





DEVELOPER

	<p>The Permanent Secretary President's Office Regional Administration and Local Government (PORALG) P. O. Box 1923 Dodoma, Tanzania Telephone: +255 262 321 234 Email: ps@tamisemi.go.tz</p>
<p>SUBMITTED TO:</p>  <p>National Environmental Management Council (NEMC) Lake Victoria Zone PSSF Front Wing, 6th floor Plot No. 17/1, 17/2 and 18 P.O. Box 11045, Mwanza Tel: +255 28 2541679 Fax: +255 28 2541679 E-mail: nemcmwanza@nemc.or.tz,</p>	<p>PREPARED BY: Karagwe District Council, P.O. Box 20, KARAGWE.</p>

18-Mar-24

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY



ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

FOR

Tanzania Secondary Education Quality Improvement Project (SEQUIP)

Quality Information

Document name	ENVIRONMENTAL AND SOCIAL IMPACT PLAN FOR THE PROPOSED CONSTRUCTION OF BASHUNGWA SECONDARY SCHOOL AT KANDEGESHO VILLAGE, NYAKAKIKA WARD IN KARAGWE DISTRICT COUNCIL, KAGERA REGION
Date	18 March 2024
Prepared by	
Reviewed	

TABLE OF CONTENTS

TABLE OF CONTENTS	III
FIGURES.....	VI
TABLES.....	VII
ACRONYMS AND ABBREVIATIONS	I
EXECUTIVE SUMMARY	IV
1 INTRODUCTION.....	1
1.1 BACKGROUND	1
1.2 PROJECT OBJECTIVES	2
1.3 SCOPE OF THE STUDY	3
1.4 LAND REQUIREMENT FOR THE PROJECT	4
1.5 STUDY APPROACH AND METHODOLOGY	4
1.6 CONTENT OF THE REPORT	6
2 PROJECT BACKGROUND DESCRIPTION.....	9
2.1 OVERVIEW	9
2.2 PROJECT LOCATION AND ACCESSIBILITY.....	9
2.3 CURRENT SITUATION IN VICINITY PROPOSED SITE.....	10
2.4 PROJECT PLANNING AND DESIGN	10
2.5 PROJECT ACTIVITIES	16
2.6 ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK.....	22
2.7 PROJECT ASSOCIATED FACILITIES.....	23
2.8 MANPOWER	24
2.9 PROJECT COST	24
3 POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK	25
3.1 INTRODUCTION	25
3.2 THE CONSTITUTION OF TANZANIA, 1977-1995 (AS REVISED).....	25
3.3 NATIONAL DEVELOPMENT VISION 2025 AND NATIONAL FIVE-YEAR DEVELOPMENT PLAN 2021/22– 2025/26	25
3.4 RELEVANT POLICIES	26
3.5 LEGAL FRAMEWORK	32
3.6 NATIONAL REGULATIONS	38
3.7 THE WORLD BANK ENVIRONMENTAL AND SOCIAL FRAMEWORK (ESF)	40
3.8 OTHER WORLD BANK INSTRUMENTS APPLICABLE FOR SEQUIP	44
3.9 INTERNATIONAL AGREEMENTS, CONVENTIONS AND TREATIES.....	44
3.10 INTERNATIONAL CONVENTION	46
3.11 STRATEGIES.....	46
3.12 SUSTAINABLE DEVELOPMENT GOALS (SDGs)	47
3.13 INSTITUTIONAL FRAMEWORK	48
4 BASELINE CONDITIONS	51
4.1 INTRODUCTION	51
4.2 PROJECT CORE AREA.....	51
4.3 GENERAL CONDITIONS	52
4.4 SOCIO-ECONOMIC BASELINE	53
4.5 PHYSICAL- GEOGRAPHICAL ENVIRONMENT	58
4.6 BIOLOGICAL ENVIRONMENT	59
5 STAKEHOLDERS IDENTIFICATION AND INVOLVEMENT.....	60

5.1	INTRODUCTION	60
5.2	STAKEHOLDER ENGAGEMENT PROCESS	60
6	IMPACTS IDENTIFICATION	61
6.1	INTRODUCTION	61
6.2	IMPACT RECEPTORS AND THEIR SENSITIVITY	62
6.3	IMPACT NO. 1: ATMOSPHERIC AIR QUALITY	66
6.4	IMPACT NO. 2: NOISE POLLUTION.....	66
6.5	IMPACT NO. 3: VISUAL/AESTHETIC POLLUTION.....	69
6.6	IMPACT NO. 4: SOIL POLLUTION.....	70
6.7	GENERAL PRINCIPALS OF ESMP METHODOLOGY	74
6.8	IMPACT NO 8: CULTURAL HERITAGE IMPACTS	78
6.9	IMPACT NO. 9: SOCIOECONOMIC IMPACTS	78
6.10	RESIDUAL IMPACTS.....	82
6.11	ERGONOMICS IMPACTS	83
6.12	ACTIVITY RISK ASSESSMENT.....	83
	CONSTRUCTION PHASE	85
	OPERATION PHASE	86
	DECOMMISSIONING PHASE	86
7	CONSIDERATION OF ALTERNATIVES	87
7.1	INTRODUCTION	87
7.2	PROJECT SITE ALTERNATIVE.....	87
8	ENVIRONMENTAL MITIGATION MEASURES.....	88
8.1	INTRODUCTION	88
9	ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN	92
9.1	ENVIRONMENTAL MANAGEMENT POLICY	92
9.2	OCCUPATIONAL HEALTH AND SAFETY POLICY	93
9.3	LOCAL COMMUNITY POLICY	93
9.4	COORDINATION AND REVIEW OF THE ESMP	93
9.5	REPORTING.....	94
10	ENVIRONMENTAL AND SOCIAL MONITORING PLAN	103
10.1	PARAMETERS ARE MONITORED	103
10.2	ENVIRONMENTAL HEALTH AND SAFETY AUDITING.....	107
10.3	AWARENESS AND EDUCATION.....	107
11	RESOURCE EVALUATION/COST BENEFIT ANALYSIS.....	108
11.1	INTRODUCTION	108
11.2	ENVIRONMENTAL COST AND BENEFIT ANALYSIS.....	108
11.3	EFFECT ON THE LOCAL COMMUNITY	108
11.4	INFRASTRUCTURE DEVELOPMENT	108
11.5	ADVANTAGES FOR THE BROADER COMMUNITY AND COUNTRY	108
12	DECOMMISSIONING PLAN.....	110
12.1	INTRODUCTION	110
12.2	COMPONENTS	110
12.3	DISPOSAL/DEMOLITION OF PROJECT STORAGE BUILDINGS.....	110
12.4	CONSIDERATIONS.....	110
13	CONCLUSION AND RECOMMENDATIONS	111

13.1	CONCLUSION.....	111
13.2	RECOMMENDATIONS.....	111
	REFERENCES	112
	APPENDIX: PROPOSED AREA	113

FIGURES

Figure 1-1: Impact Assessment Process	5
Figure 2-1: Proposed project site	10
Figure 2-4: Classroom Design	12
Figure 2-5: Proposed Design for School Administration block	12
Figure 2-6: Proposed layout of the Laboratory room to be constructed	13
Figure 2-7: Various Facilities to be constructed with the General layout in 3D	16
Figure 4-1: Karagwe District council map showing boundaries	52
Figure 4-2: Existing situation of the project site	53

TABLES

Table 1-1: Content of the Report	6
Table 2-1: Summary of buildings to be constructed	15
Table 2-2: Project activities	16
Table 2-3: Waste likely to be generated During Mobilization Phase	18
Table 2-4: Materials required During Construction Phase	19
Table 2-5: Waste generated during cconstruction phase	20
Table 3-1:The World Bank Environmental and Social Standards (ESS) Applicable to Project and Associated Instruments	41
Table 3-2: Sustainable Development Goals (MDGs)	47
Table 4-1: Study Areas for the SIA	53
Table 4-2: Land Area and Administrative Units (Wards, Streets, Villages and Hamlets) by Division, Karagwe District Council; 2015	54
Table 4-3: Number of Primary Schools and Average Number of Schools per Ward and Village by Council, Kagera Region, 2015	55
Table 4-4: Distribution of Public Health Facilities by Council, Kagera Region, 2015	55
Table 6-1: Sources, Receptors and Magnitude of Environmental Impact all Planned Phases	61
Table 6-2: Impact Characterization	66
Table 6-3: Comparison of indicative noise levels	67
Table 6-4: Summary of Source, Impacts and Consequences of Noise in all Project Phases	67
Table 6-5: Noise Impacts during the Construction Phase	67
Table 6-6: Noise Impact Assessment during the Decommissioning Phase	68
Table 6-7: The Potential Visual Indicators Identified That Could Trigger a Visual Impact Assessment Based on the Nature of the Receiving Environment	69
Table 6-8: The Potential Visual Indicators Identified that Could Trigger a Visual Impact Assessment Based on the Nature of the Project	69
Table 6-9: Characterization of Visual Impact	70
Table 6-10: Impact Assessment Criteria on Soil	70
Table 6-11: Potential Environmental and Social Impact of Project by Phases	71
Table 6-12: Terrestrial and Aquatic Ecology Impact Assessment Criteria	75
Table 6-13: Impact assessment criteria associated with the waste management	76
Table 6-14: Criteria for Socioeconomic Impact Assessment	79
Table 6-15: Socioeconomic Impact	81
Table 6-16: Identified Residual Impacts	82
Table 6-17: Risk Assessment	85
Table 8-1: Impact Mitigation Measures	88
Table 9-1: Impact Mitigation Measures	92
Table 9-2 Summary of Environmental and Socioeconomic Management Plans	95
Table 10-1: Recommended Environmental and Social Monitoring Plan	104

ACRONYMS AND ABBREVIATIONS

ADB	African Development Bank
AEP	Alternative Education Program
AIDS	Acquired Immune Deficiency Syndrome
ARAP	Abbreviated Resettlement Action Plan
CBOs	Community Based Organisations
CDP	Community Development Program
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
dB	Decibels
DC	District Commissioner
DED	District Executive Director
DEMO	District Environment Management Officer
DEO	District Education Officer
DOE	Director Of Environment
DP	Development Partner
DRC	Democratic Republic of Congo
EBRD	European Bank for Reconstruction and Development
EIA	Environment Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
EPFIs	Equator Principle Financial Institutions
ESCP	Environmental and Social Commitment Plan
ESDP	Education Sector Development Plan
ESF	Environment and Social Framework
ESMP	Environment and Social Management Plant
ESS	Environment and Social Standards
FI	Financial Intermediaries
FYDP	Five Year Development Plan
GBV	Gender Based Violence
GCA	Game Controlled Areas
GCLA	Government Chemistry Laboratory Authority
GCS	Geographic Coordinate System

GDP	Gross Domestic Product
GIIP	Good International Industry Practices
GS Pipe	Galvanized steel
HIPC	Heavily Indebted Poor Country
HIV	Human Immunodeficiency Virus
ICT	Information and Communications Technology
IFC	International Finance Institution
IPF	Investment Project Financing
ISO	International Organization for Standardization
IST	Implementing Supporting Team
IUCN	International Union for Conservation of Nature
LGAs	Local Government Authorities
LPG	Liquefied Petroleum Gas
MoEST	Ministry of Education, Science and Technology
NAPA	National Adaptation Programme Of Action
NEMC	National Environment Management Council
NEP	National Environment Policy
NGOs	Non-Governmental Organisations
NOx	Oxides of Nitrogen
NSGRP	National Strategy for Growth and Reduction of Poverty
O	Oxygen
OHS	Occupational Health and Safety
OIP	Other Interested Parties
OP	Operational Policy
OPC	Ordinary Portland Cement
OSHA	Occupational Safety and Health Authority
OSPAR	Oil Spill Prevention Administration And Response
PAP	Project Affected People
PDO	Project Development Objectives
PLONOR	Pose Little Or No Risk
PM	Particulate Matters
PoRALG	President office, Regional Administration and Local Government
PPE	Personal Protective Equipment

PVC	Polyvinyl Chloride
RAO	Region Academic Officer
RAP	Resettlement Action Plan
RAS	Region Administrative Secretary
RC	Region Commissioner
REMO	Region Management Officer
REO	Region Education Officer
RUWASA	Rural Water Supply & Sewerage Authority
SEP	Stakeholder Engagement Plan
SEQUIP	Secondary Education Quality Improvement Project
SO ₂	Sulfur dioxide
TANESCO	Tanzania Electric Supply Company
TDV	Tanzania Development Vision
ToR	Terms of Reference
URT	United Republic of Tanzania
VEC	Valued Environmental Component
VEO	Village Executive Officer
VOCs	Volatile Organic Compounds
WB	World Bank
WBMS	World Bureau of Metal Statistics
WEO	Ward Executive Officer
WHO	World Health Organization

EXECUTIVE SUMMARY

Introduction

The Government of United Republic of Tanzania (URT) in collaboration with the World Bank has prepared the Secondary Education Quality Improvement Project (SEQUIP). The objectives of SEQUIP are to increase access to secondary education, provide responsive learning environments and improve completion of quality secondary education for girls and boys.

In summary, activities under SEQUIP will be structured into four main components: Component 1: Empowering Girls through Secondary Education and Life Skills

1.1 Creating Safe Schools: Implementation of the Safe Schools Program including:

- i. Trained school guidance and counselling teachers.
- ii. Students' life skills training through girls' and boys' clubs by the guidance and counselling teachers; In-service training of secondary school teachers on the teacher code of conduct and gender sensitive pedagogical approaches;
- iii. Training of school heads and School Boards on GBV, safe school issues etc.;
- iv. School and classroom monitoring system for early identification of and intervention on girls at risk of drop out; and
- v. Community-based mechanism for safe passage to school.

