • Stockpiles of fine materials should be wetted or covered with tarpaulin during windy conditions. • Exposed ground should be sprayed with water in a manner that effectively suppresses dust. • The developer shall ensure that equipment is well-conditioned and serviced at all time. • The developer shall source for offsite already mixed concrete that would reduce the use of heavy machinery at the site. • Identify specific routes and control vehicular speed for material delivery trucks for dust control, • Provide appropriate PPE including nose masks to construction workers. • Vegetation clearing will be limited to the minimum required for safe construction to minimise exposed areas and vegetation removal. • Exposed areas to be stabilised as soon as reasonably practicable, and seeding and planting for landscaping to be done.
Cumulative Impact	Yes
Residual Impact	Yes
Reversibility	Yes

9.3.1.4. Potential loss of biodiversity and modification of habitats

Limited impact on biodiversity can be expected from clearance of remnant vegetation at the site. The impact severity is limited by the fact that the vast sections of the site was formally fallow land have already been altered by human activities.

All the plant species encountered are not yet assessed by IUCN (2018) red list of threatened species and the few that are already assessed are least concern. None of the species is on the National database of threatened species by WCS (2016). However, loss or disturbance of vegetation could cause increased erosion leading sedimentation of nearby surface water bodies.

Anticipated activities that may destroy habitats

- Continued loss of vegetation at the site, and
- Release of substances that are dangerous to both flora and fauna especially at construction phase. Debris and hydrocarbons if poorly managed will impair biodiversity services,

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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		
Loss of Vegetation and Habitats	No	Negative	2	4	6	5	60	High
	Yes	Negative	1	2	2	2	10	Low
Mitigation Measures	<ul style="list-style-type: none"> Site clearance shall be limited to project blue prints to ensure minimal vegetation removal and minimize the area of bare soil exposure to soil erosion; After construction, the developer shall restore the sites affected by construction activities, Unregulated clearance of vegetation shall be avoided to provide for survival of natural habitats and enable continuity of benefits from ecosystem, Landscaping and replanting of vegetation should be carried out after construction to enhance site aesthetics. A good landscaping plan should seek to avoid use of non-native and potentially invasive species. It should include low-maintenance local species. 							

9.3.1.5. Impact of material sourcing (creation of quarries and borrow pits)

Sourcing of construction materials earth materials (particularly murram, sand and gravel) needed for the project may create borrow pits and quarry sites in source areas. In case these pits and quarries are not adequately restored, they may: impound water becoming breeding grounds for mosquitoes and other disease vectors or pose risk of injury to animals and humans who fall into them. 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		
Creation of Quarry	No	Negative	2	2	6	5	50	Medium

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	Yes	Negative	1	2	2	2	10	Low
Mitigation Measures	<ul style="list-style-type: none"> Use existing borrow pits and quarries which have already acquired NEMA approvals wherever possible. Mbarara city authorities shall ensure that any new borrow pit sites identified for the purpose of the project obtain an approval before material excavation works begin. Fence off quarries and borrow pits during the construction period to protect livestock and people. Restore borrow pits immediately after construction. This may include: backfilling, contouring and re-vegetating. Where materials are procured from commercial operators, restoration activities are a responsibility of the third parties. The Contractor shall however ensure safe excavations (angle of cut) and controlled speed of haulage trucks. 							
Reversibility	Yes							

OPERATION AND MAINTENANCE

9.4 POTENTIAL IMPACTS ON SOCIO-ECONOMIC ENVIRONMENTAL

9.4.1 Positive Impacts

9.4.1.1 Value Addition to Dairy Products

A dairy processing plant can add value to raw milk by converting it into a range of dairy products such as yogurt, cheese, butter, milk powder, and more. Value-added dairy products have a higher market value and can lead to increased income for farmers and the dairy industry as a whole. This is a positive long-term impact with a **HIGH** significance.

Impact	Alternative	Enhancement	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Value addition to dairy	All Alternatives	No	Positive	2	4	8	5	70	High
		Yes	Positive	3	5	10	5	90	High
Enhancement Measure	– Enforce rigorous quality control measures to ensure that processed products meet safety and quality standards, safeguarding consumer health.								

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Reversibility	Yes
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9.4.1.2 Employment opportunities and income

Creation of job opportunities during project development and operation will provide a number of employment opportunities for skilled, semi-skilled and unskilled labour. Recruitment of unskilled manual labour should give preference to local people wherever feasible. Dairy processing plants require a skilled workforce for various operations, including production, quality control, packaging, and distribution. This impact will be beneficial to both men and women, especially when selling merchandise to workers. This is a positive long-term impact with a **HIGH** significance.

Impact	Alternative	Enhancement	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Employment opportunities and income	All Alternatives	No	Positive	2	4	8	5	70	High
		Yes	Positive	3	5	10	5	90	High

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Enhancement Measure	<ul style="list-style-type: none"> – During the operation phase the developer should design and implement Human Resources Policy which will include all requirements to hire workers with special treatment to locally affected people. This policy should not be politically driven or any kind of discrimination on the grounds of race, ethnicity, religion, gender, and political affiliation; – Handling of workers should be in accordance with Uganda labour laws and the World Bank Environment and Social Framework as discussed under standard 2 of Labour and Working Conditions. – The project contract will be drafted on the backbone of the Constitution of Uganda and relevant laws and regulations such as the Employment Act (2006) and the National Gender Policy (1997) and Penal Code Act (as amended 2007) – Promote the local content by giving the first priority to the project area communities to enhance local incomes and project buy-in; – Prohibit child Labour and child sexual abuse through strict scrutiny during the workers recruitment exercise and massive public sensitization campaigns through the project implementation period, – Institute Grievance Redress Mechanism to help address the grievances from workers' and members from immediate communities as they arise
Reversibility	Yes

9.4.1.3 Acquisition/improvement of skills

People who have ever worked on similar projects before would improve on their skills. People who have never worked on such projects would acquire such skills which they would use to seek employment in future. Establishing such a plant can contribute to skill development, training, and capacity building, helping to enhance the human capital of the country. This is a positive long-term impact with a **HIGH** significance.

Impact	Alternative	Enhancement	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Employment opportunities and income	All Alternatives	No	Positive	2	4	8	5	70	High

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

	Yes	Positive	3	5	10	5	90	High
Enhancement Measure	<ul style="list-style-type: none"> – Provide on job training to enhance workers prospects of advancement within the project workforce and guidance with safe use of machinery for occupational health and safety purposes. – Provide kind of certificate, appointment or contract on which workers may use for future reference in the case applying for similar jobs somewhere else. 							
Reversibility	Yes							

9.4.1.4 Induced development in the Project Area

There is possibility of emerging a new town or trading center due to establishment of the proposed project. This is a positive long-term impact with a HIGH significance.

Impact	Alternative	Enhancement	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Employment opportunities and income	All Alternatives	No	Positive	2	4	8	5	70	High
		Yes	Positive	3	5	10	5	90	High
Enhancement Measure	<div><div>– Pearl Dairy Farms Limited should ensure proper maintenance of the plant.</div><div>– The proposed landscaping design should be properly implemented.</div></div>								
Reversibility	Yes								

9.4.1.5 Income Diversification for Farmers

Dairy farmers can diversify their income sources by selling raw milk to the processing plant at competitive prices. This can provide them with a stable and predictable income, leading to improved livelihoods. This is a positive long-term impact with a **HIGH** significance.

Impact	Alternative	Enhancement	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Employment opportunities and income	All Alternatives	No	Positive	2	4	8	5	70	High
		Yes	Positive	3	5	10	5	90	High
Enhancement Measure	<ul style="list-style-type: none"> Involve local communities in the establishment and operation of the plant to ensure their needs and concerns are addressed, fostering positive relationships. 								
Reversibility	Yes								

9.4.1.6 Technology Transfer and Innovation

A dairy processing plant can introduce advanced processing technologies and practices to improve efficiency, product quality, and safety. This technology transfer can benefit not only the dairy industry but also contribute to the overall technological development of the country. This is a positive long-term impact with a **HIGH** significance.

Impact	Alternative	Enhancement	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Employment opportunities and income	All Alternatives	No	Positive	2	4	8	5	70	High
		Yes	Positive	3	5	10	5	90	High
Enhancement Measure	<ul style="list-style-type: none"> Implement strict environmental regulations and standards to ensure that processing activities do not lead to pollution or harm to natural resources. Provide training and capacity-building programs to enhance the skills of the workforce, ensuring safe and efficient plant operations. Regularly monitor effluent quality to ensure that treatment processes are effective and meet regulatory standards. 								
Reversibility	Yes								

9.4.1.7 Market Expansion

Processed dairy products often have a longer shelf life, which allows for distribution to a wider geographic area, including urban centers and export markets. This can lead to increased market opportunities and revenue for dairy producers. This is a positive long-term impact with a **HIGH** significance.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Impact	Alternative	Enhancement	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Employment opportunities and income	All Alternatives	No	Positive	2	4	8	5	70	High
		Yes	Positive	3	5	10	5	90	High
Enhancement Measure	<ul style="list-style-type: none"> Involve local communities in the establishment and operation of the plant to ensure their needs and concerns are addressed, fostering positive relationships. Educate local communities about the benefits of the treatment plant and involve them in its management and monitoring. 								
Reversibility	Yes								

9.4.1.8 Environmental protection

An effluent treatment plant prevents untreated wastewater from entering water bodies, mitigating water pollution and protecting aquatic ecosystems. This is a positive long-term impact with a **HIGH** significance.

Impact	Alternative	Enhancement	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Employment opportunities and income	All Alternatives	No	Positive	2	4	8	5	70	High
		Yes	Positive	3	5	10	5	90	High
Enhancement Measure	<ul style="list-style-type: none"> Implement waste minimization practices within the processing plant to reduce the volume and toxicity of effluent generated. Develop contingency plans for potential accidents or incidents to minimize negative impacts on the environment and public health. 								
Reversibility	Yes								

9.4.2 Negative Impacts

9.4.2.1. Loss of income among the project after layoff/demobilization of staff

It is predicted that the project implementation will employ a number of people during construction phase. After that phase the number will be reduced to a few people who will handle the operation and maintenance phase. The project construction phase is

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

expected to last for ten months. Professionals and non-skilled workers such as casual labourers, material suppliers, masons, and technical people such as Engineers and Surveyors, among others will lose the financial benefits they had come to rely on.

Mitigation Measures

The predicted effects of the anticipated loss of income from the project are considered high during operation and with the implementation of the suggested mitigation measures, the significance of the impact can be reduced to low Negative.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Loss of income among the project after	No	Negative	2	3	4	4	36	Medium
	Yes	Negative	3	4	8	5	85	High
Mitigation Measures	<ul style="list-style-type: none"> • Provide financial literacy training to workers to make informed use of their incomes from the project after completion. • Provide workers with reference materials for use as future reference when applying for similar jobs elsewhere. 							
Cumulative Impact	Yes:							
Reversibility	Yes							

9.5. POTENTIAL IMPACTS ON BIO-PHYSICAL ENVIRONMENT

9.5.1 Negative Impacts

9.5.1.1 Impacts arising from Noise generation

The facility operation is the key activity during existence of the project. During the process of operation and maintenance there will be temporarily noise generation with impacts similar to those of construction phase. Though operation noise will be similar in nature to the construction noise, impacts have been considered to be more significant than during construction phase and long term. It is expected that during operation of the project, significant noise will be generated. Depending on the method or technology used to operate the greenhouse, noise will mainly result from maintenance pumping water for irrigation, equipment, standby generator, loading and offloading trucks among others.

Mitigation Measures

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

The predicted effects of the anticipated noise generated are considered high during operation and it is recommended that the following mitigation measures are implemented. With the implementation of the suggested mitigation measures, the significance of the impact can be maintained low.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Generation of Noise	No	Negative	2	4	6	5	60	High
	Yes	Negative	1	2	2	2	10	Low
Mitigation Measures	<ul style="list-style-type: none"> Selecting equipment with lower sound power levels Installing vibration isolation for mechanical equipment Limiting the hours of operation for specific pieces of equipment or operations Re-locating noise sources to less sensitive areas to take advantage of distance and shielding Siting permanent facilities away from community areas if possible Taking advantage of the natural topography as a noise buffer during facility design Developing a mechanism to record and respond to complaints. 							
Cumulative Impact	Yes							
Residual Impact	None							
Reversibility	Yes							

9.5.1.2 Sludge generation

Treatment processes will generate sludge, which requires proper disposal or management to prevent environmental contamination.

The predicted effects of the anticipated sludge generated are considered high during operation and it is recommended that the following mitigation measures are implemented. With the implementation of the suggested mitigation measures, the significance of the impact can be maintained low.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

				n	de	ty		
Generation of Noise	No	Negative	2	4	6	5	60	High
	Yes	Negative	1	2	2	2	10	Low
Mitigation Measures	<ul style="list-style-type: none"> Implement proper sludge management practices, including treatment and disposal options, to prevent soil and water contamination. 							
Cumulative Impact	Yes							
Residual Impact	None							
Reversibility	Yes							

9.5.1.3 Unpleasant odours from chemicals/ Resulting Impacts on Air Quality

The odour characteristics of effluent treatment processes can generate environmental nuisance.

Odours can be caused by manures, sludge fertilizers and chemicals, waste disposal sites, composting sites and activities, mulches and waste management equipment.

The volatile chemicals when the packaging is destroyed and when stored in concentrated amounts. These volatile chemicals can be released even at low temperatures. These chemicals may have an adverse effect on the amenity of an area. While these chemicals are generally released in low concentration, the odorous nature of the volatiles imposes upon the environment, particularly to persons working with chemicals in stores and transportation when stored in concentrated amounts.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Generation of Noise	No	Negative	2	4	6	5	60	High
	Yes	Negative	1	2	2	2	10	Low

Mitigation Measures	<ul style="list-style-type: none"> • Storing stockpiles of chemicals, a way from public amenities and the community. • The stockpiles of the chemicals should be fully enclosed and kept within enclosures or coverings that extend to ground level to trap volatile release that is associated with colder air currents. Further, the material should only be exposed to the atmosphere when accessing or replacing stock, so as to minimise the time periods where blooms of odour can escape. • The amount of chemicals stored on site should be significantly reduced and also ensure that only required chemicals are stocked to serve as samples that assist with orders and placed orders should be delivered directly to the stores. • Permanent building should be constructed where larger volumes stockpiles are stored, or where continually being replenished with new stock. The building should be vented through chimney stacks to ensure that the volatiles vapours do not further impact upon the nearby environments. • Stockpiles of the chemicals should be stored on a sealed surface or on racks above the ground and not be stored on unlined surfaces or exposed to the weather, in pooling water, in areas subject to storm water run-off, or on saturated soils. • During transport, all chemicals should be covered in such a fashion as to minimise atmospheric exposure and airflow. • The stores should develop and execute “Odour Management Plans” to address the reduction of the potential for chemicals to contribute to environmental nuisance. The Odour Management Plans should include detail of the chemical management Processes employed to manage the odour generated by the freshly treated timber. • The following storage structure should also be employed ✓ structurally sound to wind and weather especially good roof with no leaks. ✓ fire resistant structure and internal cladding is preferred wall and roof insulation to moderate storage temperature is desirable. ✓ should have clear access and outward opening doors. ✓ Ventilation must be adequate to prevent build-up of chemical vapours; both lower vents just above the bund and upper vents in the walls or roof are highly recommended. ✓ Workers employed in chemical storage area must be provided with adequate PPE and limited time spent within the stores.
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Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Cumulative Impact	Yes
Residual Impact	None
Reversibility	Yes

9.5.1.4 Impacts arising from Waste Generation and Management

The expected waste includes kitchens and bathrooms and toilet flushing, housekeeping, maintenance, and kitchen departments. Dairy processing can generate significant amounts of waste, including packaging materials and by-products. This can contribute to solid waste disposal challenges.

Waste from this project shall be categorized as hazardous and non-hazardous waste. Major wastes would include,

- **Organic Waste:** This includes milk solids, whey, cream, and other dairy by-products that are not suitable for direct human consumption. These materials can be generated during processes such as milk separation, clarification, and concentration.
- **Packaging Materials:** Dairy products are often packaged in containers, bottles, cartons, and other materials. These packaging materials contribute to solid waste generation.
- **Cleaning Waste:** Dairy processing equipment and facilities need regular cleaning, leading to the generation of cleaning chemicals, detergents, and wastewater containing residues from cleaning processes.
- **Sludge:** Effluent treatment processes can generate sludge as a by-product. Sludge may contain organic matter, suspended solids, and residual treatment chemicals.

The anticipated effects of this impact are negative with a **high** significance that can be reduced to low if the proposed mitigation measures are properly implemented.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Waste Generation	No	Negative	2	4	6	5	60	High
	Yes	Negative	1	4	2	2	14	Low

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Mitigation Measures	<ul style="list-style-type: none"> • Integrate waste management activities in the area into the city-wide waste management system. • Companies with experience in handling waste especially desilted sludge should be contracted to dispose of waste material. • Waste Segregation and Recycling: Implement proper waste segregation practices to separate different types of waste, making it easier to recycle materials like packaging and cardboard. • By-Product Utilization: Explore opportunities to utilize dairy by-products for animal feed, composting, or other value-added applications, reducing organic waste. • Effluent Treatment and Reuse: Install and maintain an effluent treatment plant to properly treat wastewater generated during processing, reducing the environmental impact of effluent discharge. • Lean Manufacturing Practices: Implement lean manufacturing principles to optimize processes, reduce excess production, and minimize waste generation. • Sustainable Packaging: Choose eco-friendly packaging materials and design to minimize the environmental impact of packaging waste. • Community Engagement: Engage with local communities to raise awareness about waste reduction and proper waste management practices.
Cumulative Impact	Yes
Reversibility	Yes

9.5.1.5 Unpleasant odours from chemicals/Resulting Impacts on Air Quality

The odour characteristics of effluent treatment processes can generate environmental nuisance. Odours can be caused by manures, sludge fertilizers and chemicals, waste disposal sites, composting sites and activities, mulches and waste management equipment.

The volatile chemicals when the packaging is destroyed and when stored in concentrated amounts. These volatile chemicals can be released even at low temperatures. These chemicals may have an adverse effect on the amenity of an area. While these chemicals are generally released in low concentration, the odorous nature of the volatiles imposes upon the environment, particularly to persons working with chemicals in stores and transportation when stored in concentrated amounts.

Also, the negative impacts identified due to air borne emissions at the site are primarily related to emissions of dust arising from facility operation including vehicle and generator emissions. These emissions may have effects on human health from

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

generation of particulate matter. Basically, dust will be the major emission to air. These 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 and it is expected that emissions arising from this phase are HIGH. This impact can be reduced from **HIGH NEGATIVE** to **LOW NEGATIVE** provided the suggested mitigation measures are implemented.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Waste Generation	No	Negative	2	4	6	5	60	High
	Yes	Negative	1	4	2	2	14	Low

Mitigation Measures	<ul style="list-style-type: none"> • Storing stockpiles of chemicals, a way from public amenities and the community. • The stockpiles of the chemicals should be fully enclosed and kept within enclosures or coverings that extend to ground level to trap volatile release that is associated with colder air currents. Further, the material should only be exposed to the atmosphere when accessing or replacing stock, so as to minimise the time periods where blooms of odour can escape. • The amount of chemicals stored on site should be significantly reduced and also ensure that only required chemicals are stocked to serve as samples that assist with orders and placed orders should be delivered directly to the stores. • Permanent building should be constructed where larger volumes stockpiles are stored, or where continually being replenished with new stock. The building should be vented through chimney stacks to ensure that the volatiles vapours do not further impact upon the nearby environments. • Stockpiles of the chemicals should be stored on a sealed surface or on racks above the ground and not be stored on unlined surfaces or exposed to the weather, in pooling water, in areas subject to storm water run-off, or on saturated soils. • During transport, all chemicals should be covered in such a fashion as to minimise atmospheric exposure and airflow. • The stores should develop and execute “Odour Management Plans” to address the reduction of the potential for chemicals to contribute to environmental nuisance. The Odour Management Plans should include detail of the chemical management Processes employed to manage the odour generated by the freshly treated timber. • The following storage structure should also be employed <ul style="list-style-type: none"> ✓ structurally sound to wind and weather especially good roof with no leaks. ✓ fire resistant structure and internal cladding is preferred wall and roof insulation to moderate storage temperature is desirable. ✓ should have clear access and outward opening doors. ✓ Ventilation must be adequate to prevent build-up of chemical vapours; both lower vents just above the bund and upper vents in the walls or roof are highly recommended. ✓ Workers employed in chemical storage area must be provided with adequate PPE and limited time spent within the stores.
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Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Cumulative Impact	Yes
Reversibility	Yes

9.5.1.6 Occupational Health and Safety Impacts

Brief direct contact with large amounts of chemicals with skin can result in irritation, which when not washed off or when accentuated by sunlight, can result in minor burns. Overexposure to vapours from the input chemical can result in irritation. Eye contact with chemical may result in irritation, which can result in effects ranging from minor burns to severe corneal injury, including keratitis, conjunctivitis and corneal abrasion. Overexposure to chemical vapour may result in irritation to respiratory tract. Prolonged exposure in significant excess of permissible air concentrations can result in acute toxic effects, such as dizziness, respiratory difficulty, convulsions and possible cardiovascular collapse.

With the implementation of the suggested mitigation measures, the significance of the impact can be reduced from **High Negative** to **Low Negative**.

Impact	Alternative	Mitigation	Impact					Significance	
			Nature	Extent	Duration	Magnitude	Probability		
Occupational and Health and Safety Impacts	All Alternatives	No	Negative	3	4	8	4	60	Medium
		Yes	Negative	1	4	4	3	27	Low

- All employees should wear long-sleeve shirts and long pants and use gloves impervious to the chemicals when handling the chemicals.
- The workforce should wear goggles when spraying and handling the chemical, to protect eyes getting in contact with the chemical and should also wash work clothes separately from other household clothing.
- The site managers should give full regard to occupational health safety and welfare management issues that relate to the handling of the chemicals.
- Where close contact is essential, following treatment, the following protective clothing should be used by all the employees at the farm: hooded coveralls fastened at neck, ankles and wrist; goggles; gauntlet gloves; impervious boots; a respirator with combined dust/organic vapor cartridge.
- Where close contact is necessary beyond the three-month holding period, the following protective clothing should be used by the workforce: full-length coveralls, impervious boots and gauntlet gloves.
- Avoid burning wastes contaminated with chemicals in open fires or in stoves, fireplaces, or residential boilers because toxic chemicals may be produced as part of the smoke and ashes.

In addition, the following recommendations should also be implemented

- Develop and implement occupational health and safety policy and procedures for the facility.
- Workers should be provided with appropriate PPE such as safety shoes, overalls, gloves, hard head helmets and other necessary protective equipment, for use.
- A first aider and first aid boxes should be available on site to handle minor accidents and to administer first aid in case of serious accidents before the victims are transferred to the nearby health facilities for extensive medical attention.
- The developer/contractor should ensure that at all time there are quick means of ambulating victims to the nearest health facilities.
- Workers should be trained in safety matters including accident prevention, proper control and maintenance of equipment and facilities.
- Workers should be provided with adequate public facilities (toilets and bath shelters).
- Emergency numbers of the Police (999) and those for nearby medical health centers should all be with the developer.
- The contractor should have in place a Health and Safety Policy and Action Plan, addressing workers occupational health and safety issues, workers welfare and working conditions in line with the Occupational Health and Safety Act of 2006.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Cumulative Impact	No
Residual Impact	No
Reversibility	Yes

9.5.1.7 Impacts due to Traffic Flow

The operation of the proposed facility has the potential to disrupt traffic flow off Mbarara-Masaka road. Considering traffic characteristics of the project area, the environmental sensitivity of the location and the characteristics of any potential impacts including factors such as the existing and additional project traffic flows, road infrastructure quality, vehicle types and respective operating speeds and the proximity of communities/residential premises, the anticipated traffic impacts will be low. The road that serves the project site is tarmac and motorable. However, there will be some localized interference with traffic where truck or vehicles are parked along the road.

The major concern is the increase of the risk of motor accidents in the area, especially to children who have a tendency of running after vehicles. Cyclists and pedestrians are also vulnerable and they currently constitute the biggest percentage of road users in the project area given the rural nature of the area.

The major effects that may be brought about by traffic interruption include;

Delays to road users because there many vehicles observed along the access road; There is likelihood of compromised safety to road users resulting from increase in project traffic. Accidents could occur between vehicles and vehicles, pedestrians and vehicles and other factors during overtaking over slower trackers that would be turning to the site, parked along the road near the site or raw material delivery.

Another anticipated effect is increased levels of noise and air Pollution. It is anticipated that increased traffic flow, vehicle types, operating speeds as well as proximity to receptors are key determinants of these effects.

Mitigation Measures

The identified effects of traffic disruption due to project construction were assessed to be low which could be maintained with low significance if the proposed mitigation measures were implemented properly.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Disruption of Traffic Flow	No	Negative	1	4	4	3	27	Low
	Yes	Negative	1	4	2	1	15	Low
Mitigation Measures	<ul style="list-style-type: none"> Develop and implement a traffic management plan for all the roads likely to be affected by the project activities and submit to the relevant authorities for approval; Transporting raw materials and products shall be scheduled for off-peak traffic hours, as far as possible. 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 each time a section of the road is temporally disrupted; Truck drivers should be sensitized on the proper driving code of conduct; All heavy trucks must carry warning sign at the rear of the vehicle as required by the law. 							
Cumulative Impact	Traffic disruption will be as result of additive effect caused by project trucks to the existing cars using the access road.							
Residual Impact	No							
Reversibility	Yes							

9.5.1.8 Fire Outbreak

The volatile chemicals readily escape the stores and pose a high risk of fire outbreak as a result of accidental fires. That's because ammonium nitrate, a chemical commonly used in agricultural fertilizers, is a highly explosive compound. If it comes into contact with an open flame or other ignition source, it explodes violently. The explosive force occurs when solid ammonium nitrate decomposes very rapidly into two gases, nitrous oxide and water vapor.

The products to be stored at the greenhouse such as Petrol or diesel for generator use are classified "flammable". In case of a fire outbreak, there is likely to be extensive property damage, possibly loss of human life and large-scale short-term air pollution by smoke and VOCs. Possible ignition sources include electric shocks and cigarette smoking. They should be prohibited at the facility.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		
Fire Outbreak	No	Negative	4	2	10	4	64	High
	Yes	Negative	1	2	4	2	14	Low
Mitigation Measures	<ul style="list-style-type: none"> A fire-break zone should be created around the storage area with fire-fighting resources readily accessible. The chemicals should be stored separately from other materials that present a potential fire hazard. A fire management plan should be put in place with fire extinguishers available around the entire facility. Signs should be erected at plant for people not to smoke within the facility's environs. Employees should be trained in firefighting and fire control skills. Electrical installation will conform to acceptable national safety standards. Due diligence is to be exercised by all employees, for their safety depends on how careful they execute their duties. 							
Cumulative Impact	No							
Reversibility	Yes							

9.5.1.9 Contamination of Ground Water and Soil/Spills, leakage of chemical contaminated effluents

Since the project will make extensive use of chemicals during effluent treatment processes, there is high possibility of spillage and leakage of these chemical preservatives and this may end up in the into the environment. However, management will ensure that there is minimum spillage of the chemicals by ensuring that leachate trapping system is employed. Any spilled chemical or leaching chemicals will be trapped by specific drainage system to the onsite effluent treatment plant. The oil interceptor will be constructed to trap any spilled fuel that may be washed away by rain water and the oil interceptor will be emptied regularly and the trapped waste will be incinerated.

Impact	Mitigation	Impact					Significance	
		Nature	Extent	Duration	Magnitude	Probability		

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Contamination of Ground Water and Soil/Spills, leakage of chromate contaminated	No	Negative	4	2	10	4	64	High
	Yes	Negative	1	2	4	2	14	Low
Mitigation Measures	<ul style="list-style-type: none"> • The dairy processing plant will have a new effluent treatment plant for treatment of waste water generated before discharge in the environment. • Maintenance of a functional sanitation system and immediate response by qualified personnel to any defects. • Stockpiles of the chemicals should be fully enclosed and kept within enclosures or coverings that extend to ground level to trap volatile release that is associated with colder air currents. • The buildings should be vented through chimney stacks to ensure that the volatiles vapours do not further impact upon the nearby environments. • Sorting of wastes, keeping the wastes in different garbage bins and immediate disposal. • Avoid pouring the chemical wastes down drains, sinks and toilets. • Take waste contaminated with chemicals for incineration. 							
Cumulative Impact	No							
Reversibility	Yes							

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

10.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

10.1 Introduction

Pearl Dairy Farms Ltd seeks to acquire sustainable development through ensuring effective management of all impacts likely to be generated during the proposed establishment of the dairy production facility and a new effluent treatment plant, an Environment Management Plan (EMP) is provided in tables 10-1 and 10-2 below. It includes major potential impacts identified, mitigation/enhancement measures proposed, monitoring indicators, timing of monitoring, parties responsible, any capacity building requirement and the estimated monitoring cost.

10.2 Objectives of ESMP

The overall objective of the ESMP is to ensure that the environmental and social issues likely to arise from the project activities are addressed and appropriate mitigation actions are integrated into the project implementation phase to protect the environment.

Other Specific Objectives include in addition to the above, this ESMP has been prepared to achieve the following specific objectives:

- a. Identify the environmental issues associated with the major activities.
- b. Develop mitigation measures for the aspects identified as having environmental impacts.
- c. Incorporate environmental mitigation measures into operation schedules and activities and develop corrective actions and ensure monitoring.
- d. Examine the project in terms of its major activities and identify the aspects associated with the project operation which generate environmental impacts.
- e. Define the specific actions required, roles and responsibilities for these actions, timetable for implementation, and associated costs.
- f. Describe capacity building and training requirements for the implementation of the ESMP, and
- g. Define a proposed institutional structure to govern the implementation of the ESMP.

Therefore, this ESMP identifies the aspects of operation activity which have environmental issues associated with them; it proposes mitigation to minimize resultant impacts and serves as a basis to further examine and improve environmental construction and operation performance of this project.

10.3 Scope of the ESMP

The scope of this ESMP covers number of issues which include;

- Design plan of the project guiding operation impacts and mitigation measures including health and safety, emergency response and site access; and

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- Monitoring Programme, implementation schedule as discussed in the subsequent sections of this ESMP.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

10.4 Environmental and Social Management and Monitoring Plan

The following Environmental Management and Monitoring Plan allocates the responsibilities for implementation of the proposed mitigation measures to the various stakeholders and is divided into measures to be implemented during the **construction phase** and the **operational/Maintenance phase** of the project. It also provides the management and monitoring measures as identified from the enhancement and mitigation measures proposed.