1.2 Promoting Girls' and Boys' Completion of Secondary Education through Quality Alternative Education Pathways including:

- i. Setting up an ICT-enabled system for tracking girls and boys dropping out at national and district level to provide key information for AEP planning and implementation.
- ii. Alternative Education Centers and LGAs undertaking local outreach activities to out-of-school girls in the community, which will include activities such as AEP center-organized community meetings, information via local radio, flyers and brochures.
- iii. Enhancing access to Alternative Education Pathways through (i) expansion of the network of AEP centers; and (ii) tuition fee subsidies for vulnerable girls.
- iv. A quality package for strengthening student learning in Alternative Education Pathways will also be implemented
- v. Environmental and Social Management Framework –Tanzania - Secondary Education Quality Improvement Project (SEQUIP)

Component 2: Digitally enabled Effective Teaching and Learning

2.1 Effective Teaching and Learning

- i. Minimum package of critical teaching and learning resources for all schools: This package consists of an adequate number of textbooks and teacher guides in core subjects (English, Mathematics, and Sciences).
- ii. Equitable, gender-balanced teacher deployment to schools
- iii. In-service teacher training/continuous professional development (CPD) to improve classroom teaching practice for secondary English, Mathematics and Science teachers
- iv. Evaluate student learning in lower secondary to provide opportunities for remedial use: to allow for targeted early intervention to prevent girl dropout due to learning difficulties

2.2 Digitally enabled Teaching of Math Sciences and English:

- i. Development of an ICT in Education Strategy and plan for secondary education.
- ii. Digital content and connectivity package to facilitate the teaching of English, Mathematics and Science in phases.

Component 3: Reducing Barriers to Girls' and Boys' Education through Facilitating Access to Secondary Schools

Expansion of the secondary school network to substantially reduce the distance to secondary schools through an expansion of the secondary school network, especially in rural areas. SEQUIP will disburse project funding based on the number of schools in each LGA meeting minimum infrastructure standards

Support upgrading existing secondary schools with the minimum infrastructure package (number of classrooms/students, adequate WASH facilities; multi-purpose science labs, electricity, etc.) with the objective is that at least 50 percent of all existing schools in all LGAs will meet the minimum standards set.

Component 4: Technical Assistance, Impact Evaluation and Project Coordination Environmental and Social Management Framework –Tanzania - Secondary Education Quality Improvement Project (SEQUIP)

SEQUIP will be jointly implemented by the Ministry of Education, Science and Technology (MoEST) and the President’s Office, Regional Administration and Local Government (PO-RALG).

Project Description

The Project will apply the Environmental and Social Standards (ESS's), as a requirement for the Bank financing. The Government has prepared Environmental and Social Management Framework (ESMF) for the application of the following Environmental and Social Standards: Assessment and Management of Environmental and Social Risks and Impacts

The proposed project site is administratively located at Kandegesho village, Nyakakika ward, Karagwe district Council in Kagera Region.

Location and Accessibility

Kandegesho village is situated within the Nyakakika ward of the Karagwe district Council, which is located in the Kagera Region of Tanzania. The Kagera Region is located in the northwestern part of Tanzania, sharing borders with Uganda and Rwanda.

The proposed site for construction of the school is located at Northern eastside of the Karagwe head quarter offices and there is 70 km from Kayanga Town centre.

Project Planning and Design

The school construction and design will consist of a required infrastructure package based on the school construction and maintenance strategy (e.g. number of classrooms/students, adequate WASH facilities, especially important for students; multi-purpose science labs, electricity, etc.). Administration Block, Classrooms Block, Library Block, block, Laboratory Block, Teachers houses and Toilets

No	Buildings	No. of Buildings
First construction phase		
1	Classrooms	8
2	Science Laboratories	3
3	Administrative Building	1
4	Library	1
5	ICT Room	1
6	Student Toilets Holes (Boys 10 & Girls 10)	20
7	10,000-liter Water Tanks	2
8	Tank Installation Pole	1
9	Handwashing Infrastructure	1
10	Water Harvesting/Connection	1
Second construction phase		
1	Teacher Houses	2
2	Purchase of ICT Equipment	1

Project activities

Main activities of the project include preconstruction, Construction, Operations, and decommissioning.

Pre-Construction Activities

The mobilization phase of the project, which is estimated to take average of maximum three months, will entail the following activities:

Design finalization, establishment of construction camps, material and equipment storage areas, materials processing yards, including sanitation facilities. The following specific activities will be involved during this stage.

- Design finalization
- Equipment and labour mobilization
- Workers/ security temporarily house construction
- Bush clearing.
- Construction of Material and equipment storage areas
- Construction of sanitation facilities
- Installation of electrical infrastructure
- Installation of water and wastewater infrastructure

Identification of naturally occurring material borrow sites (sand, fill, gravel borrow and quarry sites), and identification of sources of water for domestic and construction works

Construction Phase

The construction phase of the project, which is estimates to take 12 months will encompass following major activities:

- Earth works to facilitate widening and re-alignment of the road. Earth works will entail the following activities:
 - a) Clearing and grubbing (clearing of vegetation, including trees).
- Extraction of naturally occurring construction materials. This will include:
 - a) Excavation and transport of natural sand, gravel, and sub-base materials to construction sites
 - b) Stone quarrying (including blasting), crushing and transport of crushed aggregates to construction sites
 - c) Transport and handling of fuel, lubricants etc. from their sources to the project site
- Transport of construction materials from source to site such as roof, steel, woods, nails, rope

Operation phase

The maintenance activities of the Overall, SEQUIP will contribute to increasing total enrolment in secondary school by 1.8 million students and increase the number of girls and boys graduating from both secondary schools and alternative secondary education pathways. The specific activities during operation of the school will involve looking into social and community relation issues with regards to schools positive and negative impacts to the community and maintain a balance between the two.

Decommissioning Phase

The decommissioning will mainly be for the construction phase as for the school once operational we are not expecting to remove it unless there are some relevant government directives. After completion of construction, all the utilities which were used shall be reverted to the Municipal Director who will decide on their future use.

The main activities during demobilization phase, will engross the following:

- Collection and disposal of storage facilities such as pallets, packing, boxes
- Collection and disposal of construction materials and waste such as waste oil, sewage, solid waste (plastics, wood, metal, papers, etc.) at the workshop, site office etc. to authorized dumpsite

- Restoration of material borrows areas to safer condition

Environmental and Social Management Framework

The ESF instruments that have been prepared for SEQUIP incorporate measures for project site Selection and to ensure designs and school construction align with the ESF requirements. It has been agreed that civil works will follow building standards acceptable to the World Bank and required under the ESF; taking into account structural safety, universal access, changes in the standard drawings, water source availability and quality, efficient use of materials (wood) to reduce pressure on natural resources, Water and Sanitation for Health (WASH) and solid waste management at the schools, among other risks identified as part of the due diligence process. Site selection for school construction is very important to avoid possible direct and indirect environmental and social impacts and lack of water sources for construction and during operation.

Vulnerable group

Means a group of people who, due to their characteristics and circumstances, are likely to suffer more adverse impacts of natural disasters than other groups in the community. **Vulnerable Person** means any person who by reason of age, infirmity, illness, disability or any other circumstance is in need of care or attention. Vulnerable groups associated to SEQUIP

- Age group (children & elders)
- Indigenous
- Physical challenged group
- Women/Sexuality (Gender issue)

Project Cost

Total Project Cost is four billion Tanzanian shillings

National Legislation

Tanzania has ample legislation for the protection of the environment, health, safety and social welfare which is relevant for the application of the World Bank Environmental and Social Standards included in the ESF.

The main environmental, biodiversity, water, health, cultural resources, social and labour, policies and regulations relevant to SEQUIP and its commitment to this legislation during implementation has been discussed in this report, relevant legislation that applies to the project has been discussed too,

Baseline

In order to gauge the extent of impact, it is crucial to establish the status quo. The consulting team conducted the baseline study of the current level of impacts. This involved a study on flora and fauna, air, soil and water.

It also covered socioeconomic issues, noise, and vibration etc. The aim of ascertaining the baseline it to appreciate to what extent the proposed project can alleviate or exacerbate the current situation and Issues from Key Stakeholders.

Assessment of Impacts (Both Positive and Negative)

This critically reviews and analyses interaction between the proposed project and the existing environment. In this analysis, the consultant distinguished between significant positive and negative impacts, direct and indirect impacts, and immediate and long-term impacts. The analysis of impacts also looked into the cumulative and negative impacts of the proposed project.

Impacts, which are unavoidable or irreversible, are also identified. Wherever possible, impacts are described quantitatively in terms of environmental costs and benefits.

Positive impacts

- Mitigating girls abuse which was a factor of distance they walk from home to schools
- Increased employment opportunities to workers and teachers
- Educational opportunities

Negative impacts

Mobilisation

- Impact on Air quality
- Exposure to Noise and vibration
- Habitat alteration and fragmentation
- Biodiversity loss
- Effect on Community Health, Safety and Security
- Displacement of people and properties
- Increased Spread of HIV Infection
- Impact on Cultural Heritage

Construction

- Impact on Air quality
- Impact on Noise and vibration
- Habitat alteration and fragmentation
- Surface water pollution and groundwater pollution (shallow wells)
- Biodiversity loss
- Risk of increased spread of Invasive Alien Species Infestation
- Effect on Community Health, Safety and Security
- Displacement of people and properties
- Increased Spread of HIV Infection
- Restrictions to Access Routes and to ecosystem services
- Impact on Cultural Heritage
- Increased level of waste generation
- Increase pressure of natural resources
- Non-compliance to Labour and Working Conditions
- Loss of employment at the conclusion of the construction phase
- Violation of Human rights

Operation

- Impact on community Health and Safety
- Increased level of waste generation
- Increase pressure of natural resources
- Human rights issues

Decommissioning

- Impacts on air quality
- Impacts on noise and vibration
- Impacts on community health and safety
- Loss of employment

Summary of Enhancement and Mitigation measures

- Equal opportunity in employment be given to all including women who have the requisite qualifications;
- Contractor shall develop and implement a gender equality and gender abuse policy;
- Confine construction work within the acquired project areas (right of way, sources of material and worker's camps)
- Use most effective and efficient machines and cars
- Provide PPE to all workers.
- Contractor to sort out all waste at source according to type;
- All hazardous waste should be treated at designated disposal sites;

- Where involuntary land acquisition is inevitable, undertake valuation of the affected properties and provide compensation as per the national laws as well as ESS 5 requirements;
- A Cultural Heritage Management Plan shall be developed which outlines the Projects approach to management of cultural and archaeological heritage in accordance with ESF and Tanzanian Grave yard removal requirements.

Consideration of Alternatives

This environmental assessment also involved an analysis of reasonable alternatives to meet the ultimate project objective. This analysis included any alternatives examined while developing the proposed project, and that from an environmental, socio-cultural or economic point of view may be sounder than the proposed project.

This also includes the 'no action' alternative, which assesses environmental conditions without project. It is described how the alternatives compare in terms of potential impacts, costs, suitability under local conditions, as well as institutional, training, and monitoring requirements.

To the extent possible, costs and benefits of each alternative are quantified, incorporating the estimated costs of any associated mitigating measures. Finally, this report described the reasons for selecting the proposed project over the other alternatives.

Developing an Environmental Management Plan

This report recommends feasible and cost-effective measures to prevent or reduce any significant negative impacts to levels that are acceptable. This involves:

- Estimating the impacts and costs of those measures, and of the institutional and training requirements to implement them.
- Preparing a management plan including proposed work programs, budget estimates, schedules, staffing and training requirements, and other necessary support services to implement the mitigating measures.
- A management plan also covering the decommissioning phase of the project.

Developing an Environmental Monitoring Plan

This report contains a detailed plan to monitor the implementation of mitigation measures and the impacts of the project during its execution. This plan includes a cost estimate for carrying out the proposed monitoring plan

Decommissioning

Decommissioning is the last phase of project life. It involves terminating project activities and operations and rehabilitating site to or close to its original state. It is anticipated that the project shall continue if there is a demand for a project, however, individual components of the plant shall be decommissioned as need be.

Conclusion and recommendations

The project will have both positive and negative impact to the environment and the local communities along it. Measures have been proposed to enhance impacts which are positive to the environment and the local people.

For those impacts that are negative, mitigation measures have been proposed to avoid or abate them to the extent possible for the purpose of maximizing benefits of the road project and minimizing detriments of the project intervention to the communities.

1 INTRODUCTION

1.1 Background

The Government of the United Republic of Tanzania (URT) in co-operation with the World Bank developed the Secondary Education Quality Improvement Project (SEQUIP). The objectives of SEQUIP are to increase access to secondary education, provide responsive learning environments for girls and in result, improve completion of quality secondary education for girls and boys.

Although access to and completion of primary education has improved over the last decade and substantial progress has been made in secondary education, secondary student enrolment rates of girls and boys are still very low in Tanzania compared to other East African countries. The share of secondary students of the relevant school age population enrolled was only 28 percent in 2018, compared to 68 percent in Kenya, despite the recent enrolment surge. Secondary school attendance was 28 percent for girls and 27 percent for boys.

The three main challenges in secondary education are:

- (i) Access to and completion of quality secondary education for girls and boys.
- (ii) A safe, supportive learning environment to keep girls in school longer and delay early marriage; and
- (iii) Effective and clear Alternative Education Pathways (AEP) to enable girls and boys who drop out of lower secondary school, for various reasons including early pregnancy, to finish the lower secondary education cycle and enter upper secondary schools

The proposed project intends at enhancing the secondary education through delivery point's improvement by increasing access to secondary education, provide responsive learning environments for girls and improve completion of quality secondary education for girls and boys

The implementing Government Agencies are Ministry of Education, Science and Technology (MoEST) and the President's Office – Regional Administration and Local Government (PO-RALG). Both Ministries are responsible for implementation of school-level education activities through the Local Government Authority (LGA). One of the key components to be implemented through SEQUIP is facilitating access to secondary schools and bringing schools closer to communities. The project plans to support construction of 1000 new schools and rehabilitation of additional facilities at existing secondary schools.