10.4.1 Construction Phase

Table 10.1 below summaries the EMP for construction phase

Table 10-1: Construction Phase

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated cost for Project duration (Uganda Shillings)
9.2.1 POSITIVE IMPACTS - SOCIO-ECONOMIC ENVIRONMENT							

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated cost for Project duration (Uganda Shillings)
9.2.1.1 Employment opportunities and income	I. During the construction phase the developer/contractor should design and implement Human Resources Policy which will include all requirements to hire workers with special treatment locally affected people. This policy should not be politically driven or any kind of discrimination on the grounds of race, ethnicity, religion, gender, and political affiliation;	Fair and equal allocation of jobs. Operation of works within Uganda labour laws e.g. no child labour	Number of people from local community Complaints recorded against prompt and adequate payments Record of child labour at the project, and Ratio of men to women employed	Throughout construction period	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Should be estimated according to how many workers and how long the project is going to take.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated cost for Project duration (Uganda Shillings)
	I. Handling of workers should be in accordance with Uganda labour laws and the World Bank Environment and Social Framework as discussed under standard 2 of Labour and Working Conditions.	Fair and equal allocation of jobs. Operation of works within Uganda labour laws e.g. no child labour	Number of people from local community Complaints recorded against prompt and adequate payments Record of child labour at the project, and Ratio of men to women employed	Throughout construction period	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Should be estimated according to how many workers and how long the project is going to take.
	II. The contractor should avoid use of child labour.	No person below 18 years will be employed Compliance with labour laws	Record of child labour at the project, and Complaints about child labour abuse recorded.	Throughout construction period	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Should be estimated according to how many workers and how long the project is going to take.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated cost for Project duration (Uganda Shillings)
	V. Create Grievance Mechanism of which workers have to follow in reporting and problem solving	Fair problem reporting and solving. Minimum occurrence of grievances	Number of complaints registered about lack problem solving protocol Record of grievances registered	Throughout Project construction phase.	Pearl Dairy Farms Ltd and Community Leaders	Project Manager and Human Resources Manager	Unspecified but should be incorporated in the consultancy fees and be highlighted in RAP
9.2.1.2 Acquisition/improvement of skills	I. Provide on job training to enhance workers prospects of advancement within the project workforce and guidance with safe use of machinery for occupational health and safety purposes,	To develop career and capacity building for all workers To equip all workers with appropriate drainage construction skills this can be used anywhere else in their career.	Performance of workers per specific activity Recommendations from supervisors or team leaders Number of young professionals and artisans receiving on-job training during construction phase	Throughout Project construction phase.	Pearl Dairy Farms Ltd	Project Manager	5,000,000

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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	I. Provide kind of certificate, appointment or contract on which workers may use for future reference in the case applying for similar jobs somewhere else.	Skills improvement in youths, especially young professionals and artisans	Performance of workers per specific activity Recommendations from supervisors or team leaders	Throughout Project construction phase.	Pearl Dairy Farms Ltd	Project Manager	Depends on number of workers who deserve the performance certificates. Each certificate could cost 10,000/=
9.2.1.3 Income to Construction material / equipment suppliers and sub-contractors	I. Ensure prompt payment to suppliers.	Empowerment to all material suppliers and improvement of their livelihood	Number of local community members benefiting from supplying construction material to the project.	Throughout Project construction phase.	Pearl Dairy Farms Ltd	Project Manager	Part BoQ for the developer
	II. Construction materials should be purchased from licenced quarry sites, to reduce on offsite environmental degradation as a result of the project implementation.	No environmental degradation from material source points (promote environmental protection off site)	Number of licenced construction material suppliers.	Throughout Project construction phase.	Pearl Dairy Farms Ltd	Project Manager	Part BoQ for the contractor

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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9.2.2 NEGATIVE IMPACTS – SOCIO-ECONOMIC ENVIRONMENT							
9.2.2.1 Occupational Health and Safety Impacts	I. Workers should be provided with appropriate PPE such as safety shoes, overalls, gloves, helmets and other necessary protective equipment, for use.	To ensure Health and Safety on the construction site To prevent injury to construction workers and Other personnel.	Safety records, records of accidents Violence amongst workers as a result of drug abuse/alcohol	Throughout Construction period	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	20,000,000
	II. A first aider and first aid boxes should be available on site to handle minor accidents and to administer first aid in case of serious accidents before the victims are transferred to the nearby health facilities for extensive medical attention.	To attend to all minor injuries and emergencies at the site as appropriate as possible	Safety records, records of accidents Violence amongst workers as a result of drug abuse/alcohol	Throughout Construction period	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	8,000,000
	II. The developer/contractor should ensure that at all time there are quick means of ambulating victims to the nearest health facilities	To avoid loss of life at the site due to lack of ambulating means	Safety records, records of accidents	Throughout Construction period	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies	25,000,000

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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	V. Workers should be trained in safety matters including accident prevention, proper control and maintenance of equipment and facilities.	All workers on site aware of EHS requirements and site safety rules	Records of incidents and accidents on site. Observance of site safety rules by workers. Use of requisite PPE by workers.	Throughout Construction period	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	7,000,000
	V. Workers should be provided with adequate public health facilities such as toilets,	Minimize the likelihood of outbreak of water-borne diseases	Number and state of hygiene of sanitation facilities being used by Project workers.	Throughout Construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	6,500,000

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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	I. Emergency numbers of the Police (999) and those for nearby health Centre like Mbarara Regional Referral Hospital should all be with the developer.	Quick access to nearest emergency response agencies	Availability of the provided phones numbers every time they are contacted Response time every time contacted for emergency	Throughout Construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	500,000
	II. All equipment must be operated by qualified and authorized personnel.	All equipment operators to be aware of EHS requirements and site safety rules	Records of incidents and accidents on site due to equipment operations.	Throughout Construction period	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	1,000,000
9.2.2.2 Inadequate Security, Theft of equipment and Vandalism	I. Execute works as agreed with workers to avoid uncalled for strikes	Harmonise worker execution	Records of riots and chaos due to disagreement between project management and workers.	Throughout Construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Security Authorities	Not direct

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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	I. Provide workers with work protective gears to avoid chaos originating from poor handling of workers	Minimize risk of exposure of workers to hazardous material.	Records of incidents as a result of exposure to hazardous material.	Throughout Construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Incorporated in 9.3.2.1 (I, ii & iii)
9.2.2.3 Influx of Migrant Workers	i. Promotion of local content with involvement of the local leadership in the recruitment exercise	Fair and equal allocation of jobs. Operation of works within Uganda labour laws e.g. no child labour	Number of people from local community Complaints recorded against prompt and adequate payments Record of child labour at the project, and Ratio of men to women employed	Throughout construction period	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Unspecified.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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9.2.2.4 Community Hazards	I. Restricting access to the site, through a combination of institutional and administrative controls, with a focus on high risk structures or areas depending on site-specific situations, including fencing, signage, and communication of risks to the local community	Minimise injuries acquired by community members due project implementation	Records of incidents and accidents on site. Observance of site safety rules by community members.	Throughout Construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Included in Contractor's cost
	II. Removing hazardous conditions on construction sites that cannot be controlled effectively with site access restrictions, such as covering openings to small confined spaces or locked storage of hazardous materials.	Minimise injuries acquired by community members due project implementation	Records of incidents and accidents on site. Observance of site safety rules by community members.	Throughout Construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Included in Contractor's cost

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated cost for Project duration (Uganda Shillings)
	II. A site hoarding off permit will be acquired by the contractor allowing the contractor to hoard / fence off the open excavated areas.	Minimize risk of accidents on site to as low as possible, particularly from the public. All the excavated sites and are hoarded and barricades are installed and the local population has no access	Records of incidents. Number of complaints from the general public No of excavated sites and barricaded from community access,	Throughout Construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara Government Authorities	Unspecified

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated cost for Project duration (Uganda Shillings)
9.2.2.5 Gender imbalance	I. The Project Contractor would prepare a Gender Management Plan which would include details of measures he/she proposes to adopt in a bid to encourage the recruitment of men and women as well as addressing their specific gender working and living needs at the project site, including the camp. The Project Contractor's Management Plan would include a description of recruitment policy and procedures, awareness raising meetings, gender sensitive working conditions and facilities to be provided at the workplace, and participatory gender sensitive monitoring.	To demonstrate the best of gender balance during workers recruitment process.	Ration of men to women employed	Throughout the preconstruction phase	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Unspecified

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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	II. The contractor will have an orientation on all the labour laws including the child labour law before starting works. The contractor will consult and involve the Division labour officers in each of the divisions to ensure that there is compliance on no child labour during construction of the channels. The contractors human resource department will require an introduction letter from the applicants LC1 (residents village leadership) and birth certificate as additional requirements for job applications.	Protection of women and children's rights by all Project personnel throughout the construction period.	Number of workers defaulting on trained laws irrespective training they have gone through Number of trainings offered by the contractor	Throughout construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Included in Contractors cost
	II. Announcement notices (in local language) of equal employment opportunities should be posted in visible and popular places in the local communities and that such notices would also reach women and youth leaders.	To demonstrate the best of gender balance during workers recruitment process.	Ration of men to women employed	Throughout the construction phase	Pearl Dairy Farms Ltd contractor and LC1	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Unspecified

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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9.2.2.6 Physico-Cultural Resources/Chance Finds	I. Develop a Chance Finds Procedure for the contractor to follow and implement.	Proper handling of chance finds.	Records of any 'chance finds'	Throughout the construction phase	Pearl Dairy Farms Ltd	Lead Agencies like Ministry of Tourism, Wildlife and Antiquities	4,000,000 depending of the chance finds
9.2.2.7 Sanitation and Public Health Risk	I. Sanitary facilities should be the first structures to be constructed onsite for construction workers.	To avoid spread of waterborne diseases	Number of toilets in relation to number workers Status and distribution of sanitary facilities	Throughout construction period	Pearl Dairy Farms Ltd	Lead Agencies like Ministry of Tourism, Wildlife and Antiquities	Incorporated in 9.3.2.1 (v)
9.2.2.8 Socio-cultural Drift and Spread of Sexually Transmitted Diseases	I. The contractor in liaison with the developer should carry out the HIV/AIDS sensitization and awareness campaign within the project area. During campaign free HIV/AIDS testing, counseling and condom distribution for both workers and local community can be done;	To prevent spread of communicable and sexually transmitted diseases	Record of complaints from affected communities	Throughout Construction period	Pearl Dairy Farms Ltd Contractor and LC1	Mbarara city Government Authorities	3,000,000

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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	II. The contractor will be required to have an approved HIV/AIDS policy and should be adequately implemented during Project execution. The policy must include orientation and sensitization framework about responsible sexual behaviour with Project area communities and inherent health risks associated with HIV/AIDS and other sexually transmitted diseases.	To prevent spread of communicable and sexually transmitted diseases	Record of complaints from affected communities	Throughout Construction period	Pearl Dairy Farms Ltd Contractor and LC1	Mbarara city Government Authorities	3,000,000
9.2.2.9 Impacts on Traffic Flow	I. Develop and implement a traffic management plan for all the roads likely to be affected by the project activities and submit to the relevant authorities for approval;	No accidents to occur due to traffic caused by the project implementation	Record of accidents along the roads	Throughout construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities	5,000,000
	II. Transporting construction materials shall be scheduled for off-peak traffic hours, as far as possible. This will reduce the risk of traffic congestion and road accidents on the Mbarara-Masaka Road;	Minimize the risk of traffic disruption and road accidents due to Project implementation as much as possible.	Recorded number of traffic incidents as a result of Project implementation Incidents of traffic congestion as a result of Project-related activities.	Throughout construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities	Indirect

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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	III. Flagmen shall also be employed to control traffic and guide vehicles;	Minimize the risk of traffic disruption and road accidents due to Project implementation as much as possible.	Number of traffic flagmen employed Efficiency of flagmen in controlling traffic disruption	Throughout construction period.	Pearl Dairy Farms Ltd	Mbarara city Government Authorities and Traffic Police	2,000,000
9.3.1 NEGATIVE IMPACTS - BIOPHYSICAL ENVIRONMENT							
9.3.1.1 Impacts of Noise Emissions	I. Construction equipment likely to generate high noise levels shall put off when not in use	To minimise noise disturbance to neighbours	Number of complaints of excessive noise. Levels of noise generated as a result of construction activities (Noise measurements)	Throughout construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities	Not applicable
	II. Regular servicing of all equipment to ensure high operation efficiency thus less noise;	To control and prevention of unnecessary noise due to inefficiency of the equipment	Levels of noise generated as a result of construction activities (Noise measurements)	Regularly Throughout construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities	10,000,000

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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	III. Construction contractors will be required to comply with the requirements of the IFC (Construction Plant and Equipment) (Permissible Noise Levels) guidelines and the Safety, Health and Welfare at Work (Control of Noise at Work) guidelines include national noise regulations.	To minimise noise disturbance to neighbours	Number of complaints of excessive noise. Levels of noise generated as a result of construction activities (Noise measurements)	Throughout construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities	Included in 9.2.3.2 (i)
	IV. Switch off equipment when not in use;	To minimise noise disturbance to neighbours	Number of complaints of excessive noise.	Throughout construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities	Not applicable
	V. Provide workers with PPE who are exposed to higher levels of noise	Minimize nuisance of dust emissions in residential and busy commercial areas	Number of complaints registered from residents in Project area.	Daily throughout construction period	Contractor	Department of Occupational Health Safety MoGLSD	Included in 9.2.2.1 (I,II & IV)

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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9.3.1.2 Impacts arising from Generation of large Volume of Waste	I. Prepare a site waste management plan. This should include the designation of appropriate waste storage areas, collection and removal schedule;	Proper waste management practices	Number of waste collection facilities or centres, Number of times waste is disposed or collected from the collecting point How long does the waste stay and the collection point Heaps of waste & excavated material on site	Regularly Throughout construction period.	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities NEMA	20,000,000
	II. Degazette dump site where cut soil/excess cut soil can be dumped;	To avoid littering waste at the site To properly manage the cut soil and excess soil	Heaps of waste & excavated material on site not properly Degazette	Regularly Throughout construction period.	Contractor	NEMA	Included in 9.3.3.3 (i)

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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	III. Oil storage areas shall be constructed with an impervious surface with a bund around it	To prevent soil and water contamination due to mismanagement of hazardous waste	How often the waste is collected by a licensed waste collector	Throughout construction period	Contractor;	Mbarara city authorities and NEMA	Included in 9.3.3.3 (i)
9.3.1.3 Resulting Impacts on Air Quality	I. Stockpiles of fine materials should be wetted or covered with tarpaulin during windy conditions	To Prevent fine materials being blown away by wind thus controlling fugitive fine materials	Number of complaints of excessive dust by workers and public.	Throughout construction period	Contractor;	Mbarara city authorities and NEMA	3,000,000
	II. Exposed ground should be sprayed with water in a manner that effectively suppresses dust.	To Prevent fine materials being blown away by wind thus controlling fugitive fine materials	Number of complaints of excessive dust by workers and public.	Throughout construction period	Contractor;	Mbarara city authorities and NEMA	3,000,000

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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	III. The developer shall ensure that equipment is well-conditioned and serviced at all time.	Prevent exhaust emissions from construction equipment	Observance of released sort from the equipment exhausts Number of complaints registered from residents in Project area Number of equipment breaks	Throughout construction period	Contractor;	Mbarara city authorities and NEMA	Included in 9.3.3.2 (ii) cost
	IV. The developer shall source for offsite already mixed concrete that would reduce the use of heavy machinery at the site	Avoidance of material stock piling at the site	Quality of the outsourced construction material	Where necessary during construction phase.	Contractor;	Mbarara city authorities and NEMA	Covered in contractor's BoQ

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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9.3.1.4 Potential loss of biodiversity and modification of habitats	I. Site clearance shall be limited to project blue prints to ensure minimal vegetation removal and minimize the area of bare soil exposure to soil erosion;	Minimised Impact on biodiversity in Project area to as low as reasonably practicable Areas with species of conservation concern be avoided	Area cleared of vegetation compared to footprint of the project components; Complaints registered and resolved; Compensation records	Throughout construction period	Contractor;	Mbarara city authorities and NEMA	4,000,000
	II. After construction, the developer shall restore the sites affected by construction activities,	To restore the site to as near original as possible	Ratio of Area of land cleared off vegetation to area restored	Throughout the Construction period	Contractor;	Mbarara city authorities and NEMA	18,000,000
	I. Unregulated clearance of vegetation shall be avoided to provide for survival of natural habitats and enable continuity of benefits from ecosystem,	Minimal loss of vegetation	Extent of the proposed project Area and number of species of concern affected	Construction period	Contractor;	Mbarara city authorities and NEMA	Unspecified

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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9.3.1.5 Impact of material sourcing (creation of quarries and borrow pits)	I. Use existing borrow pits and quarries which have already acquired NEMA approvals wherever possible	To minimise opening up new un licenced quarries	Sourcing construction material from licenced quarry pits	Construction period	Contractor;	Mbarara city authorities and NEMA	Included in BoQ
	ii) Pearl Dairy Farms Ltd shall ensure that any new borrow pit sites identified for the purpose of the project obtain an approval before material excavation works begin.	To avoid opening up new quarries in protected area like forests and wetlands	Number of quarries opened in protected areas Complaints reported by lead agencies for operating a quarry illegally	Construction period	Contractor;	Mbarara city authorities and NEMA	Included in BoQ
Total			UGX	97,000,000 (Ninety-Seven Million Shillings)			

10.4.2 Operation Phase

Table 10-2: Operation and Maintenance Phase

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated annual cost (Uganda Shillings)
9.4.1 POSITIVE IMPACTS – SOCIO-ECONOMIC ENVIRONMENT							
9.4.1.1 Value Addition to dairy products	i) Enforce rigorous quality control measures to ensure that processed products meet safety and quality	Plant operation capacity	Complaints from people Failure to supply	Throughout Operation and Maintenance Phase	Pearl Dairy Farms Ltd		Unspecified but should be included in Pearl

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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	standards, safeguarding consumer health.		dairy products				Dairy Farms Ltd annual budget
9.4.1.2 Employment opportunities and income	i) During the operation phase the developer should design and implement Human Resources Policy which will include all requirements to hire workers with special treatment to locally affected people. This policy should not be politically driven or any kind of discrimination on the grounds of race, ethnicity, religion, gender, and political affiliation;	Fair and equal allocation of jobs. Operation of works within Uganda labour laws e.g. no child labour	Number of people from local community Complaints recorded against prompt and adequate payments Record of child labour at the project, and Ratio of men to women employed	Throughout operation period	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour and Social Development	Should be estimated according to how many workers and how long the project is going to take.
	ii) Handling of workers should be in accordance with Uganda labour laws and the World Bank Environment and Social Framework as discussed under standard 2 of Labour and Working Conditions.	Fair and equal allocation of jobs. Operation of works within Uganda labour laws e.g. no child labour	Number of people from local community Complaints recorded against prompt and adequate payments Record of child labour at the project, and	Throughout operation period	Pearl Dairy Farms Ltd Contractor	Mbarara city Government Authorities and other lead agencies like Ministry of Labour and Social Development	Should be estimated according to how many workers and how long the project is going to take.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

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			Ratio of men to women employed				
9.4.1.3 Acquisition/improvement of skills	i) Provide on job training to enhance workers prospects of advancement within the project workforce and guidance with safe use of machinery for occupational health and safety purposes. ii) Provide kind of certificate, appointment or contract on which workers may use for future reference in the case applying for similar jobs somewhere else.	Advancement and on job promotions	Records of appraisals	Throughout the operation period	Pearl Dairy Farms Ltd	Mbarara city Government Authorities and other lead agencies like Ministry of Labour and Gender and Social Development	Should be estimated according to how many workers and how long the project is going to take.
9.4.1.4 Induced development in the project area	i) Pearl Dairy Farms Limited should ensure proper maintenance of the plant. ii) The proposed landscaping design should be properly implemented.	Corporate social responsibility activities in the area	Record of community projects	Throughout the operation period	Pearl Dairy Farms Ltd	Mbarara city Government Authorities	Unspecified
9.4.1.5 Income diversification for farmers	i) Involve local communities in the establishment and operation of the plant to ensure their needs and concerns are addressed, fostering positive relationships.	Smooth relationships with farmers.	Record of complaints from farmers	Throughout the operation period	Pearl Dairy Farms Ltd	Mbarara city Government Authorities	Should be estimated according to how many workers and how long the project is

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated annual cost (Uganda Shillings)
							going to take.
9.4.1.6 Technology transfer and innovation	<ul style="list-style-type: none"> i) Implement strict environmental regulations and standards to ensure that processing activities do not lead to pollution or harm to natural resources. ii) Provide training and capacity-building programs to enhance the skills of the workforce, ensuring safe and efficient plant operations. iii) Regularly monitor effluent quality to ensure that treatment processes are effective and meet regulatory standards. 	Improved efficiency of the treatment plant and production capacity of dairy products.	Record of plant production capacity	Throughout the operation period	Pearl Dairy Farms Ltd	Mbarara city Government Authorities	Unspecified
9.4.1.7 Market expansion	<ul style="list-style-type: none"> i) Involve local communities in the establishment and operation of the plant to ensure their needs and concerns are addressed, fostering positive relationships. ii) Educate local communities about the benefits of the treatment plant and involve 	Increased production capacity and more markets for export	Record of sales	Throughout the operation period	Pearl Dairy Farms Ltd	Mbarara city Government Authorities	Unspecified

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated annual cost (Uganda Shillings)
	them in its management and monitoring.						
9.4.1.8 Environmental protection	i) Implement waste minimization practices within the processing plant to reduce the volume and toxicity of effluent generated. ii) Develop contingency plans for potential accidents or incidents to minimize negative impacts on the environment and public health.	Improved efficiency of the treatment plant	Water and air quality measurements Record of effluent discharge quality	Throughout the operation period	Pearl Dairy Farms Ltd	Mbarara city Government Authorities	Should be estimated according to effluent discharge from dairy processing processes
9.4.2 NEGATIVE IMPACTS - SOCIO-ECONOMIC ENVIRONMENT							
9.4.2.1 Loss of income from Project-related activities	i) Provide financial literacy training to workers to make informed use of their incomes from the project after completion ii) Provide workers with reference materials for use as future reference when applying for similar jobs	All Project workers aware of Project duration and phasing to enable proper planning of individual finances Capacity and career building for workers who	Occurrences of workers unaware of the Project's duration and phasing Number of workers receiving completion of work and performance	Throughout post construction phase Throughout Operation and Maintenance Phase	Pearl Dairy Farms Ltd Pearl Dairy Farms Ltd	N/A N/A	Unspecified Included in Pearl Dairy Farms Ltd annual

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated annual cost (Uganda Shillings)
	elsewhere	performs well	certificates				operational budget
9.5.1 NEGATIVE IMPACTS - BIOPHYSICAL ENVIRONMENT							
9.5.1.1 Impacts arising from increases in Ambient Noise Levels	i) Selecting equipment with lower sound power levels	Keep noise levels during execution of maintenance works at the plant within permissible limits.	Number of complaints of excessive noise registered. Noise level measurements	Throughout Operation and Maintenance Phase	Pearl Dairy Farms Ltd	Mbarara city Health Inspector	Included in Pearl Dairy Farms Ltd annual operational budget
	ii) Installing vibration isolation for mechanical equipment	Not to generate noise above recommended permissible noise levels	Number of complaints of excessive noise registered. Noise level measurements	Throughout Operation and Maintenance Phase	Pearl Dairy Farms Ltd	Mbarara city Health Inspector	Included in Pearl Dairy Farms Ltd annual operational budget
	iii) Limiting the hours of operation for specific pieces of equipment or operations iv) Siting permanent facilities away from community areas if possible	To ensure Health and Safety of maintenance crew To prevent injury to maintenance workers and Other	Safety records, records of accidents Violence amongst workers as a result of drug abuse/alcohol	Throughout Operation and Maintenance Phase	Pearl Dairy Farms Ltd	Mbarara city Health Inspector	Included in Pearl Dairy Farms Ltd annual operational budget

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated annual cost (Uganda Shillings)
		personnel.					
9.5.1.2 Sludge generation	i) Implement proper sludge management practices, including treatment and disposal options, to prevent soil and water contamination.						
9.5.1.3 Impacts arising from Waste Generation	i. Integrate waste management activities in the area into the district-wide waste management system.	Proper waste management practices	Number of times waste is disposed or collected from the collecting point Complaints of waste (soil) dumping in wetlands/swamps	Throughout Operation and Maintenance Phase	Pearl Dairy Farms Ltd Management	Mbarara city Authorities NEMA	Included in Pearl Dairy Farms Ltd annual operational budget
	ii) Companies with experience in handling waste especially desilted sludge should be contracted to dispose of waste material	No littering of Project waste during haulage to authorized disposal sites	Number of complaints registered about waste disposal during haulage	Throughout Operation and Maintenance Phase	Pearl Dairy Farms Ltd Management	Mbarara city Authorities NEMA	Included in Pearl Dairy Farms Ltd annual operational budget
9.5.1.4 Unpleasant odours from chemicals/Resulting Impacts on Air Quality	The stockpiles of the chemicals should be fully enclosed and kept within enclosures or coverings that extend to ground level to trap volatile release that is associated with colder air currents. Further, the material should only be exposed to the atmosphere when accessing or replacing stock, so as	To ensure Health and Safety of the workers	Safety records, records of accidents Violence amongst workers as a result of exposure to chemical or unbearable odour	Throughout Operation and Maintenance Phase	Pearl Dairy Farms Ltd Management	Mbarara city Authorities NEMA	Included in Pearl Dairy Farms Ltd annual operational budget

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated annual cost (Uganda Shillings)
	to minimise the time periods where blooms of odour can escape.						
	The amount of chemicals stored on site should be significantly reduced and also ensure that only required chemicals are stocked to serve as samples that assist with orders and placed orders should be delivered directly to the store	To ensure Health and Safety of the workers	Safety records, records of accidents Violence amongst workers as a result of exposure to chemical or unbearable odour	Throughout Operation and Maintenance Phase	Pearl Dairy Farms Ltd Management	Mbarara city Authorities NEMA	Included in Pearl Dairy Farms Ltd annual operational budget
	Permanent building should be constructed where larger volumes stockpiles are stored, or where continually being replenished with new stock. The building should be vented through chimney stacks to ensure that the volatiles vapours do not further impact upon the nearby environments.	To ensure minimal exposure of workers to bad smell for a long time	Safety records, records of accidents Violence amongst workers as a result of exposure to chemical or unbearable odour	Throughout Operation and Maintenance Phase	Pearl Dairy Farms Ltd Management	Mbarara city Authorities NEMA	Included in Pearl Dairy Farms Ltd annual operational budget
	The stores should develop and execute “Odour Management Plans” to address the reduction of the potential for chemicals to contribute to environmental nuisance. The Odour Management Plans should include detail of the chemical management Processes employed to manage the odour	To prevent soil contamination	Safety records, records of accidents Violence amongst workers as a result of exposure to chemical or unbearable odour	Throughout Operation and Maintenance Phase	Pearl Dairy Farms Ltd Management	Mbarara city Authorities NEMA	Included in Pearl Dairy Farms Ltd annual operational budget

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated annual cost (Uganda Shillings)
	generated by chemicals						
9.5.1.4 Occupational Health and Safety Impacts	All employees should wear long-sleeve shirts and long pants and use gloves impervious to the chemicals when handling the chemicals.	To ensure Health and Safety on the plant To prevent injury to operational workers and Other personnel.	Safety records, records of accidents Violence amongst workers as a result of poor safety work place	Throughout Operation period	Pearl Dairy Farms Ltd	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Included in Pearl Dairy Farms Ltd annual operational budget
	The workforce should wear goggles when handling the chemical to protect eyes getting in contact with the chemical and should also wash work clothes separately from other household clothing.	To ensure Health and Safety on the plant To prevent injury to operational workers and Other personnel.	Safety records, records of accidents Violence amongst workers as a result of poor safety work place	Throughout Operation period	Pearl Dairy Farms Ltd	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Included in Pearl Dairy Farms Ltd annual operational budget
	Where close contact is essential immediately following treatment, the following protective clothing should be used by all the employees at the plant: hooded	To ensure Health and Safety on the plant	Safety records, records of accidents Violence amongst	Throughout Operation period	Pearl Dairy Farms Ltd	Mbarara city Government Authorities and other lead agencies	20,000,000

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated annual cost (Uganda Shillings)
	coveralls, fastened at neck, ankles and wrist; goggles; gauntlet gloves; impervious boots; a respirator with combined dust/organic vapor cartridge.	To prevent injury to operational workers and Other personnel.	workers as a result of poor safety work place			like Ministry of Labour Gender and Social Development	
	Avoid burning wastes contaminated with chemicals in open fires or in stoves, fireplaces, or residential boilers because toxic chemicals may be produced as part of the smoke and ashes.	To ensure Health and Safety on the plant To prevent injury to operational workers and Other personnel.	Safety records, records of accidents Violence amongst workers as a result of poor safety work place	Throughout Operation period	Pearl Dairy Farms Ltd	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Included in Pearl Dairy Farms Ltd annual operational budget
	Develop and implement occupational health and safety policy and procedures for the facility.	To ensure Health and Safety on the plant	Safety records, records of accidents	Throughout Operation period	Pearl Dairy Farms Ltd	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	Included in Pearl Dairy Farms Ltd annual operational budget
	A first aider and first aid boxes	To attend to	Safety records,	Throughout	Pearl Dairy	Mbarara city	8,000,000

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

ESIA Reference section and Impact	Mitigation/Enhancement commitments	Desired Outcomes	Monitoring: Performance Indicators/Targets or Acceptance Criteria	Timing/Frequency	Responsibility	Monitoring Institution	Estimated annual cost (Uganda Shillings)
	should be available on site to handle minor accidents and to administer first aid in case of serious accidents before the victims are transferred to the nearby health facilities for extensive medical attention.	all minor injuries and emergencies at the site as appropriate as possible	records of accidents Violence amongst workers as a result of drug abuse/alcohol	operation period	Farms Ltd	Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	
	Workers should be trained in safety matters including accident prevention, proper control and maintenance of equipment and facilities.	All workers on site aware of EHS requirements and site safety rules	Records of incidents and accidents on site. Observance of site safety rules by workers. Use of requisite PPE by workers.	Throughout Operation period	Pearl Dairy Farms Ltd	Mbarara city Government Authorities and other lead agencies like Ministry of Labour Gender and Social Development	7,000,000
Total			No amount could have been estimated for this phase. The cost for implementation of this ESMP during operation and maintenance phase should be included in Annual operational Budget.				

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

10.5 Implementation Schedule and Reporting

10.5.1 Institutional Arrangements

Pearl Dairy Farms Ltd will be responsible for implementing the ESMP throughout implementation of the proposed project. Pearl Dairy Farms Ltd with Environment, Health and Safety Officer will be responsible for monitoring the ESMP implementation especially during the construction phase. They will be specifically responsible for implementation of mitigation measures proposed in this ESMP. They will be full time employees for monitoring the ESMP compliance. They will also be required to carry out regular monitoring of ESMP implementation and providing progress report to Company board members responsible for environmental compliance.

Pearl Dairy Farms Ltd may be required to hire external consultants specialized in environmental health and safety to carry out regular monitoring of the project during its construction. The consultant will be expected to undertake necessary trainings on ESMP and health and safety management to all the personnel associated with management, maintenance and operation of the project to enhance their capacity on environmental and social issues and proposed mitigation plan. The progress report of ESMP implementation will be shared with the lead agencies such as NEMA, Mbarara city Local Government Authorities, Ministry of Gender and Social Development (MoGLSD), Ministry of water and environment and other stakeholders like the community members.

10.5.2 Implementation Responsibilities

The following staffs of Pearl Dairy Farms Ltd and lead agencies/ Authorities who may be directly involved with the implementation of the proposed project have been designated for ESMP implementation and monitoring with following roles and responsibilities though some responsibilities are already highlighted in monitoring and mitigation plan.