The project specifically has the following components.

- Component 1: Empowering Girls Through Secondary Education and Life Skills
- Component 2: Digitally Enabled Effective Teaching and Learning
- Component 3: Reducing Barriers to Girls' Education through Facilitating Access to Secondary Schools
- Component 4: Project Coordination, Monitoring and Evaluation

The Secondary Education Quality Improvement Project (SEQUIP) focuses on enabling young girls to continue their secondary education despite social and economic barriers. More generally, SEQUIP aims to improve the completion of quality, learner-friendly secondary education for girls and boys. In 2018, 1,025,629 girls and 965,242 boys attended lower secondary school.

However, in the same year, a further 134,000 children, half of whom were girls, qualified to continue their schooling but were unable to because of lack of spaces in government secondary schools. Drop-out rates are high for both boys and girls with a quarter of students leaving before they complete their lower secondary schooling. In 2017, about 5,500 girls were not able to continue with their secondary education due to adolescent pregnancy and early motherhood. SEQUIP contributes to addressing these key challenges by:

- (i) Creating a gender sensitive, learner-friendly school environment through investing in supportive structures in the school and community including trained school guidance counsellors, stronger links with the community through Parent Teacher Associations and life skills training.
- (ii) Supporting female students to avoid dropping out of secondary school due to pregnancy through measures that include:
 - (a) Encouraging community awareness of risks for girls;
 - (b) Supporting safe passage and reducing the distance to schools to lower the risks of gender-based violence on the way to and from school; and supporting girls who become pregnant to

- access recognized, quality Alternative Education Pathways (AEPs) to obtain lower secondary certification and continue with upper secondary education or post-secondary education.
- (c) Improving the quality of secondary school teaching and learning environments through the hiring of additional qualified teachers in core subjects and providing textbooks in core subjects.
 - (d) Increasing the number of secondary school spaces through the construction of new classrooms that meet minimum infrastructure standards and supporting the expansion of the school network to bring schools closer to communities.
 - (e) Using innovative digital technology to facilitate mathematics and science teaching and improve learning.

The Government will implement material measures and actions so that the Project is implemented in accordance with the World Bank Environmental and Social Standards (ESSs). This Environmental and Social Management Plan (ESMP) sets out a summary of the material measures and actions. The ESMP requires compliance with the provisions set out in the Stakeholder Engagement Plan (SEP), Environmental and Social Management Framework (ESMF), Resettlement Framework (RF) and Vulnerable Groups Planning Framework (VGPF) which have been developed for the Project, as well as other specific instruments as needed, such as (ESMPs), Environmental and Social Management Plans (ESMPs), Resettlement Action Plans (RAPs), Vulnerable Groups Plans, etc.

However, this ESMP is basically directing to the construction of Bashungwa secondary school located at Nyakakika ward in Karagwe district Council. This school will cover different buildings as shown in table 2.1 needed to establish secondary schools according to the government policy, it is expected to enroll 820 students (both boys and girls) with a total number 35 teachers.

The Environmental and Social Management Plan (ESMP) is a site-specific plan developed to ensure that the project is implemented in an environmentally sustainable manner where all contractors and subcontractors, including consultants, understand the potential environmental risks arising from the proposed project and take appropriate actions to properly manage that risk. ESMP also ensures the project implementation is carried out in accordance with the design by taking appropriate mitigation actions to reduce adverse environmental impacts during its life cycle. The plan outlines existing and potential problems that may adversely impact the environment and recommends corrective measures where required. Also, the plan outlines roles and responsibility of the key personnel and contractors who are charged with the responsibility to manage the Bashungwa secondary school buildings in Karagwe District. The impact previously identified having some adverse effect on the different environmental attributes along with some beneficial impact of the project, both during construction and operation of the Bashungwa secondary buildings. Proper mitigation measures if implemented can reduce the negative impact during construction and operation. The environmental management plan is therefore prepared to minimize the adverse impact.

These SEQUIP interventions are aligned with the Government's Education Sector Development Plan (ESDP) (2016/17–2020/21) and related strategies. SEQUIP design also draws on lessons learned from previous and ongoing World Bank and Development Partner (DP) support to education in Tanzania. Overall, SEQUIP will contribute to increasing total enrolment in secondary school by 1.8 million students and increase the number of girls graduating from both secondary schools and alternative secondary education pathways.

Over its lifetime, the Project directly benefits about 6.5 million new and existing secondary school students, including 3.2 million girls. SEQUIP helps more girls' transition from lower to upper secondary education, including girls who had to leave lower secondary government schools due to pregnancy

1.2 Project Objectives

The Program's objective is to increase access to secondary education, provide responsive learning environments and improve completion of quality secondary education for girls and boys. The project interventions will:

- (i) Create a safe, gender sensitive and learner-friendly school environment,
- (ii) Provide good quality alternative education opportunities for secondary school drop-outs including young mothers;
- (iii) Improve the quality of secondary education by improving teacher skills, reducing class sizes and providing adequate teaching and learning materials;

- (iv) Use innovative digital technology to improve mathematics and science teaching and;
- (v) Increase access to secondary education by providing more schools closer to the homes of children. Over the project's lifetime, 6.5 million children (3.1 million girls) will benefit from project interventions and an additional 900,000 children are expected to successfully complete their secondary education.

A need and evidence-based approach was used in identification and selecting locations and schools that will benefit

1.2.1 Objectives of the ESMP

The study purpose is to make sure that the project proponent complies with Environmental Management Law (2004) and its regulation (2005) along with the Environmental and Social Standards (ESS) of the World Bank Environmental and Social Framework (ESF).. The ESMP stick on project compliance and Karagwe District Council Strategy that any proposed project in the district shall consider the environmental issues and undergo Social and Environmental Study/Studies or assessment as prescribed on Environmental Act of (2004). The key benefits of the ESMP is that it provides the organization with means of managing its environmental performance thereby allowing it to contribute to improved environmental quality.

1.2.1.1 The specific objectives of this ESMP are:

- To Assess the level of compliance of the project activities at different aspects) as stipulated by Study related laws, regulations, standards and practices.
- To identify expected future project impacts.
- To propose mitigation measures for the identified side effect as the core factor of ESMP.
- To identify, predict and evaluate impacts of the proposed project
- To propose mitigation measures and project alternatives to minimize the negative impacts and enhance the positive impacts of the proposed project.
- To provide Management and Monitoring plans for the proposed project
- To identify and assess the source and the quality of material for construction
- To ensure that the school complies with acceptable standards.

The ESMP is generally: -

- Prepared in accordance with rules and requirements of the Environmental Management Law (2004) and its regulation (2005) and ESF of the WB
- To ensure that the component of facility are operated in accordance with the design;
- Process that confirms proper operation through supervision and monitoring;
- System that addresses public inconvenience during construction and operation of the facility; and
- Plan that ensures remedial measures are implemented immediately

The project will use heavy equipments, Lorries and machinery in execution of some activities mentioned above. The construction period will be 12 months with two phases and the life span is expected to be 50 years with the employment opportunities of 500 skilled and unskilled labours mainly during construction. The first phase is expected to be 12 months in which seven blocks has supposed to be finished. Also the project is expected to generate solid waste per day that will depend number of people at the project area.

1.3 Scope of the Study

The ESMP was conducted in accordance to the guidelines laid down by the Environment Management Act of 2004, and its regulations as well as the World Bank requirements as provided in the Environmental and Social Framework which goes down to the ten environmental and social standards. In its undertaking, the key consideration among others included the following:

- To ensure that environmental considerations are explicitly addressed and incorporated into the decision-making process, with the aim to anticipate and avoid, minimize, or offset the adverse

significant biophysical and social effects of the proposed project; and to protect the capacity of natural systems and ecological processes to maintain their functions.

- To promote development that is sustainable and optimizes resources use and management opportunities.

This study was carried out to assess the comprised project components and its activities of construction. It also looked at daily operations to Environment, Geology, Social, Economic standard and best practices. The components and activities that were covered by this study include: Size of land Site, Excavation and backfill, Utility installation, Repair and maintenance of infrastructure, construction of building, Power and Water supply, Stone Crushing and Management of wastes.

- The project will use force account procedure to employ “local fund” for construction as provided in Table 2.1.
- The project will use several permanent staff from Karagwe head quarter for management purposes and 30 day workers under supervision of local funds.
- The project will cover the area of 12.8 acres.
- The project will have different buildings for all phases. As provided in Table 2.1

1.4 Land requirement for the project

Land is public property and rights to the land are issued in the form of residential leases and certificates of rights to occupancy. The construction of new schools in Karagwe required enough land. Site selection was important in minimizing the extent of resettlement including that of informal land owners and or users who were present in an area prior to the selection of a site for a school.

The proposed land in Karagwe was previous owned by the village government of Kandegesho Village and when they received the proposal of school construction from the district council they held a meeting and agreed to provide 12.8 hectares for the project implementation where the Regional Land and District Land Commissioners were responsible for taking measurements which guided the preparation of a title deed. As per construction directives from PO-RALG, specific land size requirement is 5 acres in rural areas and 3 acres in urban areas. But Kagera like other region has put aside about 12.8 hectares for the construction.

1.5 Study Approach and Methodology

The approach to this exercise was structured to cover the requirements under the Environment Impact Assessment and Audit Regulations, 2005. It involved largely an understanding of the project background, the preliminary designs, and the implementation plan as well as commissioning.

In addition, baseline information was obtained through physical investigation of the project site areas, desktop studies, and public consultations with members of the community in the project areas, survey, photography, and discussions with the project Proponent. 12.8 hectares' procedures and guidelines set by the EIA & Audit Regulations of 2005. The study adopted the approach of conducting Impact Assessment which is closely related to the flowchart in Figure 1-1.

1.5.1 Pre-Audit Visit

A pre site visit was conducted prior to the site. This enabled the team to:

- Know Site location/Site identification
- Means of mobilizations
- Understand the operations activities at site
- Environmental status of the area.
- The distance of the site from water sources as well as social services
- Shortest distance of house hold from residential area

1.5.2 Site inspection

The team visited the project site physically and got satisfied with the planned activities. The visit was accompanied by the four local fund contractors who were there for further assistance/explanation/clarification where necessary.

1.5.3 Documentary Review

In order to develop the environmental management plan, several documents were reviewed. These include; safety procedures legislation, environmental law, environmental policy, explosive regulation, the National land policy (1997), the National education policy (2003), National employment policy (1997), National water policy (NAWAPO 2002), the water resources management act(2009), Occupational health and safety act, 2004, The environmental management act 2004 (EMA, 2004), and the land act (1999).

1.4.4 Study Expert The prepared EMP involved two Environmental Experts (Environmental officers) and other five skilled and unskilled labour.

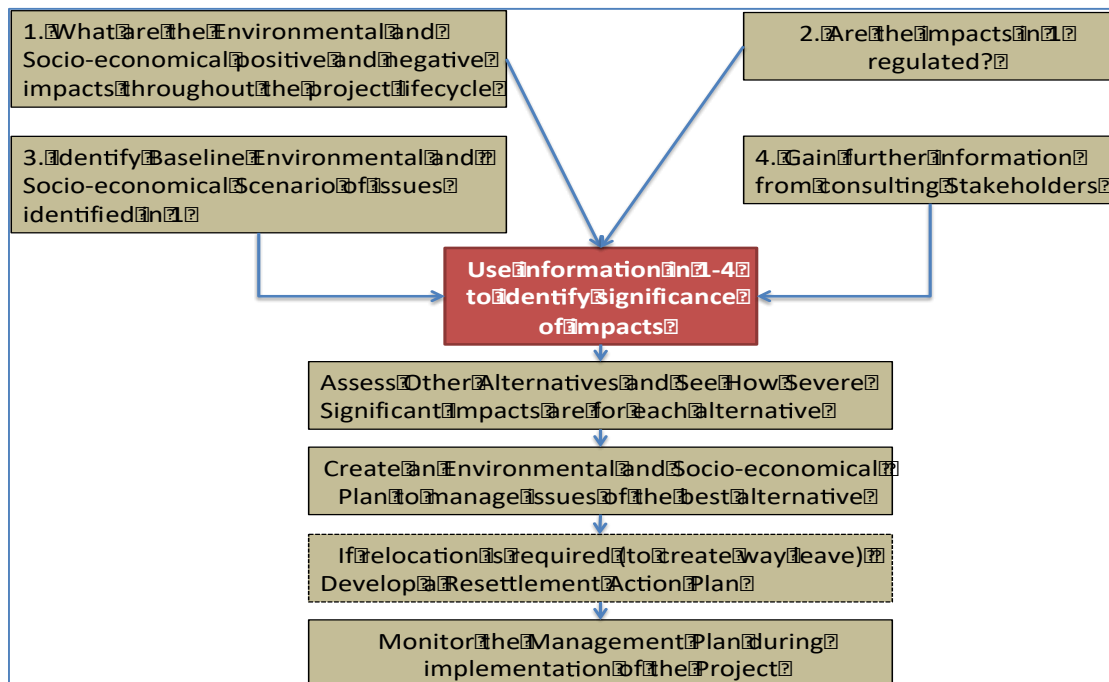


Figure 1-1: Impact Assessment Process

1.5.4 Issues Associated with the Proposed Project

Environmental and social Issues associated with school construction activities were identified based on previous history and detailed project activities. These are detailed in **Chapter 2**.

1.5.5 Regulatory Framework with Associated Issues

Description the relevant regulations and standards governing environmental quality, health and safety, protection of sensitive areas, sitting, land use control as detailed in **Chapter 3**.