Table 10-3: List of Staff and their Responsibility

No	Organization	Designation	Responsibility
1	Pearl Dairy Farms Ltd	Project Manager	<p>Overseer of the implementation of the ESMP and ensuring that the measures are delivered.</p> <p>Specifically, Pearl Dairy Farms Ltd will ensure that:</p> <ul style="list-style-type: none"> • There is minimum disruption to the lives of local residents within the Project area; • The responsibility for implementing and complying with the conditions of the ESMP

			<p>forms part of the conditions of appointment of all workers;</p> <ul style="list-style-type: none"> • Training and awareness creation in environmental and social management and the mitigation of impacts are provided to Project staff, to ensure they are aware of their responsibilities and are competent to carry out their work in an environmentally and socially responsible manner. • The site and activity managers notify the Environmental, Health and Safety (EHS) Manager immediately when environmental or health and safety incidents occur. If the breach is a part of a permit or license condition, the EHS Manager will inform the responsible authority within 48 hours.
2	Pearl Dairy Farms Ltd	Environment, social, Health and safety officer	<ul style="list-style-type: none"> • Prepare daily, weekly and monthly reports on EHS aspects, and furnish the project manager with the information during weekly and monthly. • Regular engagements with the local communities to ensure continued social acceptance in the project scheduled work areas.
3	External Monitoring Team	Environment Health and Safety	<p>Evaluation or/and auditing of ESMP and activities involved with implementation of the project.</p> <p>The monitoring team will start its work during the site preparation and construction process and continue throughout the operation phase and should ensure that the proposed mitigation measures are implemented as suggested in this report. The monitoring team will most particularly check for the following issues among others:</p> <ul style="list-style-type: none"> ▪ Collaboration of the Project Proponent with NEMA and other relevant authorities to ensure that operations of project structures meet regulatory requirements. ▪ Proper storage, handling and final disposal of any solid waste produced at the sites.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

			<ul style="list-style-type: none"> ▪ General cleanliness at the site ▪ Emergency preparedness especially in cases of fire outbreak. ▪ Constant acquisition of appropriate permits and/or licenses from respective institutions and compliance with the regulatory framework. ▪ Supervise implementation of all the proposed mitigation measures. ▪ Compile a monitoring report indicating all non-conformances and mitigation measures. ▪ Conduction of regular environmental audits for the plant at least once every year and reports submitted to the National Environment Management Authority (NEMA) for review to ascertain compliance with the environmental regulations and suggested mitigation measures as required by the National Environment Act 2019 Cap 153.
5	Lead Agencies, Authorities and Local Authorities	MoGLSD, MAAIF	Monitoring of the ESMP where need arise for example; Ministry of Gender Labour and Social Development will respond to matters regarding community, public and occupational health and safety. MAAIF to do with use of agricultural inputs and management.
		NEMA and etc.	<p>NEMA will, in consultation with Mbarara city Environment Officers monitor all environmental phenomena with a view of making an assessment of any possible changes in the environment and their possible impacts; the operation of the plant with a view of determining its immediate and long-term effects on the environment.</p> <p>Among other things NEMA will;</p> <ul style="list-style-type: none"> • Review ESIA and recommend conditions that will have to be fulfilled to ensure Project success and sustainability. • Adherence to national standards for air quality, noise, waste disposal, and others regarding environmental protection.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

10.5.3 Monitoring and Reporting

A comprehensive monitoring plan for ESMP comprising monitoring parameters, frequency and responsibility of monitoring is given in Tables 10-1 and 10-2. Compliance to the proposed monitoring plan will be effected through the following types of monitoring mechanism to achieve the objectives of ESMP.

10.5.3.1 Internal Monitoring

The project manager and environment health and safety officer will carry out regular monitoring of the project activities related to the ESMP implementation. They will be assisted by project manager in monitoring of ESMP. Non-compliances pertaining to ESMP implementation will be reported to the project manager and environment, health and safety officer who will in turn report to the project manager before Pearl Dairy Farms Ltd Board. The prescribed monitoring parameters, frequency and time schedule will be followed to ensure smooth implementation of proposed mitigation measures for various component and activities of the project. Monitoring will be done on daily/weekly/monthly basis but reporting could be done on monthly and quarterly basis.

10.5.3.2 External Monitoring / Third Party Validation

External monitoring called as “Third-Party Validation” will be carried out through an independent monitoring consultant on annual basis to evaluate the quality of work and validate the data pertaining to overall ESMP implementation progress, and to ensure that the mitigation measures are implemented as per mitigation plan. In case of any deviation, corrective actions will be taken where necessary. For Third Party Validation, well qualified and experienced environmental and social scientist shall be hired to conduct thorough analysis of the data collected from the field and desk review of all quarterly progress reports to validate and identify gaps and weaknesses, if any, in the ESMP implementation and monitoring. The External Monitoring Team will submit report to Pearl Dairy Farms Ltd who will in turn submit to Regulating Authorities such as NEMA and other stakeholders.

10.6 Social Management Plan (SAP)

This is essentially concerned with the social action plan for the host communities. Social action plan consists of measures designed to mitigate the adverse social impacts of projects. Among other things, SAP lists mitigation measures, the means by which the measures will be implemented, the time schedule for the implementation, as well as the implementing agency. Social action plan is therefore based on clearly identified mitigation measures. These measures are usually designed in collaboration with host communities in order to engender a sense of ownership. This can be achieved by holding wide-ranging discussions with cross sections of the communities. This is necessary for the success of the mitigation measures.

10.6.1 Mitigation

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

It is clear from the literature and from experience that development projects do generate some adverse social impacts, in addition to the positive effects they have. Mitigation measures are usually designed to address the adverse impacts. The mitigation measures for the respective adverse social impacts were spelt out in previous chapter nine. On the basis of the proposed mitigation measures, a proposed social action plan is provided in Table 10-3.

Table 10-4: Proposed Social Action Plan

Goals	Actions	Implementing Agency	Time frame
1. Stem population growth due to in-migration	Recruit and train locals for project jobs	Pearl Dairy Farms Ltd	Immediate
2. Ease pressure on local infrastructure	Provide infrastructure for project staff	Pearl Dairy Farms Ltd	Immediate
3. Minimize disruption of means of livelihood	Pay compensation where necessary	Pearl Dairy Farms Ltd	Immediate
4. Curb possible sexuality	Recruit and train locals for project jobs in order to minimize social disruption due to the influx of non-locals. Promote health education and public enlightenment concerning STDs and AIDs	Pearl Dairy Farms Ltd	Immediate
5. Reduce the potential for community rejection	Collaborate with the local authorities Cultivate good community relations	Pearl Dairy Farms Ltd	Immediate

10.7 ESMP Reporting

Progress report of ESMP monitoring will be shared with all stakeholders. The responsible monitoring personnel will be in charge of report writing who will submit to Project Manager. The project manager will directly report to NEMA. Third Party Validation reports will be submitted to Regulating Authorities such as NEMA and other stakeholders annually. Note that while Pearl Dairy Farms Ltd is under no obligation to disclose construction phase audits, annual post-construction audits must be submitted to NEMA as a regulatory requirement as per Section 31(2) of National EIA Regulations, 1998.

The reporting frequency for different tier of monitoring will be as following:

Table 10-5: Reporting on ESMP Progress

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Reporting Frequency	Reporting Responsibility	Review and Decision
Monthly	Project Environment and safety officer	Project Manager
Monthly	Project Manager	Pearl Dairy Farms Ltd
Annual	Pearl Dairy Farms Ltd	Local Authorities- Regulatory Authorities -NEMA

10.8 Estimated Cost

To implement the ESMP interventions, a cost will be incurred. This should be integrated into the project overall costs. The intervention cost incurred will be due to monitoring, capacity building, and general maintenance, among many others. The table 10-6 below presents the distinctive environmental and social mitigation costs.

Table 10-6: Estimated Cost

No.	Mitigation Measure/Plan/Activity	Cost (UGX)
01.	Environmental Monitoring	Approx. 15,000,000 (for about 1-3 years)
02.	Compensation	Not applicable
03	Emergency Responses	Approx.30,000,000 (Standby)
04.	Environmental Audit costs	Approx.25,000,000 (for about 3-5 years)
05.	Institutional Strengthening, Training and Capacity Building Formation of environmental unit Local authorities, communities and other stakeholders On-site training Offsite training Local capacity building Equipment and logistics including PPE	Approx.25,000,000 (for about 2-5 years)
	TOTAL	95,000,000/= (Eighty-Five Million Uganda Shillings)

The total project cost for the implementation of the environmental and social management plan in the project is estimated to be Ninety-Five Million Uganda Shillings (95,000,000/=) which will be incorporated in the overall project costs.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

10.9 Capacity Building and Training Plan

Capacity building of the ESMP Implementers will be carried out through environmental trainings and training on health and safety management. These trainings will help enhance awareness level of the staff and other stakeholders and developer staff on all matters relating to the environmental and social safeguard management. These trainings will ensure that the requirements of the ESMP are clearly understood and followed by the staff and contract throughout the project period.

The primary responsibility for providing trainings to all project personnel will be that of Pearl Dairy Farms Ltd and contractor depending the arrangements therein between. The Project manager and environment officer or health and safety officer will coordinate and arrange capacity building trainings on ESMP during the implementation stage of the project.

The training scope should cover a wide range of issues including environmental and social mitigation guidelines, general environmental and social awareness, legislative aspects of environmental and social compliance and effective house-keeping during operation of activities, in order to minimize the adverse environmental and social impacts of the project. The training on health and safety issues should be able cover health and safety management during works and to train the workers and contractor staff on using the personal protective equipment in order to ensure safety of workers during project activities.

Capacity building and training will target developer staff. It requires an environmental and social expert to implement the training while health and safety expert will be required for health and safety training.

Specific training to the environmental unit shall include but not limited to;

- ❖ Principles and procedures for environmental Management Systems including impact assessment
- ❖ Compliance assessment, monitoring and follow-up with regard to national and international standards include IFC guidelines;
- ❖ Environmental audits for compliance to set standards;
- ❖ Social impact assessment and public consultation;
- ❖ Construction impacts, including civil works, sediment and erosion control, soil handling and vegetation removal;
- ❖ Waste management procedures;
- ❖ Fuel and hazardous materials management; and
- ❖ Construction camp management.

It is important to note that everyone involved in this project construction and operation should have a bit of environmental management training.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

10.10 Emergency Preparedness Plan

An emergency is any unplanned occurrence caused by either natural or man-made events which can lead to deaths, significant injuries, cessation of operations, physical or environmental damage and economic losses. Numerous events can lead to emergencies. These include:

- ❖ Earthquakes;
- ❖ Fire;
- ❖ Rock slides;
- ❖ Structural failure (office block); and/or
- ❖ Civil disturbance.

Emergency management is therefore critical to planning, mitigating, responding and recovering from the potential impacts of these events.

The emergency management process however is very site specific and varies according to type of operations, geographic location, proximity to neighboring communities and the history of such occurrences.

Therefore, one of the first stages in developing an Emergency Response Plan (ERP) would be the identification of the potential hazards or threats to the facility. The Emergency Response Plan must be documented and cover all the area mentioned above.

- ❖ The plan must identify the person(s) responsible for Emergencies and Safety. This person will keep the documentation updated (at least annually) and ensure that it is disseminated to all relevant persons;
- ❖ The plan must speak to the preparatory actions that must be taken in case of emergencies with forewarning such as facility failure and responsibilities must be assigned;
- ❖ The plan should include actions that must be taken when a spill or fire occurs;
- ❖ The plan must include for firefighting equipment to be checked on a specified frequency by a competent entity; and
- ❖ The plan must speak to cleanup measures after the emergency.

The Emergency Response Plan must be developed in consultation with the Office of Disaster Preparedness to ensure that it meets their requirements. The Emergency Response Plan for this project should be incorporated in general Emergency Response Plan for Pearl Dairy Farms Ltd or Sub-contractors.

10.11 Outline of Chance Find Procedure

During excavation and construction activities for the proposed project, there could be chances of unexpected discovery of historical remains, antiquities or any other object of cultural or archaeological importance. When such a discovery occurs, the following procedures shall be adopted by the contractor.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- ❖ The initial and very first step is to stop the activity immediately after identifying any of the chance findings;
- ❖ Map out the area of concern and demarcate it or blockade it;
- ❖ Secure the site to prevent any damage or loss of removable objects. In case of removable antiquity or sensitive remains, a night guard shall be deployed at the site until a responsible authority take over the site for protection and preservation;
- ❖ The responsible authorities would take over the charge of protecting and preserving the site or area further;
- ❖ The Ministry of Energy and Mineral Development, Ministry of Tourism, Wildlife and Antiquities or relevant archaeological departments will perform an evaluation of the finding. The significance and importance of the findings will be assessed according to various criteria and laws relevant to cultural and archaeological heritage including historic, social, cultural and economic values by the concerned authorities;
- ❖ Decision on how to handle the finding will be made on the basis of assessment and could include changes in the project site, relocation, layout (in case of finding an irrevocable remain of cultural or archaeological importance), conservation, preservation, restoration or salvage;
- ❖ Decision of the concerned authority will be implemented regarding the management of discovery;
- ❖ Excavation and construction work on the site shall be resumed after permission is given from the relevant authorities, whichever is applicable; and
- ❖ In case of relocation of the site, the developer will decide to acquire alternate location.

10.12 Grievance Redress Mechanism

Given the progress and process related to this project, it is anticipated that the project will have significant grievances to attend to. However, in order to ensure transparency and accountability, if any grievances arise during the implementation of the project, a Grievance Redress Mechanism (GRM) should be established by the Project Support Team. The GRM shall have a clear set of goals and objectives and a well-defined scope for its interventions. A set of procedures for receiving, recording, and handling complaints shall be available in the GRM. These will be managed by a Grievance Redress Committee (GRC) consisting of a Project Support Team Member, LC 1 Chairpersons, and Environmental Officer. The GRC members should be qualified, experienced, and competent personnel who can win the respect and confidence of the affected communities. The GRM should include procedures for:

- ❖ Recording, registering, and sorting grievances;
- ❖ Conducting an initial assessment of grievances;
- ❖ Referring grievances to appropriate persons;
- ❖ Determining the resolution process;

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- ❖ Making decisions, including parameters and standards for accurate and consistent decision making;
- ❖ Notifying complainants and other affected parties of eligibility, the resolution process, and outcomes; and
- ❖ Tracking, monitoring, documentation, and evaluation.

The developer will form grievance redress committee which should include at a minimum a Chairperson, a secretary and any other member. The secretary will be responsible for registering all complaints brought forward and keeping all other complaint related records including resolutions made for every complaint.

Once a grievance has been registered, the secretary in collaboration with Chairperson will convene a meeting comprising of the grievance redress committee, the complainant and where applicable, the perpetrator in which the grievance will be analysed and resolutions made. The results of the meeting should not exceed a week unless otherwise. If the complainant is satisfied with the resolutions of the meeting a closure agreement will be signed which will contain the resolutions made.

However, if the complainant is discontented with the resolutions of the grievance redress meeting, a mediator could be thought to take part. The mediator will then review the grievance and convene a meeting in which new resolutions will be made. If both parties are satisfied with the resolutions, a grievance closure agreement will be signed including the resolutions made.

In case any of the parties is still not contented with meeting held in presence of the mediator, then litigation process may start in courts of law.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

11.0 RECOMMENDATIONS AND CONCLUSION

The following recommendations should be considered in the review of the ESIA for the proposed Project. The recommendations and mitigation measures presented in this report are significant in ensuring that the biophysical, environmental, social and economic impacts are adequately addressed and mitigated to justify and validate the proposed project.

11.1 Recommendations

The most important recommendations are presented below. Of these, some of which are strategic and others require Joint Corporation between lead agencies and authorities

- The developer together with the district Environment Officer, officials from NEMA and other relevant government departments shall carry out regular monitoring to ensure that the recommended mitigation measures are carried out.
- The developer should carry out annual environmental audits for the project as required by law.
- The developer should keep up-to-date records of the project activities with copies at the project premises to ease monitoring by inspectors and other lead agencies.
- The developer is accorded maximum support to realize the anticipated benefits for sustainability of the project.
- The developer adequately complies with the proposed mitigation measures against the identified potential negative impacts and any other conditions that may be stipulated by the regulatory authority (NEMA) and the other key lead agencies. Non-compliance with the Recommendations in this ESIA statement and/or NEMA certificate. Many a time, Project Contractors do not comply with the recommendations given in the project environmental report and/or NEMA certificate / letter of approval. This could tantamount to violation of the law with possible halting of the whole project by the relevant authorities, including NEMA. A copy of this report would be availed to the Project Contractor. The Project Contractor would ensure that a copy of the certificate / letter of NEMA approval is available and displayed at the project site at all times throughout the construction phase.
- A waste awareness programme should be implemented by the responsible authority to encourage minimizing waste generation, and thereby minimise the potential for waste pollution.
- If the positive impacts to proposed project are to be permanently retained, this will require continuous investment in plant maintenance once the project is complete.

11.2 Conclusions

The environmental assessment of the proposed project has not identified any major negative impacts that cannot be successfully mitigated. The critical environmental

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

issues identified by the EIA were related to site drainage, effluent discharge, sludge generation, health and safety, construction works management, noise and vibrations, solid waste management, air emissions, soil and water contamination, traffic flow and security onsite. Others are accidental and fire risks.

Residual negative impacts are anticipated to be negligible, provided that the mitigative measures recommended are properly implemented and monitored.

The cumulative impacts have been assessed against other activities within the project area that may have similar impacts as those of the proposed project onto the same receptor. The proposed recommendations could successfully mitigate all the cumulative impacts to acceptable levels

11.3 Opinion of a Team of Environmental Assessment Practitioners

The contracted team of certified environmental practitioners wishes the proposed Expansion of Dairy Production Facility and Effluent Treatment Plant project be granted Environmental Authorization subject to implementation of the recommendations provided in this Environmental and social impact Statement. This opinion is based on environmental practitioners understanding of the project scope, familiarity with the issues and concerns, insight into the current and future environmental impacts, and experience undertaking ESIA's.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

BIBLIOGRAPHIES & REFERENCES

1. Constitution of Republic of Uganda, 1995
2. The National Environment Act 2019
3. The National Environment (Environmental and Social Assessment) Regulations, 2020
4. The Republic of Uganda, 1999: Standards for Discharge of Effluent into Water or on Land) Regulations.
5. The Water (Waste Discharge) Regulations 1998.
6. The Republic of Uganda, 1998: The Discharge of Effluent into Water or Land Standards Quality.
7. Environmental Legislation of Uganda, 2004, National Environment Management Authority
8. The Environment Impact Assessment Guidelines, 1997, National Environment Management Authority.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

APPENDICES

APPENDIX 1: STAKEHOLDER CONSULTATION COMMENTS FOR LEAD AGENCIES

Meetings (Name, Place, Premises and Date)	Present Stakeholders	Number of People Consulted	Issues/Comments/Opinions	Response to the comments
Uganda National Bureau Standards (UNBS)	Andrew Othieno Manager Standards Department Walakira Paul 0772 371593 Uganda National Bureau of Standards	2	Reference is made to your letter dated 16th August, 2023 to Uganda National Bureau of Standards (UNBS) regarding Pearl Dairy Farms Ltd (PDFL) undertaking a stakeholder consultation for the proposed expansion of the dairy production facility and new effluent treatment plant located in Migamba cell and Mbarara City. Pearl Dairy Farms Ltd (PDFL) is under the Product Certification Scheme of UNBS and the company is required to ensure that its products consistently conform to applicable national standards as listed below: <ul style="list-style-type: none"> • US EAS 33, Yoghurt – Specification • US EAS 69:2019, Pasteurized milk – Specification • US 28 EAS 39:2002 Code of practice for hygiene in the food and drink manufacturing industry • US EAS 38:2014, Labeling of pre- 	Pearl Dairy Farms Limited will ensure and continue to adhere with the standards provided by UNBS.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Meetings (Name, Place, Premises and Date)	Present Stakeholders	Number of People Consulted	Issues/Comments/Opinions	Response to the comments
			<p>packaged foods – General requirements</p> <ul style="list-style-type: none"> • US EAS 27:2019, UHT milk – Specification • US 1662, Waste management – Requirements <p>The company should also consider certification of their production processes to food safety management systems standards (such as US ISO 22000); Quality Management Systems (US ISO 9001:2015); Environmental Management Systems (ISO 14001); and Hazard Analysis and Critical Control Points HACCP US 130:2017.</p> <p>Please note that importation of some of the raw materials, industrial spare parts and machinery for this factory may be subjected to conformity assessment (Pre-Export Verification of Conformity to Standards – PVoC) in line with UNBS (Inspection and Clearance of Imports) Regulations, 2022.</p> <p>We would like to thank you for your role in ensuring that standards are met for the benefit of the consumers and the economy as a whole.</p>	

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Meetings (Name, Place, Premises and Date)	Present Stakeholders	Number of People Consulted	Issues/Comments/Opinions	Response to the comments
Ministry of Gender, Labor and Social Development	Mr. Tom Eliatu Safety Officer 0776971983	1	<ul style="list-style-type: none"> - The proponent should register the workplace at the OSH department-MGLSD. - The facility should have a representative in Health and Safety. - The proponent should ensure that HSE is under proper supervision through proper record keeping including accident recording and reporting. - The proponent should ensure training of workers (induction and continuous) on Occupation Safety, Health and Environment. - The proponent should separate welfare amenities for each gender and provide adequate sanitary facilities. - The proponent should conduct pre-employment medical examinations on workers where necessary. - The proponent should provide and display HIV/AIDS policy and programmes including VCT. - The proponent should develop an emergency plan and ensure awareness of workers on this plan and what to do in 	<p>A representative in Health and Safety will be recruited</p> <p>Proper records will be kept Workers shall be trained</p> <p>The sanitary facilities will be gender sensitive</p> <p>Premedical examinations for workers will be ensured</p> <p>An HIV/ AIDS will be put in place</p> <p>Emergency contacts should be displayed on the site notice board</p>

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Meetings (Name, Place, Premises and Date)	Present Stakeholders	Number of People Consulted	Issues/Comments/Opinions	Response to the comments
			<p>case of an emergency.</p> <ul style="list-style-type: none"> For fire safety, the proponent should provide fire prevention mechanism like detectors. 	<p>An emergency plan will be developed</p> <p>Fire-fighting equipment will be in place</p>
Meeting in Mbarara City February 2023	Mr. Niwagaba David Sancho Environment Officer Mbarara city 0775 191747	1	<ul style="list-style-type: none"> The old Effluent Treatment plant had issues relating to bad smell, however, this new proposed technology will solve the issue of bad smell. The wetland below Pearl Dairy should be maintained and not encroached on. Waste water generated from the facility should be properly discharged. Audit reports from the facility should be shared with the municipal environment officer. 	Pearl Dairy farms proposed new technology of the proposed new effluent treatment plant will solve a number of problems including improving the quality of air.
Dairy Development Authority Ministry of Agriculture, Animal Industry and Fisheries	Akankiza Samson Mpiira AG. EXECUTIVE DIRECTOR	1	<ul style="list-style-type: none"> Premise surrounding- Wall fence should be set to ensure that premises are enclosed from external environment. Paving should be done on the non- green surrounding of premises to minimize dust. Plant lay out- Design should contain all 	

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Meetings (Name, Place, Premises and Date)	Present Stakeholders	Number of People Consulted	Issues/Comments/Opinions	Response to the comments
			<p>necessary room, changing rooms and sanitary facilities, Foot Bath, provision of reception and quality control lab room, processing rooms, packaging room for products, storage rooms (separated rooms for raw materials, chemicals and products).</p> <ul style="list-style-type: none"> • Source of power- The plant should have access to main grid as main source of power. Boiler house should be in place and able to use an environmental friendly materials such as coffee husks. • Source of water- There should be access to National water and sewerage line. Water reservoirs should be constructed to ensure constant supply of water. • Quality control section- There should be internal lab for platform tests, microbial and other physiochemical parameters separated. • A closed system for production processes should be used to avoid cross contamination. • Waste Management Effluent water- A sufficient operational ETP should be in 	

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Meetings (Name, Place, Premises and Date)	Present Stakeholders	Number of People Consulted	Issues/Comments/Opinions	Response to the comments
			<p>place to handle all waste water from the plant (sufficient capacity)</p> <ul style="list-style-type: none"> • Solid waste- There should be adequate solid waste bins and operational incinerator to handle all solid wastes. • Ventilation- There should be mechanism of air extractors for reducing heat and clean aeration • Road for heavy vehicles to the factory should be away from production area to reduce sound and air pollution. • Walls, paint and Roofing- Materials for walls, paintings and roofing should be water proof and heat resistant to avoid peelings and sweating to avoid cross contamination. • Drainage- Drainage flow should be self -draining from high hygiene to low hygiene area. • Personnel Hygiene and safety- Personnel should be in full PPEs (personal protective Equipment), should be with valid medical fitness certificate at all times. • Operational foot bath should be in place 	

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Meetings (Name, Place, Premises and Date)	Present Stakeholders	Number of People Consulted	Issues/Comments/Opinions	Response to the comments
			for personnel foot ware disinfection before and after operation.	

STAKEHOLDER COMMENTS FROM COMMUNITY MEMBERS

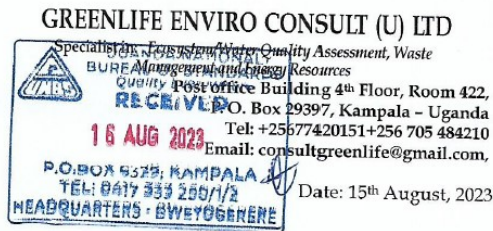
Meetings (Name, Place, Premises and Date)	Present Stakeholders	Number of People Consult ed	Issues/Comments/Opinions	Response to the comments
Meeting at LC1 offices at Migamba cell February 2023	Mr. Byamugisha Nickson 0752 613113	1	<ul style="list-style-type: none"> * There has been persistent bad smell from the effluent treatment plant and complaints from the community members have been raised several times to no avail. Diseases can emerge from this if no action is taken. * During the rainy season, Pearl discharges the effluent from the plant hence increasing bad smell. * Employment opportunities have not been availed to community members to work in the factory and people from elsewhere are ferried to work hence increasing insecurity. 	The proposed new effluent treatment plant for the plant is using advanced new technology from which issues relating to bad smell will be there no longer.
Meeting at LC1 offices in Migamba cell	Other community members interviewed are	13	<ul style="list-style-type: none"> * The new technology and effluent plant should help us with improving the quality of air around the plant. 	Pearl Dairy seeks to continue good relations with the

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Meetings (Name, Place, Premises and Date)	Present Stakeholders	Number of People Consult ed	Issues/Comments/Opinions	Response to the comments
Conducted in February 2023	presented in appendix 3		* They all had a common agreement of welcoming the project with emphasis on job creation. However, the pointed out that the developer should take responsibility of any negative effect likely to come from the project. They highlighted issues to do with generation of bad smell. They confirmed that the land belongs to the developer.	community members and farmers.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

APPENDIX 2: LETTER FOR REQUEST FOR STAKEHOLDER CONSULTATION AND RESPONSE FROM UGANDA NATIONAL BUREAU OF STANDARDS



The Executive Director,
Uganda National Bureau of Standards
Plot 2-12, By-pass link, Bweyogerere Industrial & Business Park,
P.O Box 6329, Kampala

Dear Sir,

REF. REQUEST FOR STAKEHOLDER CONSULTATION FOR THE PROPOSED
EXPANSION OF DAIRY PRODUCTION FACILITY AND NEW EFFLUENT
TREATMENT PLANT LOCATED IN MIGAMBA CELL and MBARARA
CITY

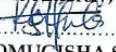
Pearl Dairy Farms Ltd (PDFL) is a dairy processing company in Uganda specializing in the production of pure, nutritious high-quality milk products that appeal to our customers' taste use of modern technology to transform milk into different products that meet the evolving needs of the market. Pearl Dairy Farms Ltd is proposing to implement an expansion program for their dairy production facility and establish a new effluent treatment plant with a feed rate of 1 million liters/day per 24 hour day.

As part of this process, the National Environment Management Authority (NEMA) has already conditionally approved the Environmental Scoping report and the Terms of Reference for the full Environmental and Social Impact Assessment (see copy of approval letter in Appendix 1). However, one of the approval conditions given by NEMA is for us to "Consult with all relevant stakeholders including Uganda National Bureau of Standards (UNBS).

Consequently, the purpose of this letter is to request your input and expertise as a valued stakeholder to ensure a comprehensive understanding of the concerns, views, opinions, recommendations, regulations and comments the project may have on the environment and the surrounding communities to shape a sustainable and socially responsible course of action for the proposed development.

Your expedited review of our submission to proceed with the proposed development will be greatly appreciated. However, should you require any clarifications in respect of this submission, please don't hesitate to contact us.

Yours Sincerely,


KOMUGISHA SHEILLA,
ESIA Operations
TEL: 0779655152

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city



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/178

30th August, 2023

Greenlife Enviro Consult (U) Ltd
Post office Building 4th Floor, Room 422,
P.O Box 29397 Kampala-Uganda.

Dear Ms. Sheilla Komugisha,

RE: REQUEST FOR STAKEHOLDER CONSULTATION FOR THE PROPOSED EXPANSION OF DAIRY PRODUCTION FACILITY AND NEW EFFLUENT TREATMENT PLANT LOCATED IN MIGAMBA CELL AND MBARARA CITY.

Reference is made to your letter dated 16th August, 2023 to Uganda National Bureau of Standards (UNBS) regarding Pearl Dairy Farms Ltd (PDFL) undertaking a stakeholder consultation for the proposed expansion of the dairy production facility and new effluent treatment plant located in Migamba cell and Mbarara City.

Pearl Dairy Farms Ltd (PDFL) is under the Product Certification Scheme of UNBS and the company is required to ensure that its products consistently conform to applicable national standards as listed below:

1. US EAS 33, Yoghurt — Specification
2. US EAS 69:2019, Pasteurized milk — Specification
3. US 28 EAS 39:2002 Code of practice for hygiene in the food and drink manufacturing industry
4. US EAS 38:2014, Labelling of pre-packaged foods — General requirements
5. US EAS 27:2019, UHT milk — Specification
6. US 1662, Waste management — Requirements

The company should also consider certification of their production processes to food safety management systems standards (such as US ISO 22000); Quality Management Systems (US ISO 9001:2015); Environmental Management Systems (ISO 14001); and Hazard Analysis and Critical Control Points HACCP US 130:2017.

UNBS encourages the management of Pearl Dairy Farms Ltd (PDFL) to purchase standards applicable to the company's services and products by visiting <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 Plot 06, Rippon Road
Chemicals House
Katwe Road
Tel: +256 312 279484

Jinja
Plot 06, Rippon Road
Tel: 0454131127

Mbale
Plot 53 B
Naboa 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

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

Please note that importation of some of the raw materials, industrial spare parts and machinery for this factory may be subjected to conformity assessment (Pre-Export Verification of Conformity to Standards – PVoC) in line with UNBS (Inspection and Clearance of Imports) Regulations, 2022. We would like to thank you for your role in ensuring that standards are met for the benefit of the consumers and the economy as a whole.

Yours faithfully,

UGANDA NATIONAL BUREAU OF STANDARDS



Andrew Othieno

MANAGER STANDARDS DEPARTMENT

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

APPENDIX 3: LETTER FOR REQUEST FOR STAKEHOLDER CONSULTATION AND RESPONSE FROM DAIRY DEVELOPMENT AUTHORITY



GREENLIFE ENVIRO CONSULT (U) LTD

Specialist in: Ecosystem/Water Quality Assessment, Waste
Management and Energy Resources

Post office Building 4th Floor, Room 422,

P. O. Box 29397, Kampala - Uganda

Tel: +25677420151+256 705 484210

Email: consultgreenlife@gmail.com,

Date: 15th August, 2023

The Executive Director,
Dairy Development Authority
P. O. Box 34006 Kampala,
Plot 1 Kafu Road Nakasero,
Tel: (256) 414-343901/3

Dear Sir,

REF. REQUEST FOR STAKEHOLDER CONSULTATION FOR THE PROPOSED
EXPANSION OF DAIRY PRODUCTION FACILITY AND NEW EFFLUENT
TREATMENT PLANT LOCATED IN MIGAMBA CELL and MBARARA
CITY

Pearl Dairy Farms Ltd (PDFL) is a dairy processing company in Uganda specializing in the production of pure, nutritious high-quality milk products that appeal to our customers' taste use of modern technology to transform milk into different products that meet the evolving needs of the market. Pearl Dairy Farms Ltd is proposing to implement an expansion program for their dairy production facility and establish a new effluent treatment plant with a feed rate of 1 million liters/day per 24 hour day.

As part of this process, the National Environment Management Authority (NEMA) has already conditionally approved the Environmental Scoping report and the Terms of Reference for the full Environmental and Social Impact Assessment (see copy of approval letter in Appendix 1). However, one of the approval conditions given by NEMA is for us to "Consult with all relevant stakeholders including Dairy Development Authority (DDA).

Consequently, the purpose of this letter is to request your input and expertise as a valued stakeholder to ensure a comprehensive understanding of the concerns, views, opinions, recommendations, regulations and comments the project may have on the environment and the surrounding communities to shape a sustainable and socially responsible course of action for the proposed development.

Your expedited review of our submission to proceed with the proposed development will be greatly appreciated. However, should you require any clarifications in respect of this submission, please don't hesitate to contact us.

Yours Sincerely,


.....
KOMUGISHA SHEILLA,
ESIA Operations
TEL: 0779655152



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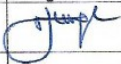
Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

APPENDIX 4: STAKEHOLDER CONSULTATION WITH THE ENVIRONMENTAL OFFICER MBARARA CITY

A LIST OF PEOPLE CONSULTED DURING THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

PEARL DAIRY

District...MBARARA.....