1.5.6 How the Situation is Currently (Baseline Situation)?

To gauge the extent of impact, it is crucial to establish the status quo (**Error! Reference source not found.**). The consulting team conducted the baseline study of the current level of impacts. This involved a specialized study on flora and fauna, air, soil and water.

It also covered socioeconomic issues. The aim of ascertaining the baseline is to appreciate to what extent the proposed project can alleviate or exacerbate the current situation. Issues from Key Stakeholders

1.5.7 Evaluation of Impacts (Both Good and Negative)

This critically reviews and analyses interaction between the proposed project and the existing environment. In this analysis, the consultant distinguished between significant positive and negative impacts, direct and indirect impacts, and immediate and long-term impacts. Impacts, which are unavoidable or irreversible, are also identified. Wherever possible, impacts are described quantitatively in terms of environmental costs and benefits.

1.5.8 Consideration of Alternatives

This environmental assessment also involved an analysis of reasonable alternatives to meet the ultimate project objective. This analysis included any alternatives examined while developing the proposed project, and that from an environmental, socio-cultural, or economic point of view may be sounder than the proposed project. This also includes the 'no action' alternative, which assesses environmental conditions without project.

It describes how the alternatives compare in terms of potential impacts, costs, suitability under local conditions, as well as institutional, training, and monitoring requirements. To the extent possible, costs and benefits of each alternative are quantified, incorporating the estimated costs of any associated mitigating measures. Finally, this report described the reasons for selecting the proposed project over the other alternatives.

1.5.9 Developing an Environmental Management Plan

This report recommends feasible and cost-effective measures to prevent or reduce any significant negative impacts to levels that are acceptable. This involves:

- Estimating the impacts and costs of those measures, and of the institutional and training requirements to implement them.
- Preparing a management plan including proposed work programs, budget estimates, schedules, staffing and training requirements, and other necessary support services to implement the mitigating measures.
- A management plan also covering the decommissioning phase of the project.

1.5.10 Developing an Environmental Monitoring Plan

This report contains a detailed plan to monitor the implementation of mitigation measures and the impacts of the project during its execution. This plan includes a cost estimate for carrying out the proposed monitoring plan.

1.6 Content of the Report

This report is designed to meet the requirements of Regulation 18 of Environmental Impact Assessment and Audit Regulations (United Republic of Tanzania, 2005) and as per the process of conducting ESMP. This introductory chapter is followed by the subsequent chapters as detailed in Table 1-1.

Table 1-1: Content of the Report

Chapter	Description
1. Introduction	Overview and objective of the study, methodology and outline of the report
2. Project Background and Description;	This chapter describes: <ul style="list-style-type: none"> • The executing entities of the project and their respective roles in the project • The project's geographic location, preferably illustrated with appropriate maps • Summary of the project (project objective(s), expected results/outcomes, outputs and main activities • Implementation arrangements.
3. Policy, Administrative and Legal Framework;	Describe the policy, legal and administrative framework within which the project takes place and identify any laws and regulations that pertain to environmental and social matters relevant to the project. This includes regulations about environmental and/or social impact assessments to which the project must adhere as well as laws implementing host country obligations under international law. If applicable. Where pertinent, consider legal frameworks for promoting gender equality. Flag any areas where the project might fall short on compliance.
4. Baseline or Existing Conditions;	The main purpose of this section of the ESMP report is to provide an understanding of current environmental and social conditions that form the baseline against which project impacts can be predicted and measured during project implementation. For moderate-risk projects that require only a partial ESMP and no scoping study, this section also provides an opportunity to substantiate the results of the ESMS screening by confirming potential impacts and/or identifying other potential impacts.
5. Assessment of Impacts and Identification of Alternatives	This step is the heart of the ESMP; it itemizes and describes the identified impacts, makes predictions in terms of their probability, and assesses their significance. When analyzing the risks not only direct impacts should be taken into consideration but also indirect impacts such as inadvertent knock-on effects or cumulative effects that materialize through interaction with other developments, impacts occurring at the project site or within the project's wider area of influence and impacts triggered over time The purpose of the analysis of alternatives is to identify other options, including not implementing the project, to achieve the project objectives and compare their impacts with the original proposal. This step is required only for high-risk projects where the identified impacts are very significant.
6. Impacts Management or Environmental Mitigation Measures	A main output of the ESMP process is a strategy for managing risks and mitigating impacts. The identification of mitigation measures is done in consultation with affected groups and is guided by the mitigation hierarchy. The mitigation hierarchy implies that all reasonable attempts must first be made to avoid negative social or environmental impacts. If avoidance is not possible without challenging the conservation objective of the project, measures should be taken to minimize the impacts to acceptable levels and address remaining residual impacts with adequate and fair compensation measures.
7. Environmental and Social Management Plan	This is a risk management strategy is documented in an Environmental and Social Management Plan (ESMP) that describes: the mitigation measures, an implementation schedule and required resources and responsibilities. The technical and operational feasibility, cultural adequacy and sustainability of proposed measures must be demonstrated as well as requirements for capacity building and institutional strengthening, where relevant.
8. Environmental and Social Monitoring Plan	The ESMP should also indicate how the measures designed to avoid impacts will be monitored for effectiveness.

Chapter	Description
9. Resource Evaluation or Cost Benefit Analysis	This chapters intends to internalize all costs associated with management of environmental and social impacts while comparing with the benefits which could be derived from implementation of the project
10. Decommissioning;	How decommissioning of the project shall be affected and restoration of the site
11. Summary and Conclusions	An overview of the study as well as conclusion from experts regarding the findings
12. References	List of all sources of information used in the report
13. Appendices	Detailed descriptions which are important for the study but cannot be included in the main body

CHAPTER TWO PROJECT DESCRIPTION

2 PROJECT BACKGROUND DESCRIPTION

2.1 Overview

The Project Development Objectives (PDOs) to increase access to secondary education, provide responsive learning environments for girls and improve completion of quality secondary education for girls and boys. SEQUIP will contribute to addressing key challenges to girls and boys accessing education. The project aims to reduce distance to government target: 3km (or 45 minutes)

The project will contribute to increasing the total number of students in secondary education including Alternative Education Pathways (AEP) by 250,000. It will directly benefit about 1.8 million secondary school students, including 920,000 girls, 95% of whom are enrolled in lower secondary.

The Construction of Bashungwa Secondary school is directly relating to this program of Secondary Education Quality Improvement Program (SEQUIP). The Ministry of Education, Science and Technology (MoEST) and President's Office –Regional Administration Local Government (PO-RALG) in collaboration with the World Bank is preparing a five years program for secondary education improvement, (**SEQUIP**). This program will provide financial support to increase access to secondary education across the country and in its 184 Councils. The Program's objective is to increase access to secondary education, provide responsive learning environments for girls and improve completion of quality secondary education for girls and boys.

The district council will receive some amount of money with attached instructions on how to run the School project. The higher government has provided various information and instruction on that project as well as building drawings from President's Office- LGAs including how to formulate supervision committees. In responding to the directory, the Council will formulate the supervision committees as follows: -

- The administrative and follow up committee whose chair person is the Karagwe District Commissioner.
- Procurement committee whose chair person is the head of Procurement Office from Karagwe District Council.
- Reception committee under Procurement Officer as a chair person.
- Stocking and monitoring committee under Head of Procurement Unit as a chair person.

2.2 Project Location and Accessibility.

Kandegesho village is situated within the Nyakakika ward of the Karagwe district Council, which is located in the Kagera Region of Tanzania. The Kagera Region is located in the northwestern part of Tanzania, sharing borders with Uganda and Rwanda.

The proposed site for construction of the school is located at Northern eastside of the Karagwe head quarter offices and there is 70 km from Kayanga Town centre

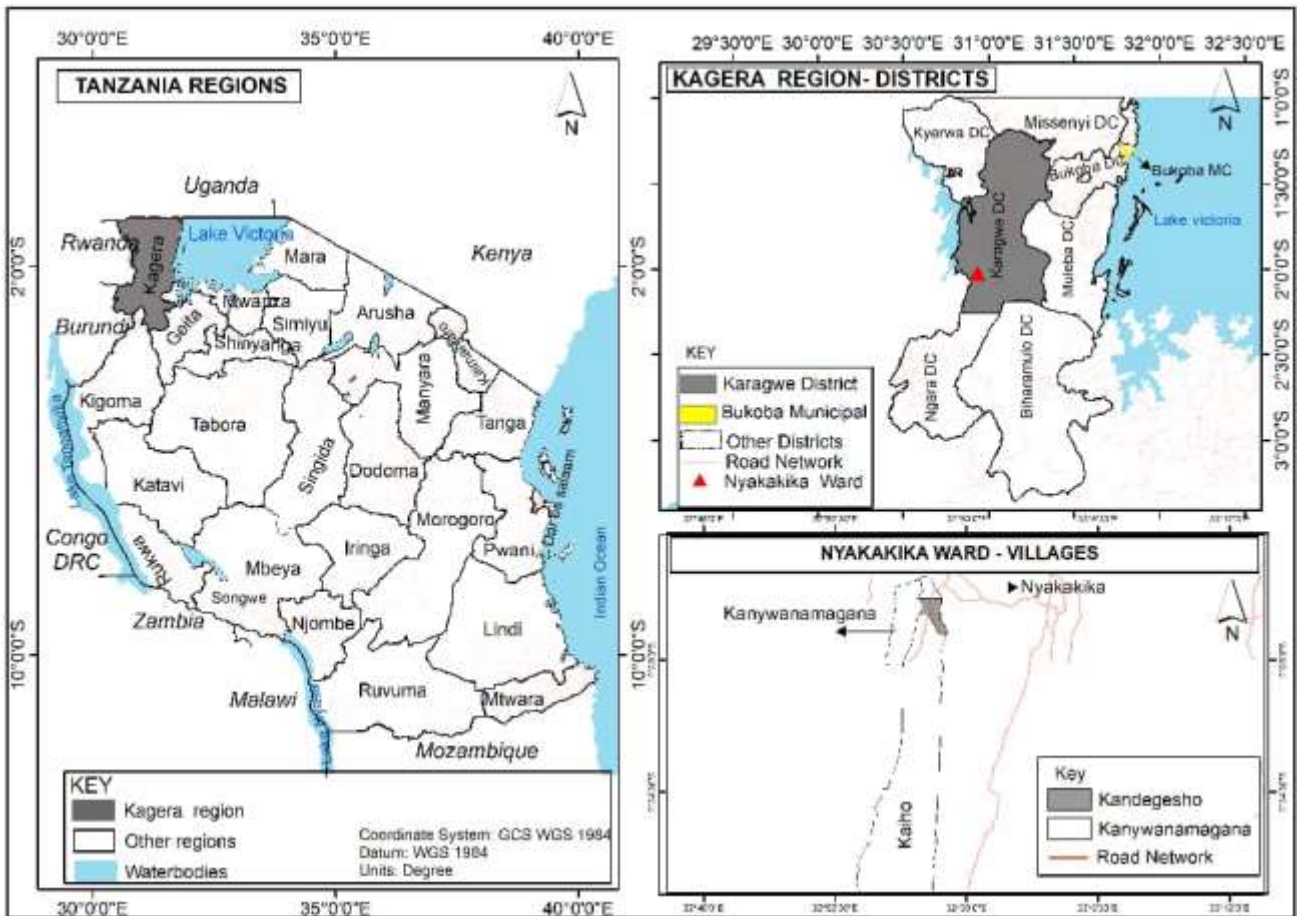


Figure 2-1: Proposed project site

2.3 Current Situation in vicinity proposed site.

2.3.1 Current Situation in vicinity proposed site.

2.3.1.1 Proposed site

The land was customary owned and before being leased it was for agricultural activities (Local Land Use Plan). The land is 12.8ha by size and it is located within settlement and agricultural areas Project Planning and Design

2.4 Project Planning and Design

2.4.1 Overview

Project planning and all designs are prepared as per SEQUIP design and the overall objectives for the development was specified in the Environmental and Social Management Framework (ESMF). The design of the School consists of required infrastructure package based on the school construction and maintenance strategy (e.g. number of classrooms/students, adequate WASH facilities, multi-purpose science labs, electricity, etc.).

However, this ESMP is basically directing to the construction of Bashungwa secondary school located at Nyakakika ward in Karagwe district Council. Established secondary schools according to the government policy, it is expected to enroll 820 students (both boys and girls) with a total number 35 teachers.

The proposed site for construction of the school in Karagwe district is directed at Kandegesho area which allocated at Nyakakika . The construction project will take only 12 months in which all required blocks will be built. these blocks will include the following:

- Administration Block
- Classrooms Block
- Library Block
- Laboratory Block
- Teachers houses
- Toilets
- etc

These buildings will be built under Force Account by using local constructors namely “local funds”.

Project Components and Activities

This has three phases as described by EMA and its regulation that, the monitoring action plan should be conducted according project phases which are Construction phase, Operation phase and Decommissioning phase.

2.4.2 Classrooms

The classrooms are designed following Education Bulletin number 1 of 2007 that directs capacity of each classroom level, 30 students for advance and 40 students for ordinary level. However, schedule of materials indicating each classroom will be having capacity of 40 students.

The Education Global Practice Africa Region report prepared by World Bank provides the following directives; Student classroom ratios of 50:1 or less, student to functioning latrine ratio of 25:1 for girls and 30:1 for boys, at least one multipurpose science laboratory, student textbook ratios in mathematics and science subjects of 1:1, teacher: teacher guide availability of 2:1. Figure 2-2 shows the proposed classroom design.

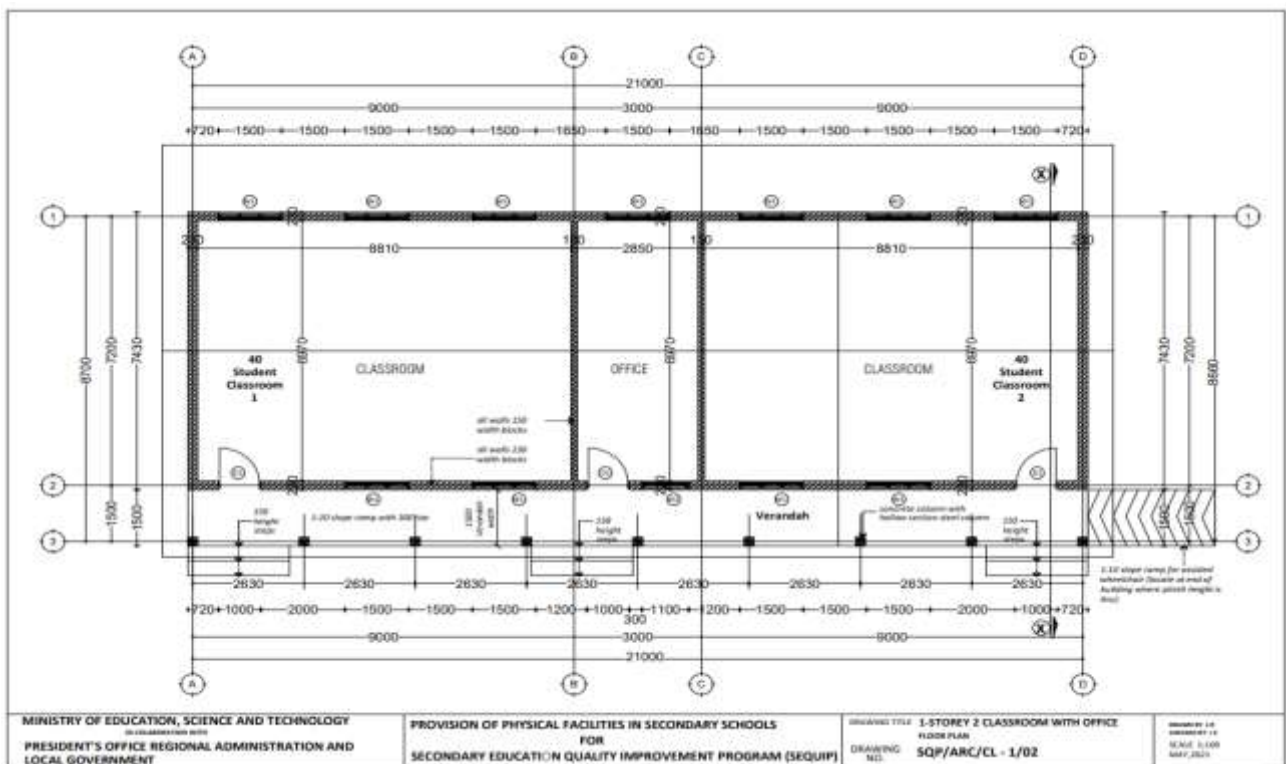


Figure 2-2: Classroom Design

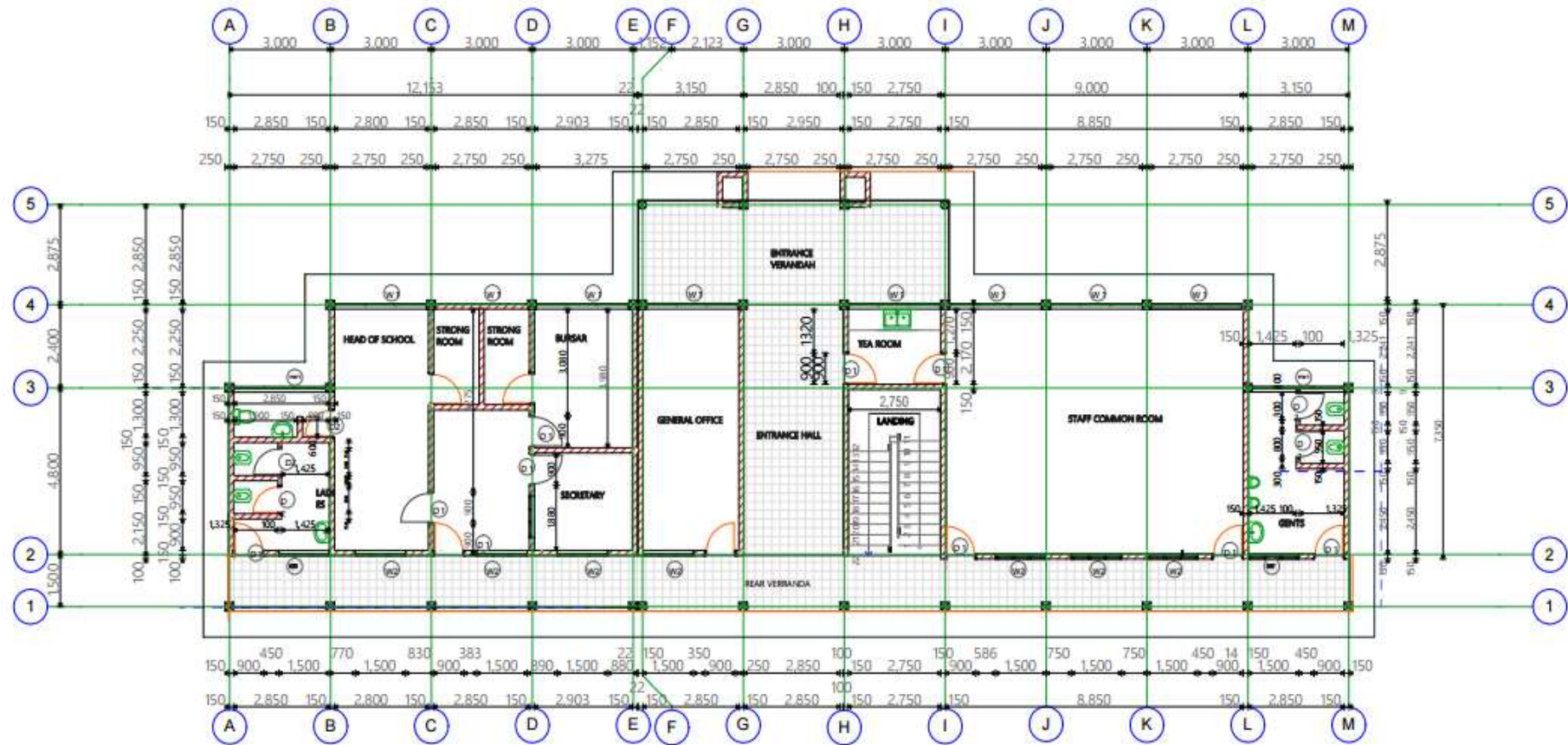


Figure 2-3: Proposed Design for School Administration block

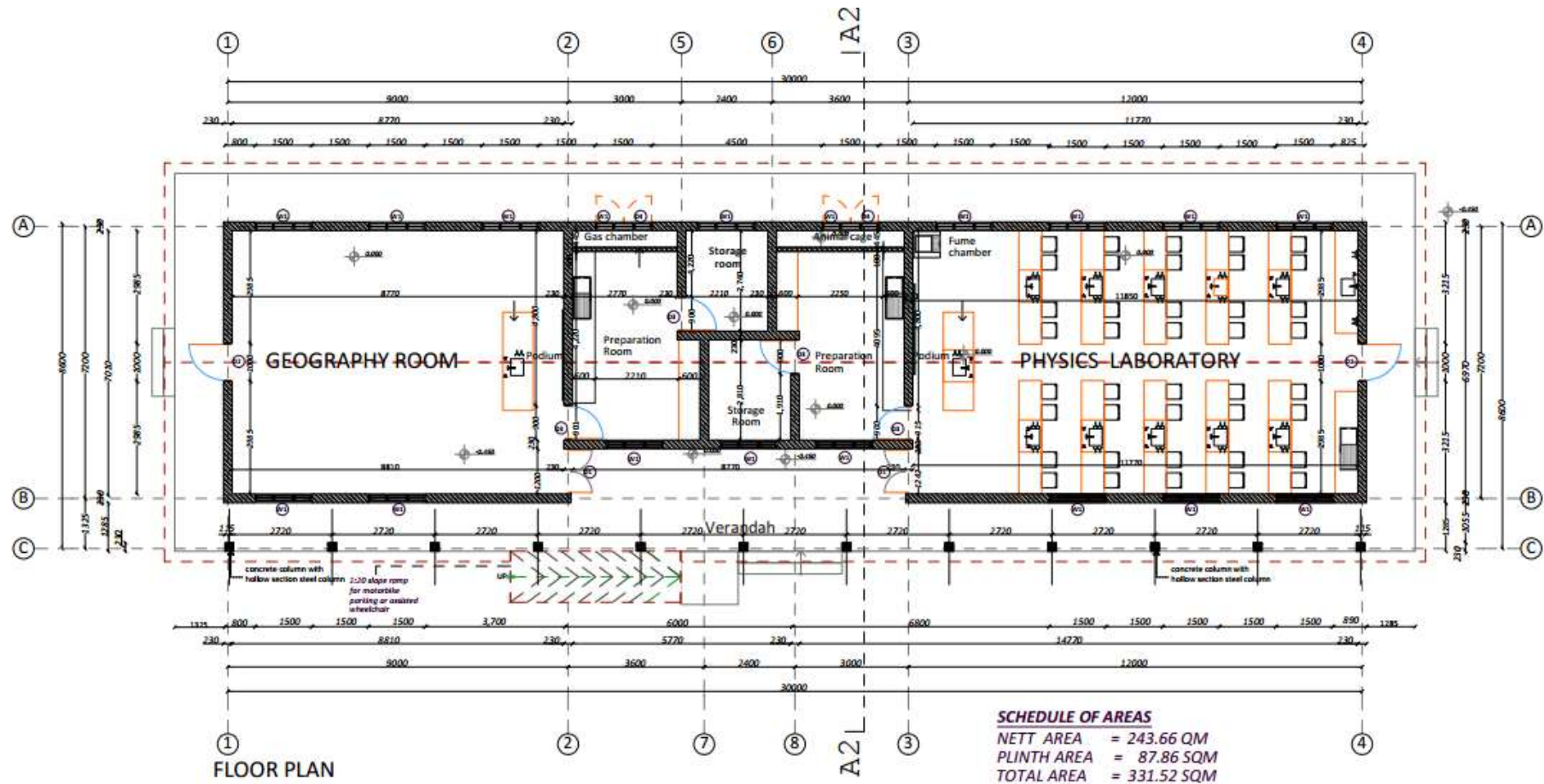


Figure 2-4: Proposed layout of the Laboratory room to be constructed

2.4.3 Laboratories

Education Bulletin number 1 of 2007 explain the capacity and set up of laboratory building for each level is 40 students, The scheduling of materials will adhere the bulletin as required the following laboratory rooms will be constructed

- Physics and geography lab
- Chemistry and biology lab,

Details on design of the laboratory can be accessed through <https://www.tamisemi.go.tz/michoro-ya-ujenzi> and the design layout is shown in Figure 2-4

2.4.4 Administration blocks

The bulletin indicate for the school having capacity of 820 (both boys and girls) student plus need to have not less than 35 teachers excluding other staffs such as school bursar, secretary etc. **Error! Reference source not found.** indicate the administration layout

2.4.5 Toilets

The proposed toilet facility will comprise of one block with 16 holes to be constructed standalone as scheduling shows, nevertheless, some of classrooms will be having sanitary rooms as designed, dormitory, and dining hall will be having sanitary also.

The development of sanitary facilities is necessary to ensure the surrounding environment is well-managed and ensuring social well-being and practical operation of the school since human dignity is directly linked to access of safety and hygienic sanitation.

2.4.6 Generator

This will be alternative source of power at school and the incorporated premises such as staff quarters. One generator will be installed for school uses.

2.4.7 Dining hall

The Dining Hall is a pivotal gathering space on School's campus and is emblematic of The Family Boarding School ideal. The school will be having enough dinning space to all students since it is boarding school, meal will be served. According to the designs of the dining hall, it has the capacity of 2000 students.

2.4.8 Teachers' house

The teachers' houses were designed to attract teachers out to the countryside, as well as to increase teachers morally to perform their duties unlike if they are coming far from the school.

2.4.9 Library

The library is important because it affects cultures, it affects innovation, and it affects individuals. Because of all this, library architecture has the responsibility to enhance these effects by providing a knowledge center that is inspirational and conducive to good communication and teaching interactions.

According to designs, the library to be constructed will accommodate 52 students for readings and the computer learning room will accommodate 8 students.

Other components that will be constructed within school compounds area Water tunnel, Waste incinerators, Water tank (hippo) and its pillars), Manhole and gully trap, Walkway & Paving. **Error! Reference source not found.** show the summary of buildings will be constructed.