No.	Name	Designation	Contact	Signature
1	Niwagaba David Saneha	Senior Env't Officer	875191747	
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

APPENDIX 5: LIST OF PEOPLE CONSULTED AND LCI CHAIRPERSON

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR PEARL DIARY MBARARA CITY

Please read carefully the questions below and answer them by ticking the right box where applicable.

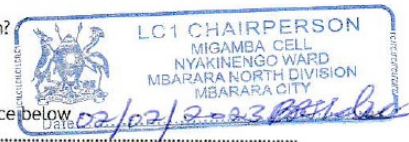
Name B. YAMUGUHA NICKSON
Contact 0752-613113 Designation LCI Chairperson
Village Migamba Parish Nyakinengo
Sub County Mbarara North District Mbarara City

2. Did you understand the purpose of this consultation?

A) Yes ☐ B) No ☐

Please tick

If no, what didn't you understand? Explain in the space below



3) What is your view towards this Environmental and Social Impact Assessment?

a) Positive ☒

b) Negative ☐

c) Do Not Care ☐

4) If you oppose the project, explain the reasons in the space provided below

5) In your opinion, what do you think the developer should put in place to ensure proper operation of the project?

- bad smell from the factory
- having a big reason for discharge effluent from the plant
- They don't give employment to local community members
- Insecurity from employing outside people who are forced to work at the facility.

6) Do you have any other additional concerns about the project?

- persistent bad smell without intervention yet complaints have been made since the project began
- from the bad smell, we are worried other diseases can emerge affecting the community.

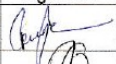

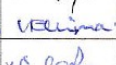

Thank You

Specialist in: Environmental Impact Assessments, Environmental Audits, Feasibility studies, Ecosystem/Water Quality Assessment, Waste Management, Cleaner production and Energy Resources

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

A LIST OF PEOPLE CONSULTED DURING THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR PEARL DIARY MBARARA CITY

Village... Migamba cell
 Parish... Nyakinengo ward
 Sub county... Mbarara North division
 District... Mbarara City

No.	Name	Designation	Contact	Signature
1	Rakesh Jha	EHS Manager	0707591566	
2	S. Roy	GM (O)	0756343892	
3	Tukahizwa Bonetanki	deputy	0774922321	
4	Nicholas Bawukanda	Sec LCI	074157259	Nicholas
5	TWIMOMUHANGI LETEMSA	Health worker	0772581155	Twimomuhangi
6	BYAMUKHLEA KICKER	Chairman	0772581155	
7				
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APPENDIX 6: APPROVED TERMS OF REFERENCE (TOR) BY NEMA



NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)

NEMA/4.5

1st August, 2023

The General Manager
Pearl Dairy Farms Limited
P.O. Box 7420
KAMPALA.

Tel: +256-200-900-939
Email: info@pearldairy.com

NEMA House
Plot 17,19 & 21, Jinja Road.
P.O.Box 22255, Kampala, UGANDA.

Tel: 256-414- 251064, 251065, 25106
342758, 342759, 34271
Fax: 256-414-257521 / 232680
E-mail: info@nemaug.org
Website: www.nemaug.org

RE: APPROVAL OF SCOPING REPORT AND TERMS OF REFERENCE FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED EXPANSION OF PEARL DAIRY FARM AND CONSTRUCTION OF AN EFFLUENT TREATMENT PLANT ON PLOTS 330 AND 286 BLOCK 7 IN MIGAMBA CELL, NYAKINENGO WARD, MBARARA NORTH DIVISION, MBARARA CITY-EIATOR 10196

This is in reference to the Terms of Reference (TOR) for carrying out the Environmental and Social Impact Assessment (ESIA) for the above-mentioned project, which was submitted to this Authority for consideration. This Authority has finalized the review and **grants formal APPROVAL** of the said TOR.

Please note that the approval of the TORs DOES NOT grant permission to start implementing any of the proposed project activities. This is not a Certificate of approval.

In addition to the scope of work provided in the TOR, you are advised to consider the key aspects below during the conduct of the environmental impact study and the preparation of the ESIA report:

- (i) Provide a comprehensive description of the project components and activities for expansion of the Dairy Farm, details of the designs, processes, the water sources, capacity of the new effluent treatment plant and the size of the workforce;

CAH

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- (ii) Describe measures and infrastructure that will be put in place to prevent contamination and maintaining public health and food safety standards at the Dairy Farm;
- (iii) Document measures for cleaner production in the ESIA including waste minimization, pollution control, energy and water conservation at the facility;
- (iv) Carry out comprehensive consultations with all relevant stakeholders including Dairy Development Authority (DDA), Uganda National Bureau of Standards (UNBS), Mbarara City Council, and the communities residing/owning property in proximity with the proposed site for location the Dairy Farm. The views of the stakeholders consulted should be well documented and appended in the ESIA report;
- (v) Provide current baseline information of the project site and its neighborhood, including site GPS Coordinates clearly indicating the boundaries of the project site and the images of the site;
- (vi) Carryout analyses of baseline noise, air quality and taking into account key parameters relevant to the nature of the project. Append the results of the analysis to the ESIA report;
- (vii) Carry out an evaluation of the negative impacts associated with the proposed Dairy Farm expansion and provide detailed mitigation and environmental management and monitoring plans that relate to the identified environmental impacts from the proposed project in particular, the following issues should be adequately assessed and appropriate mitigation actions provided in the ESIA:
 - (a) all potential waste streams from the facility operations and measures for management of such waste;
 - (b) impacts from management of effluent and other potential pollution sources including the estimated quality and quantities of effluent, the effluent treatment plant design, the waste treatment process, quality of discharges and points of discharge;
 - (c) impacts on air quality particularly odor arising from the poorly managed waste water and organic waste, particulate matter from the boiler, including details of equipment that will installed to control air emissions;
 - (d) noise emission sources, impacts and mitigation;
 - (e) occupational health and safety issues likely to arise from the construction and operation of the plant.
- (viii) Comprehensively analyze all possible alternative /options to selected project location, design, layout and technology among others;



Page 2 of 3

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

- (ix) Provide clear and legible copies of the site layout plans showing proposed equipment installation points and clear boundaries of the project site in relation to its environs;
- (x) Append to the ESIA report authentic copies of land ownership or lease documents;
- (xi) Consider any other critical environmental concerns that were not initially foreseen during the preparation of scoping report and include an evaluation of such concerns;
- (xii) The team of environmental practitioners to undertake the Study should be Certified by this Authority and possess expertise particularly in industrial processes and environmental health and safety. Include the names of the experts in the ESIA report;
- (xiii) Include the total cost for the Facility proposed for expansion based upon estimates provided by and **copy of certificate of valuation issued by a certified valuer**, in accordance with Regulation 19(1) of the National Environment (Environment and Social Assessment) Regulations, S.I. No. 143/2020;
- (xiv) Accompany the ESIA report submission with evidence of payment of the 30% ESIA fees, in accordance with Regulation 49 of the National Environment (Environment and Social Assessment) Regulations, S.I. No. 143 of 2020.

Note that only registered ESIA practitioners including the team leader should be contracted to carry out the ESIA for the proposed project.

You may proceed with carrying out the ESIA for the proposed Project.


Aidan J. Asekenye
For: EXECUTIVE DIRECTOR

APPENDIX 7: PROOF OF LAND OWNERSHIP




THE REPUBLIC OF UGANDA

Parent Title:
KAS 7/283, KAS 7/330
LEASEHOLD REGISTER

Volume **MBR590** Folio **1**

REGISTRATION OF TITLES ACT

Certificate of Title

DESCRIPTION OF LAND

ALL THAT *piece* of land delineated and edged red on the deed plan hereto annexed containing the following area or thereabouts and situate as follows:

Plot: **330**
 Block: **7**
 Municipality: **Mbarara Municipality**
 District: **Mbarara**

Area: **0.2030 Hectares**
 Estate Name: **MBARARA MUNICIPALITY**

TERM from **17th day of December 2012** for **49 years** at the rent and subject to the covenants and conditions contained or implied in Lease Number **MBR-00028986** bound up herewith and to the incumbrances (if any) entered in the Incumbrance Register.

PROPRIETORSHIP

Date, Time, Instrument No.	Name and Address of Proprietor	Signature of Registrar
* 16/07/2019 12:38 PM MBR-00028986	SINDA ANDREW R of PO Box 7026, KAMPALA	 


Date of Issue: 16th day of July 2019


 Registrar of Titles

Owner's Copy

MBR00068521

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

PROPRIETORSHIP— continued		
Date, Time, Instrument No.	Name and Address of Proprietor	Signature of Registrar
4.11.2019 3:41PM BR00030596	PEARL DAIRY FARMERS LIMITED OF P.O.BOX 24584, KAMPALA FARMS	

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

LOMP

25

UGANDA

REGISTRATION OF LAND ACT

LEASE BY URBAN AUTHORITY

This Lease made the 16th day of February one thousand nine hundred and seventy eight under and subject to the Public Lands Act and the rules made in accordance therewith BETWEEN THE URBAN AUTHORITY a body incorporated by the Urban Authorities Act (hereinafter called "the Lessor") of the one part, and SULAIMANI KYEYUNE, MRIRINGI, of P.O. Box 124, Mbarara, (hereinafter called the Lessee) of the other part. WITNESSETH as follows:—

1. In consideration of the sum of Shillings Nine hundred fifty eight, (Shs. 958/-) paid to the Lessor by the Lessee on or before the execution of these presents (the receipt whereof the Lessor doth hereby acknowledge) and also in consideration of the rent hereby reserved and of the covenants and conditions hereinafter contained on the part of the Lessee to be observed and performed, the Lessor hereby demises unto the Lessee, ALL THAT piece of land in the Municipality/Township of Mbarara, Mbarara, Mbarara, Mbarara and known as Plot Number 330, 286 Block 7, containing approximately 17.9 hectares, as the same is more particularly delineated on the plan annexed hereto and thereon edged with red (hereinafter called "the said land") TO HOLD the same unto the Lessee (as joint-tenants/tenants-in-common) for the term of (5) years and — months from the 1st day of July one thousand nine hundred and seventy eight YIELDING AND PAYING therefor during the said term the yearly rent of Shillings four hundred and fifty (Shs. 450/-) payable by two equal half-yearly payments in advance on the first day of January and the first day of July in every year.

2. THE LESSEE HEREBY JOINTLY AND SEVERALLY COVENANT with the Lessor as follows namely:

(a) to observe and perform all the conditions and covenants implied by law in this lease or otherwise herein contained or referred to,

(b) to erect on the said land buildings (hereinafter called "the said buildings") of a value

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

(c) to complete the said buildings for occupation and use to the satisfaction of the Lessor on or before the 30th day of January one thousand nine hundred and eighty two,

(d) not without the prior written consent of the Lessor to use or suffer to be used the said land and buildings or any part thereof otherwise than for Dairy Farming,

(e) not without the prior written consent of the Lessor to erect any engine or machinery on the said land ~~or in the said buildings~~ save and except such engine or machinery as shall be necessary to or consistent with the user of the said land or buildings as stipulated herein,

(f) in addition to any covenant implied herein the Lessee shall not, until he has completed the said buildings ~~and obtained a final occupation permit in respect thereof~~, sell or sublet or part with the possession of or suffer anyone to use or confer on anyone an equitable interest in or in any way mortgage the said land or buildings or any part thereof without having first obtained the written consent of the Lessor,

(g) to keep insured the said buildings to the full value thereof in a responsible insurance office against loss or damage by fire and upon the request of the Lessor to produce the policy of such insurance and the receipt for the last premium and to cause all sums received in respect of such insurance to be forthwith laid out and expended in rebuilding or repairing or otherwise reinstating the said buildings and to make up any deficiency in such sums out of the Lessee's own money,

(h) not to make or allow to be made any alterations or additions to any of the said buildings nor to cut, injure or demolish or allow to be cut, injured or demolished the roof or any of the walls or floors thereof without the prior written consent of the Lessor,

(i) not at any time during the said term to use, exercise or carry on or permit or suffer to be used, exercised or carried on in or upon the said land or buildings or any part thereof any noxious noisome or offensive art trade business occupation or calling or to allow any act matter or thing whatsoever to be done at any time during the said term in or upon the said land or buildings which shall or may be or grow to the annoyance nuisance grievance damage or disturbance of the occupiers or owners of the adjoining lands and properties.

3. IT IS HEREBY EXPRESSLY declared and agreed as follows:

(i) that if this lease be enlarged as hereinafter provided, the rent herein reserved shall be revisable by the Lessor at any time after the expiration of the first Five (5) years of the said term and at intervals of not less than Two (2) years thereafter,

(ii) that the cost of re-aligning covering in or protecting any public or private services which may be on or pass under or over the said land and of any works incidental thereto shall be the liability of the Lessee.

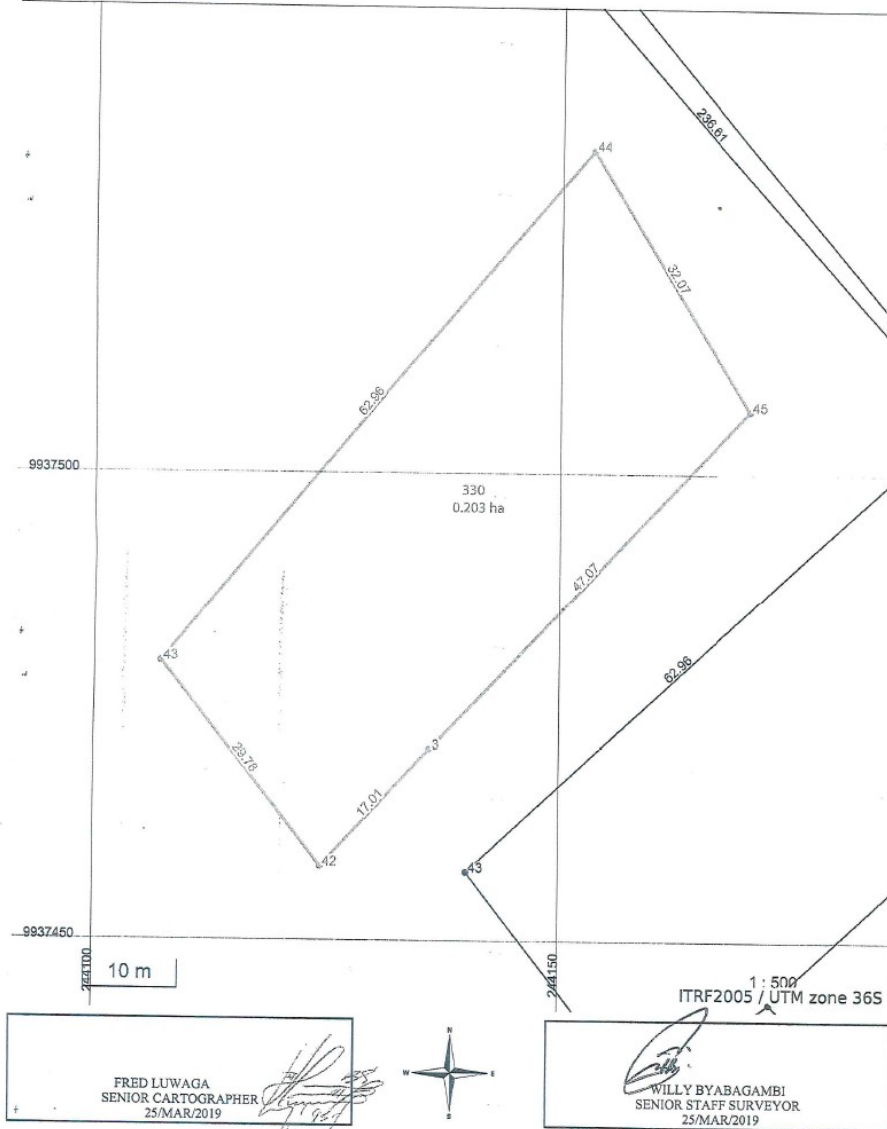
Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city



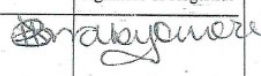
Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

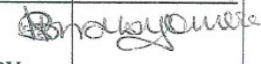


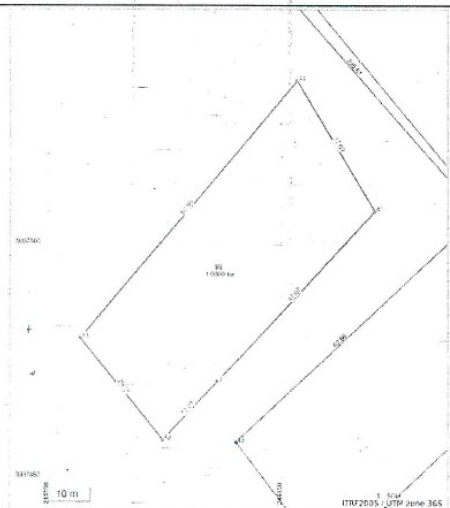
Mbarara District
Kashari County
Plot 330, Block 7
IS Number:
Ref. Number:



Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city



RENT		
Date, Time, Instrument No.	Particulars of Rent	Signature of Registrar
16/07/2019 12:38 PM MBR-00028986	GROUND RENT IS NOW SHS. 5,000.00/- PER ANNUM WITH EFFECT FROM 17/12/2012	

COVENANTS AND CONDITIONS		
Date, Time, Instrument No.	Particulars of Covenants and Conditions	Signature of Registrar
16/07/2019 12:38 PM MBR-00028986	<p>1.USER IS RESTRICTED TO DAIRY FARMING.</p> <p>2.COMPENSATION TO TENANTS IF ANY SHALL BE DONE BY THE APPLICANT.</p> <p>3.LAND WILL BE DEVELOPED IN ACCORDANCE WITH THE PLANNING REGULATION</p>	

Miniature Deed Plan		
	District	Mbarara
	Municipality	Mbarara Municipality
	Block	7
	Plot	330
	Estate Name	MBARARA MUNICIPALITY

The included sketch is not for technical use; it is only for illustration purposes, measurements are to be made on the full sized deed plan.