Table 2-1: Summary of buildings to be constructed

No	Buildings	No. of Buildings
First construction phase		
1	Classrooms	8
2	Science Laboratories	3
3	Administrative Building	1
4	Library	1
5	ICT Room	1
6	Student Toilets Holes (Boys 10 & Girls 10)	20
7	10,000-liter Water Tanks	2
8	Tank Installation Pole	1
9	Handwashing Infrastructure	1
10	Water Harvesting/Connection	1
Second construction phase		
1	Teacher Houses	2
2	Purchase of ICT Equipment	1





Figure 2-5: Various Facilities to be constructed with the General layout in 3D

2.5 Project Activities

The envisaged project activities can be broadly categorized in three phases as listed in Table 2-2

- Mobilization and Construction
- Operational phase
- Decommissioning phase

Table 2-2: Project activities

Project Phase	Activities
Mobilization Phase	<ul style="list-style-type: none"> • Bush clearing. • Site levelling • Site marking • Temporary camp/shed for office
Construction phase	<ul style="list-style-type: none"> • Excavation of trenches for foundation • Alignment of blocks for Foundation • Concrete mixing • Setting up main door frame and other room door frames • Wall construction until window frame base • Setup ventilators for exhaust fans, bathroom ventilators if needed • Slabs formworks for Floors • Bar bending work for beams and roof • Electric pipes setup inside roof • Clear any blockage in the roof pipes • Laying electric pipes in the walls and setup electric boxes • Tiles laying on the floors and bathroom walls • Plastering of roof and walls indoors and outdoors • Finishing outside and plumbing work and tank • Painting • Electric wiring and switches setup

Project Phase	Activities
	<ul style="list-style-type: none"> • Compound wall/fence • Firefighting system installation • Water drainage system • Air cooling system installation
Operation phase	<ul style="list-style-type: none"> • Teaching services • Movement within classrooms, dining, laboratory, offices and washrooms • Meeting and Conferences • Health, Safety and security as well as social issues.
Decommissioning phase	<ul style="list-style-type: none"> • Expansion and maintenance

2.5.1 Mobilization/pre-construction Activities

The mobilization phase of the project, which took average of maximum three months, entailed the following activities:

- Establishment of construction of camps, material and equipment storage areas, materials processing yards, including sanitation facilities. The following activities will be involved during establishment of the camp.
 - Bush clearing.
 - Construction of Material and equipment storage areas
 - Construction of sanitation facilities
 - Installation of electrical infrastructure
 - Installation of water and wastewater infrastructure
- Identification of sources of construction materials (borrow pits and quarry sites),
- Identification of sources of water for domestic and construction works

2.5.1.1 Materials required during Mobilization Phase

The following materials were required during mobilization phase of the project:

- Cement, sand, and aggregates for block and concrete works
- Water for general construction works and dust abatement
- Timber, galvanized iron sheets, paints, nails, etc. for roofing.
- Electrical works: conduits, cables, fittings
- Cement, galvanized iron sheets, nails, fence wire, electrical and plumbing utilities will mainly be obtained from either Dar es Salaam, while sand, aggregates, and timber will be obtained locally.

2.5.1.2 Equipment Required During Mobilization Phase

The major equipment that were required during mobilization phase of the project included:

- Bull dozers/motor graders, excavators for site clearing, excavation, and grading of the storage facilities construction at site
- Light duty vehicles and trucks for the transport of construction materials, small machines and staff
- Water pumps, block making machines, stationery concrete mixers and trans mixers, etc. for making of blocks and concrete mixes for concrete works
- Electric power generator(s)

2.5.1.3 Waste Generated During Mobilization Phase

Mobilization phase of the project generated waste as shown in **Error! Reference source not found.**

Table 2-3: Waste likely to be generated During Mobilization Phase

Aspect	Solid Waste	Liquid Waste	Gaseous Waste
Site clearing and excavation	Earth, green cutting	None	Generation of air pollutants (dust)
Construction of foundation(s): block/concrete works	Concrete, blocks, hessian cement bags	Water slurry, wash-down water	None
Construction of the main Storage room	Cement bags, mortar, steel reinforcements, nails, timber, iron sheet waste, etc.	Concrete slurry	Paint
Installation of electrical infrastructure	conduit pipes, cables	None	None
Installation of water infrastructure	PVC and GS pipes	None	None
Labour force	Plastic bottles/ bags, food waste	Sanitary waste	None
Servicing of construction equipment	Used batteries, used tyres, used metals parts, used oil and fuel filters, empty oil drums	Waste oil	None

2.5.1.4 Treatment and Disposal of Waste Generated During Mobilization Phase

The treatment methods for the waste generated during mobilization phase shall be based on re- using, re-cycling, burying, or burning, and on-site treatment.

- During site clearing, top soil and green cutting were disposed of in old borrow pits or other areas approved by the Engineer
- Concrete and cement blocks waste were disposed of in borrow pits during their reinstatement as approved by the Engineer.
- Metal waste such as GS pipes, nails, reinforcement bars, and used equipment parts were disposed of by recycling. They were collected and stored; until enough quantities were obtained before being disposed of by the Contractor. The Engineer approved the metal scraps disposing companies.
- Degradable materials such as paper cement bags and paper boxes were treated on site by controlled burning.
- Non degradable waste such as plastic, PVC pipes, and plastic bottles were collected and transported and given freely to plastic factories where they will be recycled.
- Used batteries, empty metals drums, used oil filters were disposed of through approved disposing companies.
- Temporary pit latrines were constructed at active mobilization sites (campsites) for the disposal of sanitary waste.

2.5.2 Construction Phase

The construction phase of the project, which is estimated to take 12 months for each of the phase one encompassed following major activities:

- Earth works to facilitate widening and re-alignment of the road. Earth works entailed the following activities that were clearing and grubbing (clearing of vegetation, including trees).
- Extraction of naturally occurring construction materials. This included:
 - a) Excavation and transport of natural sand, gravel, and sub-base materials to construction sites
 - b) Stone quarrying (including blasting), crushing and transport of crushed aggregates to construction sites
 - c) Transport and handling of fuel, lubricants etc. from their sources to the project site
- Transport of construction materials from source to site such as roof, steel, woods, nails, rope,

2.5.2.1 Materials Required During Construction Phase

During the project construction, the following materials (Table 2-4) were required:

Table 2-4: Materials required During Construction Phase

SN	Material	Usage	Possible Source
1.	Ordinary Portland Cement (OPC) and Pozollana Portland Cement (PPC)	For construction purposes.	Twiga cement (Dar es salaam), Tanga cement (Tanga), and Mbeya cement (Mbeya)
2.	Sand	Production of mortar and general concrete works	Stone crusher dust and sand pits (to be established by Contractors)
3.	Crushed aggregate	Concrete works (Structural works) and construction	Local available
4.	Steel reinforcement bars	Reinforced concrete works construction of structures,	Kagera /imported
5.	Steel shutters and form works	Concrete works	Kagera
6.	Soft timber	Production of timber formworks and shutters	Locally
7.	Nails	Nails for fixing timber form works	Kagera
8	Water	Drinking, concrete works, dust suppression	KUWASA

2.5.2.2 Waste Generated During Construction Phase

The waste generated during construction phase of the project resulted from operation of construction and equipment maintenance. The waste that were generated during construction phase of the project are shown in Table 2-5.

Construction process of school buildings will generate different type of wastes that include food waste, plastic bags and residual for construction materials such as broken blocks. This is estimated to 856kg per week which were estimated by using standard generation rate 1.1kg/capita/day which depends on number of people at the site and activities taking place.

Table 2-5: Waste generated during construction phase

Aspect	Solid Waste	Liquid Waste	Gaseous Waste	Hazardous Waste
Operations of Campsite				
	Paper	Sanitary waste	-	-
	Litter	-	-	-
	Toner, cartridges	-	-	-
	Paper litter	Sanitary waste	-	-
	Plastic bottles/bags	-	-	-
	Aluminium cans	-	-	-
	Food waste	-		
				Biohazard waste (medical waste)
Machinery and equipment Maintenance				
	Plastic and glass (containers), used tires, metal (used parts), plastic and cable parts, used lead-acid batteries,	Waste oil and grease, battery acid (dilute] sulphuric acid)	-	Gases that are compressed, liquefied, or dissolved under Pressure may be hazardous. Flammable liquids including oil, grease and petroleum compounds are also hazardous. Used lead-acid batteries, plastic containers
	-	Lubricant, coolants (radiator fluid), hydraulic fluid, waste water)	-	Lubricants, hydraulic fluid

2.5.2.3 Treatment and Disposal of Waste Generated During Construction Phase

The treatment methods for the waste generated during construction phase depended on whether they are degradable, non-degradable, hazardous, or non-hazardous. Depending on the nature of the waste, the waste either were re-used, re-cycled, buried, or burnt.

2.5.3 Operation phase

The maintenance activities of the Overall, SEQUIP will contribute to increasing total enrolment in secondary school by 1.8 million students and increase the number of girls and boys graduating from both secondary schools and alternative secondary education pathways.

2.5.3.1 Material required during operation phase

Material required during the operation phase will include tables and chairs, books, chalks, a printing and photocopy machine, laboratory equipment and specimens, utilities, beds, first aid kits.

2.5.3.2 Wastes generated during operation phase

The waste generated during the operation phase of the project is a result of different activities taking place during the operational phase of the project. The waste generated during the project's operation phase are

- solid waste from the dining hall, kitchen, classroom, office,
- liquid waste from sanitary facilities, canteens, and kitchens
- Hazardous waste such as sanitary pads

2.5.4 Decommissioning Phase

After completion of construction, all the utilities that were used shall be reverted to the Municipal Director who will decide on their future use. The main activities during demobilization phase will engross the following:

- Collection and disposal of storage facilities such as pallets, packing, boxes
- Collection and disposal of construction materials and waste such as waste oil, sewage, solid waste (plastics, wood, metal, papers, etc.) at the workshop, site office etc. to authorized dumpsite
- Restoration of material borrows areas to safer condition.

2.5.4.1 Materials required During Demobilization Phase

Materials required during demobilization phase will include fuel for the operation of equipment, soils and tree seedlings for reinstatement of borrow pits. During this phase, labour, water, and energy will also be required.

2.5.4.2 Equipment Required During Demobilization Phase

The equipment required during demobilization phase will include vehicles and trucks for transport of waste.

2.5.4.3 Waste Generated During Demobilization Phase

The following waste will be generated during demobilization phase of the project:

- Hazardous waste such as used lubricants (oil and grease), empty plastic bottles, etc.
- Plastic and paper packing
- Used equipment parts

2.5.4.4 Treatment and Disposal of Waste Generated During Demobilization Phase

The treatment methods for the waste generated during construction phase will depend on whether they are degradable, non-degradable, hazardous, or non-hazardous. Depending on the nature of the waste, the waste will either be re-used, re-cycled, buried, or burnt.

2.5.4.5 Lifespan of the project

The Project Lifecycle is the sequence of phases through which a project progresses. It includes initiation, planning, execution, and closure therefore this project will take 12 months. Nevertheless, with reference to

construction schedule and material life span such as steel bricks the project life time will be 50 years followed by maintenance.

2.5.4.6 Decommissioning of Individual Components of the Project

Individual components of the project may be rendered redundant due to wear and tear or become obsolete due to technological advancement.

These shall be removed after an environmental audit is conducted and a device appropriate environmentally friendly way (Environmental Management Plan, EMP) to deal with them. Emphasis shall be on repairing so that parts can be reused or recycled of materials from defunct components to salvage important metals.

2.6 Environmental and Social Management Framework

The ESF instruments that have been prepared for SEQUIP incorporate measures for project site Selection and to ensure designs and school construction align with the ESF requirements.

It has been agreed that civil works will follow building standards acceptable to the World Bank and required under the ESF; taking into account structural safety, universal access, changes in the standard drawings, water source availability and quality, efficient use of materials (wood) to reduce pressure on natural resources, Water and Sanitation for Health (WASH) and solid waste management at the schools, among other risks identified as part of the due diligence process. Site selection for school construction is very important to avoid possible direct and indirect environmental and social impacts and lack of water sources for construction and during operation.

2.6.1 Health and Safety

As the ESMF directives, the campaign has been conducted with the utmost regards for occupational health and safety requirements of local authorities, management system, and of recognized industry standards. As a rule, all activities that present a risk to employees, contractors, and or neighboring communities are planned, and controls are implemented to limit exposure.

In addition, a Permit to Work system is in effect for risk-specific activities that is working at height. All EHS incidents, observations, near misses, etc. will be reported and investigated to prevent recurrence during construction phase and the proper way of reporting and registration during the operation phase will be employed as well. Regular emergency evacuation drills will be connected to test the training and response capacity of the workforce at the site during all phases of the project.

Occupational health and safety issues for further consideration in multi-storey office building construction and operation phases includes Fire and collapse and Slippery

2.6.1.1 Fire

The project shall be designed, constructed, and operated according to standards for the prevention and control of fire hazards.

The most effective way of preventing fires is to avoid any source of fires inside the building, store reasonable weight of equipment and instruments at the top floor of the building such as water storage tanks should be designed according to the construction standards and considering building materials such as fire detector alarms should be placed in all buildings.

2.6.1.2 Collapse.

The result analysis showed that the major factors responsible for building collapse are usage of substandard building materials, non-involvement of relevant and qualified professionals, defective design, and poor maintenance culture Poor Workmanship/Supervision Natural Occurrences.

The remedies to mitigate the problems are but not limited to The professional bodies which through their government regulatory bodies, need to ensure effective monitoring to control quackery and ensure violators are punished, building and construction permit should also be adhered and lastly ensuring the use of professional people during construction etc.

2.7 Project Associated Facilities

In ESMP depending on the characteristics of the proposed project, each element of a project should be analyzed for its potential to affect the environment and/or society during each phase of the project (including construction, operation, and decommissioning).

ESMP address a project's environmental and social costs and benefits, including an appraisal of the economic implications of the proposed project. The ESMP should consider the project as designed, in addition to potential alternative options (including that of no action).

In addition to the direct effects outlined above, the possible interactions between different environmental components (indirect effects) should also be considered, together with the impacts that could occur in conjunction with other activities taking place in the near vicinity at the same time (cumulative effects). The construction of school in Kagera region, Karagwe district has identified the following activities in the category of associated facilities.

- Utilities (water and electricity)
- Access roads
- Parking area
- Water channels for storm water

2.7.1 Access Roads

The development of access roads is necessary providing access to staff and students within the school during operation due to the landscape of the area. Access route design must consider several factors, including existing ground strength, expected weather condition and the area's landscape).

2.7.2 Utilities Systems (water and energy)

2.7.2.1 Power Plants

The proposed project will use electricity from the National Grid (TANESCO), whereas the municipal is responsible for pulling the electrical wires to the respective project site and installation within the school premises.

2.7.2.2 Water Supply

Water was required for construction activities such as concrete works, earthworks, lying of some of the pavement layers, dust suppression, as well as for domestic purposes at the camps. Water for construction

works was obtained from KUWASA. School will also adopt rain harvest so as ensure availability of water within the school compound during operation.

The amount of water required during construction of the project is estimated to be 18,000litres per day and during operation is yet to be established.

2.7.3 Water channels for storm water

The development of water channels for storm water is necessary preventing water accumulation within the school compounds and easier movement and prevent water accumulation within the school premises due to the landscape of the site area.

2.7.4 Parking area

The development of parking areas is necessary for the project implementation to avoid congestion problems for inhabitants of neighboring properties and ensure safety issues for visitors and staff.

2.8 Manpower

Both skilled and unskilled labor are required in the mobilization and construction phase of the project, which will include: Civil Engineers for construction activities and Manual workers are needed for caring sand, gravels, cement, bricks and other related activities at the project site.

During operation phase of the proposed school the following will be recruited for daily activities in order to run the school smoothly; teachers, librarians, laboratory technicians, Cooks, Matrons, Security officers and; other staff for various activities required for operation of a boarding school.

2.9 Project Cost

Total Project Cost is four billion Tanzanian shillings

3 POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

3.1 Introduction

The objective of this chapter is to describe the policy, legal and administrative framework within which the project takes place and identify any laws and regulations that pertain to environmental and social matters relevant to the project. This includes regulations about environmental and/or social impact to which the project must adhere as well as laws implementing host country obligations under international law. Explain the requirements of any co-financing partners, if applicable. Where pertinent, take into account legal frameworks for promoting gender equality. Flag any areas where the project might fall short on compliance.

3.2 The Constitution of Tanzania, 1977-1995 (as revised)

The Constitution of the United Republic of Tanzania 1977 - 1995 (revised 1997) recognizes the basic rights and equality entitled, without any discrimination, protection, and equality of all persons before the law. The United Republic of Tanzania is committed to the conservation of the country's natural environment as is evident through the Constitution and various Mission Statements.

Article 21 of the Constitution reads:

- “Take part in matters related to governance of the country, every citizen of the United Republic is entitled to take part in matters pertaining to the governance of the country, either directly or through representatives freely elected by the people, in conformity with the procedures laid down by, or in accordance with, the law.
- “Every citizen has the right and the freedom to participate fully in the process leading to the decision on matters affecting him, his well-being or the nation.”
- Article 24 of the Constitution reads:
- “Subject to the provisions of the relevant laws of the land, every person is entitled to own property, and has a right to the protection of his property held in accordance with law.”
- Article 27 of the Constitution reads:
- “Every person has the duty to protect the natural resources of the United Republic, the property of the state authority, all property collectively owned by the people, and also to respect another person's property.”
- “All persons shall be required by law to safeguard the property of the state authority and all property collectively owned by the people, to combat all forms of waste and squander, and to manage the national economy assiduously with the attitude of people who are masters of the destiny of their nation.”

3.3 National Development Vision 2025 and National Five-Year Development Plan 2021/22–2025/26

This third national five-year development plan (FYDP III) for the period 2021/2026 is a nationwide multisector document aiming at achieving the goals set in the national development vision 2025.

To increase the resilience of livelihoods to disasters, main interventions shall be:

- (i) strengthen environmental conservation and protection to mitigate adverse effects of climate change
- (ii) social development, including health and education, human settlements, clean and safe water, and environment, paying attention to equitable access, gender and people with disabilities
- (iii) strengthen sustainable use and management of oil and natural gas
- (iv) develop renewable energy sources for cooking to mitigate climate change
- (v) conserve marine and freshwater fisheries protected areas
- (vi) develop and implement strategies to combat poaching, illegal trade and illegal harvesting of wildlife, forest, bee and antiquities resources in the country
- (vii) promote biodiversity conservation;
- (viii) develop climate change adaptation and impacts mitigation measures and reduce land degradation;

- (ix) minimize environmental pollution and resultant adverse effects on the environment and human health;
- (x) establish programs and mechanisms for management, monitoring and assessment of water and wastewater quality
- (xi) Strengthen conservation and protection programs of water resources and water sources.

3.4 Relevant Policies

3.4.1 National Environmental Policy (2021)

The overarching governing Tanzania's environmental management are the National Environmental Policy (NEP) of 2021 and the Environmental Management Act (EMA) of 2004.

This Policy is a supreme national framework for environmental management in the country. It recognizes the role of sectoral policies in pursuit of effective environmental conservation and sustainable socio-economic development. In view of that, the envisioned achievements of this Policy depend on mainstreaming and implementation of relevant environmental measures in the respective sectoral policies.

The Overall Objective of this policy is to provide a national framework for guiding harmonized and coordinated environmental management for the improvement of the welfare of present and future generations.

3.4.2 Education and Training Policy 2014

This Education and Training Policy of 2014 is the result of the revitalization and finally the cancellation of the Education and Training Policy (1995), Policy on Vocational Education and Training (1996), Policy on National Higher Education (1999) and Information Technology Policy and Communication for Primary Education (2007). The vision of this policy is having an educated Tanzanian with knowledge, skills, competencies, abilities and positive attitudes to be able to contribute in bringing about the development of the Nation.

The specific objectives of the Policy are to have:

- System, structures and flexible procedures to enable Tanzanians develop themselves in various ways in academic and professional streams;
- Education and training with quality standards recognized nationally, regionally and internationally;
- Availability of various educational opportunities and training in the country;
- Increase of human resources according to priorities of the Nation;
- Effective management and operation of education and training in the country;
- Sustainable education funding system and training in the country; and
- Education and training system based on issues cross

3.4.3 The National Research and Development Policy

These policies focused on the promotion of the private sector as a major contributor to the national economy, singly or through public-private partnership. The increasingly globalized world requires nations to create an enabling environment that will facilitate active participation of the private sector in improving their respective economies.

3.4.4 ICT Policy for Basic Education 2007

The achievement of the objectives of Tanzania's education policies and education development programmes. As stated in the education policy of 1995, the overall aims of education in Tanzania are, among other things:

“To promote the acquisition and appropriate use of literary, social, scientific, vocational, technological, professional and other forms of knowledge, skills and understanding for the development and improvement of man and society.”

In 2001, the education sector development programme (ESDP) was launched, to realize the objectives of education policies by addressing critical issues, including ICT. The main objectives of this programme include: to decentralize management of educational institutions; to improve the quality of education, both formal and non-formal; to promote access and equity to basic education; and to promote science and technology. Special mention is made of the need to improve and expand girls' education, to ensure access to education by special social and cultural groups, to give appropriate education to children with disabilities, and to provide education facilities to disadvantaged areas.

3.4.5 National Biotechnology Policy

The general objective of this policy is to ensure that Tanzania has the capacity and capability to capture the proven benefits arising from health, agriculture, industry and environmental applications of biotechnology while protecting and sustaining the safety of the community and the environment.

3.4.6 National Gender Policy

The key objective of this policy is to provide guidelines that will ensure that gender sensitive plans and strategies are developed in all sectors and institutions. While the policy aims at establishing strategies to eradicate poverty, it puts emphasis on gender quality and equal opportunity of both men and women to participate in development undertakings and to value the role-played by each member of society.

3.4.7 Cultural Policy, 1997

Section 3.2.1 of the Cultural Policy stipulates that “all land development shall be preceded by Cultural Resource Impact studies. Furthermore, Section 3.1.5 states that “mechanisms shall be established to enable the nation to identify, own and preserve national treasures e.g. art, objects, natural resources minerals as well as archaeological, paleontological and botanical remains”.

3.4.8 The Wildlife Policy of Tanzania, 2007

The Ministry of Natural Resources and Tourism is charged with formulating a wildlife policy, overseeing its administration, and coordinating the development of the wildlife sector in Tanzania. The vision of the wildlife sector for the next twenty (20) years conforms to the Development Vision 2025 for Tanzania on environmental sustainability and socio-economic transformation.

The vision for the wildlife sector is to:

- Promote conservation of biological diversity,
- administer, regulate and develop wildlife resources,
- involve all stakeholders in wildlife conservation and sustainable utilization, as well as in fair and equitable sharing of benefits,

- promote sustainable utilization of wildlife resources,
- raise the contribution of the wildlife sector to the country's Gross Domestic Product (GDP) from about 2% to 5%,
- contribute to poverty alleviation and improve the quality of life of the people of Tanzania, and,
- promote exchange of relevant information and expertise nationally, regionally and internationally,

3.4.9 Antiquities Policy of 2008

Antiquities Policy 2008 section defines Physical Cultural Resources as any tangible material that represent contemporary, historic, and pre-historic human life ways. Section 2. 1 of the Antiquities Policy points out that already discovered Physical Cultural Resources shall be preserved and conserved in the National Museum of Tanzania as stipulated in Museum Act of 1980.

Furthermore, the Antiquities Policy of 2008 sections 4.2.1 to 6 elaborates on how stakeholders including government institutions, private sectors and the public should be involved in all activities of conservation and management of Physical Cultural Resources.

3.4.10 National Forest Policy, 1998

The overall goal of the National Forest Policy (1998) is to enhance the contribution of the forest sector to the sustainable development of Tanzania and the conservation and management of her natural resources for the benefit of present and future generations.

The Policy, among other aspects, recognizes the high value of forests due to the high potential for royalty collection, export, and tourism earnings as well as the recycling and sequestering of carbon and conservation of globally important biodiversity.

Furthermore, the policy emphasizes on biodiversity conservation; describes the importance of forest ecosystems for maintaining biodiversity and the threats to biodiversity. One of the main objectives envisaged in the policy focuses on ensured ecosystem stability through conservation of forest biodiversity, water catchments, and soil fertility.

3.4.11 National Water Policy, 2002

The main objective of the Policy is to develop a comprehensive framework for sustainable development and management of the nation's water resources. Specifically, on the environment the objective is to have a water management system that protects the environment, ecological system, and biodiversity. The policy emphasizes that water related activities will have to be planned to enhance or to cause least detrimental effects on the environment.

To protect ecological systems and biodiversity which, together, are important part of sustainable water resources system the policy provides a guide for determining water for the environment, in terms of quantity and quality, and levels, for both surface and groundwater resource.

The policy emphasizes the use of best available scientific information for both temporal and spatial water requirements to maintain the health and viability of riverine and estuary ecosystems, and associated flora and fauna. Public awareness on good land-use practices is insisted to contain the erosion problem.

3.4.12 Sustainable Industrial Development Policy, 1996 (SIDP)

The Policy provides for sound environmental management to ensure promotion of environmentally friendly and ecologically sustainable industrial development. The Policy insists that environmental audit and appropriate mitigation measures should be enforced for all industrial projects at pre-implementation stage.

- To ensure industrial development activities that are environmentally sound and ecologically sustainable, this policy stipulates the following conditions:
- The government will ensure adequate awareness among the public of environmental issues, which includes the right of people to a safe environment, land and wildlife conservation.
- The Tanzania Investment Act (1997), No. 7 will provide clear mechanisms for promoting investments that embody antipollution initiatives.
- EIA and appropriate mitigation measures will be incorporated and enforced for all projects.

The policy also recognizes the private sector as a principal vehicle in carrying out direct investment in industry, the government commits to putting in place an environmental protection regime that will attract private sector investment.

3.4.13 National Energy Policy, 2003

The Policy, among others, focuses on utilization of various energy resources in a sustainable and environmentally friendly manner. The Policy recognizes that energy is a prerequisite for the proper functioning of all sub-sectors of the economy.

The Policy stresses the use of renewable and alternative energy sources such as wind, solar, and mini-hydropower generators and use of liquefied petroleum gas (LPG) as well as natural gas. The use of alternative energy sources such as biogas, briquettes both for domestic and industrial uses is encouraged to minimize the use of charcoal and firewood to prevent massive deforestation.

3.4.14 National Transport Policy, 2003

The main objective of this Policy is to enhance transport systems and promote environmental protection. The mission is to develop safe, reliable, effective, efficient and fully integrated transport infrastructure and operations that was to meet the needs of travel and transport by improving levels of services at lower costs.

Ultimately, the development of a reliable transport network should drive human development in a manner that is economically and environmentally sustainable.

3.4.15 Construction Industry Policy, 2003

The Construction Industry Policy is a deliberate and managed process to improve the capacity and effectiveness of the construction industry to meet the national economic demand for buildings and other physical infrastructure facilities. The Policy is aimed at meeting the goals of the National Development Vision 2025.

The objectives of the Policy include:

- a. To improve the capacity and competitiveness of the local construction enterprises (Contractors, consultants and informal sector);
- b. To develop an efficient and self-sustaining roads network that is capable of meeting the diverse needs for construction, rehabilitation and maintenance of civil works for trunk, regional, district and feeder roads network;

- c. To improve the capacity and performance of the public sector and private sector clients so as to ensure efficient, transparent and effective implementation and management of construction projects; and

To ensure application of practices, technologies and products which are not harmful to both the environment and human health

3.4.16 National Health Policy, 2007

The overall objective of the National Health Policy, 2007 is to improve the health and well-being of all Tanzanians. In line with environmental health, Policy seeks to protect community health by enhancing sustainable environmental health.

The Policy emphasizes on community adherence to environmental health standards; Improvement of waste management systems including disposal of hospital waste; educating health service providers on the importance of environmental health in their working areas and putting in place laws and procedures for conservation and protection of the environment in the health sector.