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city



Parent Title:
KAS 7/195
LEASEHOLD REGISTER

THE REPUBLIC OF UGANDA

Volume **MBR589** Folio **19**

REGISTRATION OF TITLES ACT

Certificate of Title

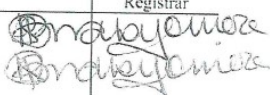
DESCRIPTION OF LAND

ALL THAT *piece* of land delineated and edged red on the deed plan hereto annexed containing the following area or thereabouts and situate as follows:

Plot: **286**
Block: **7**
Municipality: **Mbarara Municipality** Area: **0.9500 Hectares**
District: **Mbarara** Estate Name: **BIHARWE**

TERM from **17th day of December 2012** for **49 years** at the rent and subject to the covenants and conditions contained or implied in Lease Number **MBR-00028513** bound up herewith and to the incumbrances (if any) entered in the Incumbrance Register.

PROPRIETORSHIP

Date, Time, Instrument No.	Name and Address of Proprietor	Signature of Registrar
18/06/2019 9:47 AM MBR-00028513	SINDA ANDREW R of PO-Box 7026, KAMPALA	

Date of Issue: 11th day of July 2019


Registrar of Titles

Owner's Copy

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

— PROPRIETORSHIP — <i>continued</i> —		
Date, Time, Instrument No.	Name and Address of Proprietor	Signature of Registrar
11.11.2019 3:48PM R00030597	PEARL DAIRY FARMERS LIMITED OF P.O.BOX 24584, KAMPALA FARMS Error	
4.11.2019 3:48PM BR00030597	PEARL DAIRY FARMS LIMITED OF P.O.BOX 24584, KAMPALA	<i>Enayuma</i>

LOMP

LEASE BY URBAN AUTHORITY

a body incorporated by the ^{said} Urban Authorities Act (hereinafter called "the Lessor") of the one part, and SULAIMAN KHE YING, of F.O. Box 124, Malacca;

1. In consideration of the sum of Shillings Five hundred fifty eight, ---

as the same is more particularly delineated on the plan annexed hereto and thereon edged with red (hereinafter called "the said land") TO HOLD the same unto the Lessee (as joint tenants/tenants in common/in fee simple) for the term of five (5) years and = months from the 1st day of July one thousand nine hundred and

2. THE LESSEE HEREBY JOINTLY AND SEVERALLY COVENANT³ with
lessor as follows namely:

(b) to erect on the said land buildings (hereinafter called "the said buildings") of a value

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

(c) to complete the said buildings for occupation and use to the satisfaction of the Lessor on or before the 30th day of June one thousand nine hundred and eighty two,

(d) not without the prior written consent of the Lessor to use or suffer to be used the said land and buildings or any part thereof otherwise than for Dairy Farming;

(e) not without the prior written consent of the Lessor to erect any engine or machinery on the said land or in the said buildings save and except such engine or machinery as shall be necessary to or consistent with the user of the said land or buildings as stipulated herein,

(f) in addition to any covenant implied herein the Lessee shall not, until he has completed the said buildings and obtained a final occupation permit in respect thereof, sell or sublet or part with the possession of or suffer anyone to use or confer on anyone an equitable interest in or in any way mortgage the said land or buildings or any part thereof without having first obtained the written consent of the Lessor,

(g) to keep insured the said buildings to the full value thereof in a responsible insurance office against loss or damage by fire and upon the request of the Lessor to produce the policy of such insurance and the receipt for the last premium and to cause all sums received in respect of such insurance to be forthwith laid out and expended in rebuilding or repairing or otherwise reinstating the said buildings and to make up any deficiency in such sums out of the Lessee's own money,

(h) not to make or allow to be made any alterations or additions to any of the said buildings nor to cut, injure or demolish or allow to be cut, injured or demolished the roof or any of the walls or floors thereof without the prior written consent of the Lessor,

(i) not at any time during the said term to use, exercise or carry on or permit or suffer to be used, exercised or carried on in or upon the said land or buildings or any part thereof any noxious noisome or offensive art trade business occupation or calling or to allow any act matter or thing whatsoever to be done at any time during the said term in or upon the said land or buildings which shall or may be or grow to the annoyance nuisance grievance damage or disturbance of the occupiers or owners of the adjoining lands and properties.

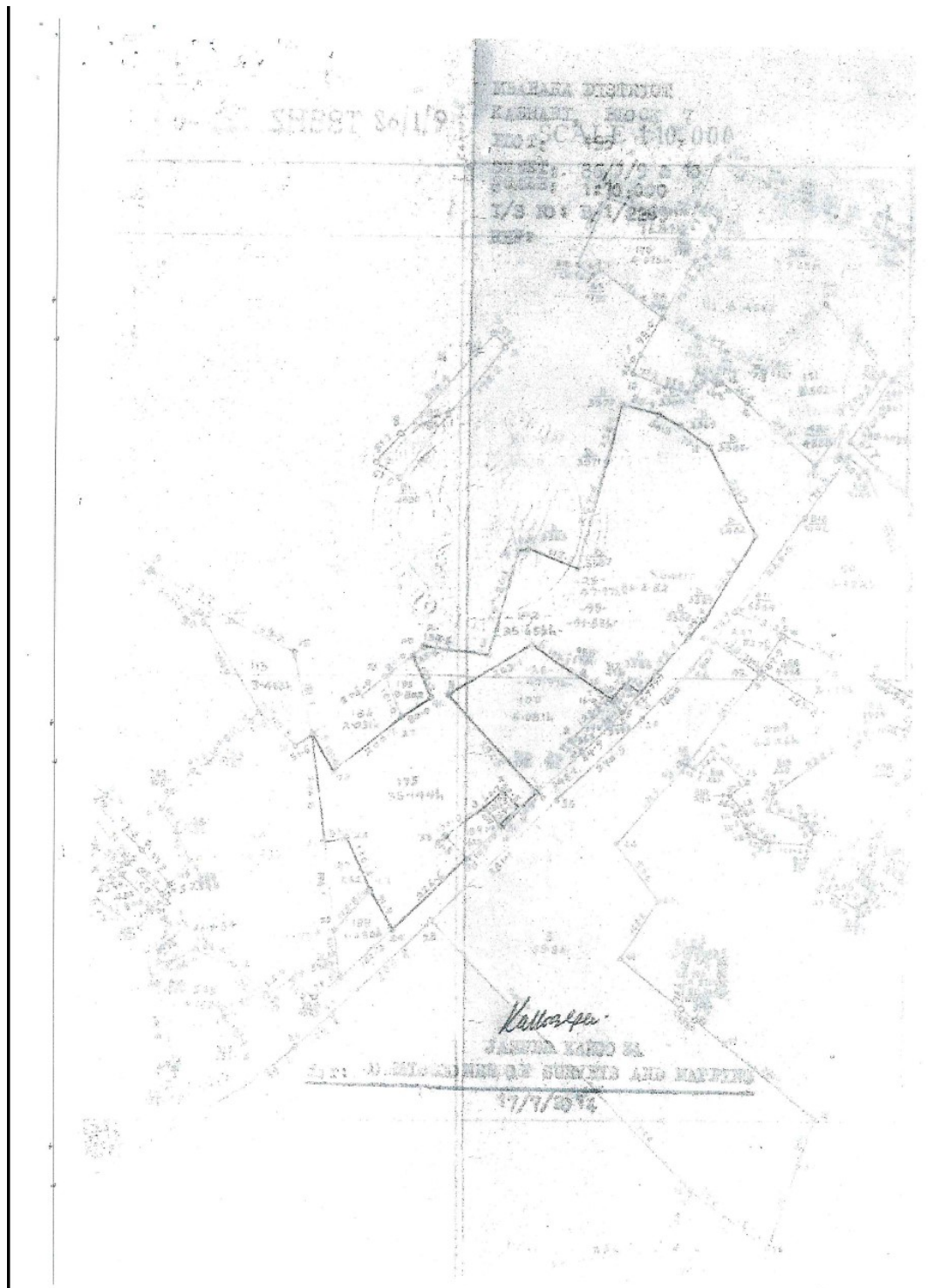
3. IT IS HEREBY EXPRESSLY declared and agreed as follows:

(i) that if this lease be enlarged as hereinafter provided, the rent herein reserved shall be revisable by the Lessor at any time after the expiration of the first Five (5) years of the said term and at intervals of not less than Ten (10) years thereafter,

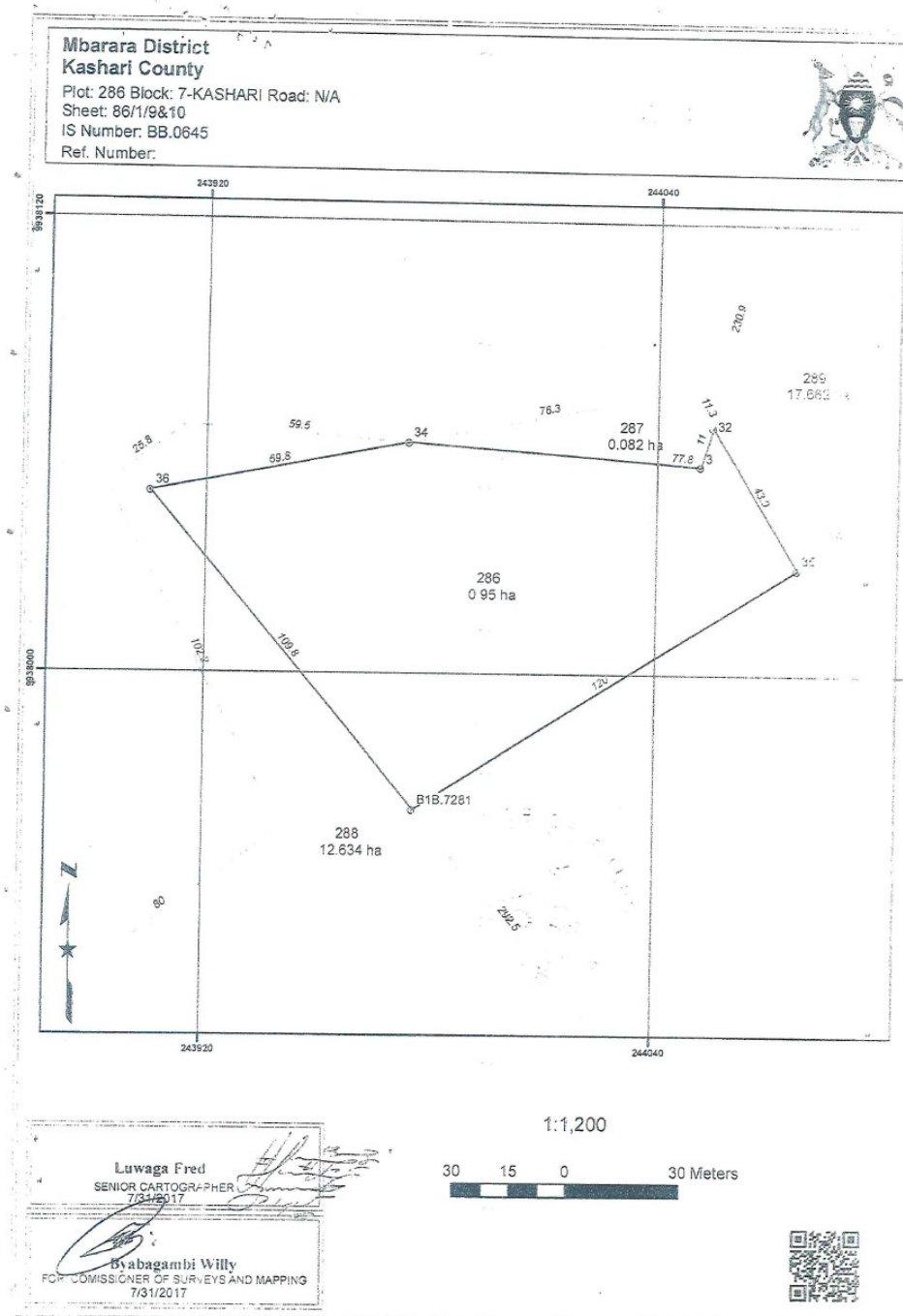
(ii) that the cost of re-aligning covering in or protecting any public or private services which may be on or pass under or over the said land and of any works incidental thereto shall be the liability of the Lessee.

(iii) that the Lessee shall be liable to make good any damage to the said land or buildings or any part thereof caused by him or his agents, servants or workmen.

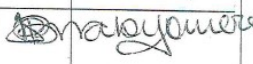
Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city



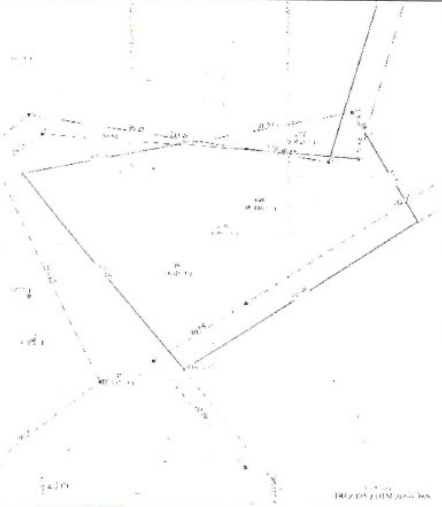
Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city





Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

RENT		
Date, Time, Instrument No.	Particulars of Rent	Signature of Registrar
18/06/2019 9:47 AM MBR-00028513	GROUND RENT IS NOW SHS. 20,000.00/- PER ANNUM WITH EFFECT FROM 17/12/2012	

COVENANTS AND CONDITIONS		
Date, Time, Instrument No.	Particulars of Covenants and Conditions	Signature of Registrar

Miniature Deed Plan		
	District	Mbarara
	Municipality	Mbarara Municipality
	Block	7
	Plot	286
	Estate Name	BIHARWE





The included sketch is not for technical use; it is only for illustration purposes, measurements are to be made on the full sized deed plan.

© M.L.D. Instruments & Certificate of Title Form - Version 2.0 (04-01-2019)

Environmental and Social Impact Assessment for proposed expansion of dairy production facility and New Effluent treatment plant located on Plots 330, 286 Block 7 in Migamba cell, Nyakinengo ward, Mbarara North division and Mbarara city

APPENDIX 8: GEOTECHNICAL INVESTIGATION REPORT