3.4.17 Occupational Health and Safety Policy 2008

The main objectives of OHS Policy are to reduce the number of work-related accidents and diseases in Tanzania. This required the adoption and implementation of a culture to prevent OHS hazards by Government, Employers and Employees. The effective prevention of work - related accidents and ill- health will have enormous social and economic benefits. These include improvements in productivity and competitiveness and the quality of life of the working population.

The effective management of many safety hazards will contribute to improved levels of public health and safety. The effective control at source in workplaces of hazardous substances will improve levels of public health and minimize environmental pollution the policy emphasizes on Sustainable safe and healthy working conditions and environment at all workplaces for the entire diversity of the workforce contributing to broad based economic growth.

3.4.18 National Water Policy, 2002

The main objective of the Policy is to develop a comprehensive framework for sustainable development and management of the nation's water resources. Specifically, on the environment the objective is to have a water management system that protects the environment, ecological system, and biodiversity.

The policy emphasizes that water related activities will have to be planned to enhance or to cause least detrimental effects on the environment. To protect ecological systems and biodiversity which, together, are important part of sustainable water resources system the policy provides a guide for determining water for the environment, in terms of quantity and quality, and levels, for both surface and groundwater resource.

The policy emphasizes the use of best available scientific information for both temporal and spatial water requirements to maintain the health and viability of riverine and estuary ecosystems, and associated flora and fauna. Public awareness on good land-use practices is insisted to contain the erosion problem.

3.4.19 National Land Policy, 1995

The National Land Policy of 1995 aims at developing a coherent and comprehensive framework that defines land tenure and enables proper management and allocation of land in urban and rural areas.

Among other things, the Policy advocates the protection of land resources from degradation, for sustainable development. The policy addresses several environmental issues such as land use planning, which take into consideration the land capability, ensures proper management of land resources, promotes resource sharing and multiple land use techniques in areas of conflicting land use, and involve community in resource management, land use and conflict resolution.

3.4.20 National Human Settlements Development Policy, 2000

The Policy stresses on the need for ensuring that human settlements are kept clean and pollution effects of solid and liquid waste do not endanger the health of residents. The policy advocates for a set of environmental quality standards of gaseous emissions from industries and vehicles. This has to be ensured during the construction phase so as to ensure no environmental pollution to the surrounding community.

3.4.21 The Tanzania Development Vision, 2025 and The five years Development Plan 2021-2025

Tanzania's development aspirations are outlined in the Tanzania Development Vision 2025 (TDV 2025) which was developed in the late 1990s to guide economic and social development efforts up to the year 2025. Targets

1. Transforming Tanzania into a middle-income country, imbued with five main national attributes:
 - a) High quality livelihood;
 - b) Peace, stability and unity;
 - c) Good governance;
 - d) A well-educated and learning society; and
 - e) A competitive economy capable of producing sustainable growth and shared benefits.
2. Transforming the economy from a predominantly agricultural one to a diversified and semi-industrialized economy with a substantial industrial sector comparable to typical middle-income countries.

The original plan to implement Vision 2025 through five-year development plans (FYDPs) was sidelined by Heavily Indebted Poor Countries (HIPC) process. Qualifying for debt relief under HIPC required the Preparation of Poverty Reduction Strategy Papers (PRSPs), which focused on delivery of social sectors. Subsequent acceptance of the importance of "growth" as a basis for stimulating the capacity to finance social services and reducing aid dependence led to the emergence, in 2005, of the National Strategy for Growth and Poverty Reduction commonly known as MKUKUTA I, followed by MKUKUTA II in 2010

3.4.22 National HIV/AIDS Policy (2001)

The overall goal of this policy is to provide for a framework for leadership and coordination of the national multi-sectoral response to the HIV/AIDS pandemic. This includes the formulation by all sectors of appropriate interventions which will be effective in preventing transmission of HIV/AIDS and other sexually transmitted infections, protecting and supporting vulnerable groups, and mitigating the social and economic impacts of HIV/AIDS. For project sustainability TAMISEMI will have to closely observe the above policy.

3.4.23 National Economic Empowerment Policy (2004)

The policy is intended to address economic empowerment needs of the individual citizens of Tanzania and local companies. The policy takes on board all economic actors including farmers, livestock keepers, fishermen, employees, traders as well as other groups of individuals in various economic activities.

The policy puts in place the general guidelines for formulation of strategies to be used by respective sectors depending on the prevailing circumstances. In this respect, each sector is enjoined to come up with concrete implementation strategies. As this policy touches the education sector which this project has a bearing. Hence, education availability by constructing schools in each Tanzania region will play a key role in this case.

3.4.24 National Employment Policy (2008)

The major aim of this policy is to stimulate national productivity, to attain full, gainful and freely chosen productive employment, in order to reduce unemployment, underemployment rates and enhance labour productivity. Relevant sections of this policy are (i) accelerating and making the pattern of economic growth more employment intensive ii) Balancing the number of new entrants and the proportion that can get paid employment iii) Improvement and Transformation of the Informal Sector for creating decent jobs iv) Enhancing the promotion of youth employment v) Reducing rural unemployment and underemployment and rural to urban migration. This project implementation will enable to meet the objective in various sections of the policy as in all phases of the project implementation recruitment of labour force is required.

3.5 Legal Framework

3.5.1 Environmental Management Act (2004)

The Environmental Management Act No. 20 of 2004 is the principal legislation governing environmental management in the country. The Environmental Management Act (EMA) recognizes "...the right of every citizen to a clean, safe and healthy environment, and the right of access to environmental resources for recreational, educational, health, spiritual, cultural and economic purposes."

Thus, the EMA "provides a legal framework for coordinating harmonious and conflicting activities by integrating those activities into overall sustainable environmental management systems by providing key technical support to Sector Ministries."

Section 81, subsection 1 in Part VI of the EMA requires a project proponent or developer to undertake an Environmental Impact Assessment (EIA) at his/her own cost prior to commencement or financing of a project or undertaking. The EMA prohibits any development to be initiated without an Environmental Impact Assessment (EIA) Certificate. ARA through undertaking this study complies with the requirement of the law.

3.5.2 Water Resource Management Act, 2009

The Water Resource Management Act 2009 is a new principal legislation dealing with the protection of water resources and control of water extraction for different uses. According to section 39 (1) of this act, owner or occupier of land on which any activity or process is or was performed or undertaken, or any other situation exists which causes has caused or is likely to cause pollution of a water source, shall take all reasonable measures to prevent any such pollution from occurring, continuing or recurring. It is stated under section 39 (2) that a Basin Water Board may direct any person who fails to take the measures required under subsection (1) to:

(a) Commence taking measures before a given date;

- (b) Diligently continue with those measures; and
- (c) Complete the measures before a given date.

Section 40 (1) states that where a person fails to comply or comply inadequately with a directive given under Section 39 (2), the Basin Water Board may take measures as it considers necessary to remedy the situation.

Section 40 (2) provide that a Basin Water Board may recover all reasonable and justifiable costs incurred because of the Board acting under subsection (1) jointly and severally from the following persons:

- (a) Any person who is or was responsible for, or who directly or indirectly contributed to, the pollution or the potential pollution.
- (b) The owner and or occupier of the land at the time when the pollution or potential for pollution occurred; and
- (c) Any person who negligently failed to prevent the activity or process being performed or undertaken or the pollution or potential for pollution occurring.

Section (3) gives that where more than one person is liable in terms of subsection (2), the Basin Water Board shall, at the request of any of those persons, and after giving the opportunity to be heard, apportion the liability, but such apportionment shall not relieve any of them of their joint and several liabilities for the full amount of the costs.

Section (2) provide more that the responsible person, any other person involved in the incident or any person with knowledge of the incident must, as soon as is practicable after obtaining knowledge of the incident, report the incident to the Basin Water Board or any public officer and a responsible person shall:

- (a) Take all reasonable measures to contain and minimize the effects of the incident.
- (b) Undertake clean-up procedures; and
- (c) Take such measures as the Basin Water Board may verbally or in writing direct, and any verbal directions shall be confirmed in writing within fourteen days to have effect under this subsection.

3.5.3 The Land Act, [Cap. 113 R. E. 2019]

The Land Act, provides basic legal requirements in relation to land other than village land (see Village Land Act, 1999 below), the management of land, settlement of disputes and related matters.

The following are some of the main principals of the Land Act:

- To recognize that all land in Tanzania is public land vested in the President as trustee on behalf of all citizens;
- To ensure that existing rights in and recognized long standing occupation or use of land are clarified and secured by the law;
- To facilitate an equitable distribution of and access to land by all citizens;
- To regulate the amount of land that any one person or corporate body may occupy or use;
- To ensure that land is used productively and that any such use complies with the principles of sustainable development;
- To consider that an interest in land has value and that value is taken into consideration in any transaction affecting that interest; and
- To pay full, fair and prompt compensation to any person whose right of occupancy or recognized long-standing occupation or customary use of land is revoked or otherwise interfered with to their detriment by the state under this Act or is acquired under the Land Acquisition Act;

Importantly, provided that in assessing compensation for land acquired in the manner provided for in this Act, the compensation shall be based on the following:

- Market value of the real property;
- Disturbance allowance;
- Transport allowance;
- Loss of profits or accommodation;
- Any other cost, loss or capital expenditure incurred with respect to the development of the subject land; and
- Interest at market rate.

Section 156 of the Act, which applies to non-governmental corporate bodies, institutions or groups of persons, requires compensation to be paid to any person for the use of land of which they are in lawful or actual occupation. These include:

- Any damage suffered in respect of trees, crops, and buildings as result of the creation of a way leave; and
- Damage due to preliminary work undertaken in connection with surveying or determining the route of that way leave.

It is the duty of the Government Department or the Ministry, local or public authority or corporate body that applied for the way leave to pay the compensation.

3.5.4 The Village Land Act, [Cap 114 R. E. 2019]

The Village Land Act, of 2019 provides for the management and administration of land and matters related thereto in specifically villages. The Village Land Act (in addition to the Land Act) have set clear procedures for compensation while acquiring Land from citizens.

3.5.5 The Land (Compensation Claims) Regulations 2001

The Land Regulations 2001 were promulgated in terms of the Land Act, Act No. 4 of 1999 sections 12 & 179. The form of compensation is stipulated in Section 10 (1) of the Land Regulations 2001. Furthermore, the Regulations list the entities that are eligible for compensation and/or resettlement.

If the person does not agree with the amount or method of payment or is dissatisfied with the time taken to pay compensation, he /she may apply to the High Court. The High Court shall determine the amount and method of payment and determine any additional costs for inconveniences incurred.

3.5.6 Forest Act, 2002

The Forest Act, Act No. 14 of 2002 provides regulations for the classification, conservation, management, and trade of forest products. The Act aims to among other things “promote, to enhance

3.5.7 The Land Acquisition Act [Cap 118 R. E.2019]

The Land Acquisition Act, of 1967 (as amended in 1968) stipulates matters pertaining to compensation under part two division b, Section 11 and Section 12. Section 13 address disputes that might arise due to land acquisition.

3.5.8 The Local Government (district Authorities) Act, [Cap 287 R. E. 2002] and ‘The Local Government (Urban Authorities) Act, [Cap 288 R. E 2002]

The Local Government Acts of 2002 form an important legal basis for rural councils and rural authorities, which were reintroduced in the early 1980 and consist of Act No. 7 relating to District Authorities and Act No.8 relating to Urban Authorities. These Acts establish and regulate district councils, township authorities and village authorities. Important provisions are the subdivision of districts into divisions and wards and the establishment of ward development committees along with procedures for implementation of schemes and programs at ward level.

Section 118 deals with protection and management of the environment in addition to the First Schedule (Section 118 (4)) of Act No. 7. The District Councils are hereby required to take necessary measures to control soil erosion and desertification; to regulate the use of poisonous and noxious plants, drugs or poisons, regulate and control the number of livestock; maintain forests, manage wildlife, ensure public health, and provide effective solid and liquid refuse management.

If construction commences it will be the Developers responsibility to obtain permission from the District Councils for the disposal of solid and liquid waste. In addition, District council will also oversee and regulate the use and prevent the misuse or waste of, or any interference with, water.

3.5.9 Occupational Health and Safety Act, 2003

The Occupational Health and Safety Act of 2003 deals with the regulation of health, safety, and welfare of workers. Some of the provisions of this Act are relevant to the project. The Act covers economic activities in constructions, agriculture, commerce, and offices. In case of occupational accidents/illness, it is the responsibility of the labour department in the ministry to ensure the victim get compensated by the insurer of the employer. Moreover, the victim may also claim for work-injury benefit should he/she be a member of a social security scheme.

The OSHA is of particular importance for contractors that construct the proposed facility, and they should be aware of their obligations regarding the workforce health and safety measures stipulated in this Act. There are specific Safety procedures and guidelines to be followed by both workers and their respective employers to ensure a Safe and conducive working environment.

3.5.10 Public Health Act No. 1 of 2009

The Act provides for the promotion, conservation, and maintenance of public health with a view of ensuring comprehensive functional and sustainable public health services. The Act also prohibits discharges into a sewer or into drain that may cause malfunctioning of the drainage systems.

3.5.11 Wildlife Conservation Act No 5 of 2009

The Act establishes:

- a wildlife division in the Ministry responsible for wildlife protection, with the post of director of wildlife responsible for advising the government on wildlife conservation and management
- wildlife management areas for the purpose of community-based wildlife conservation in areas outside protected areas, within village land or outside village land but in areas used by local communities
- the mechanism for the declaration of protected species and confers automatic protected species status on any species protected under an international convention to which Tanzania is a party
- the mechanisms for the translation of regional and international agreements on wildlife conservation to which Tanzania is a party into Tanzanian law.

The project footprint will include areas used by wildlife.

3.5.12 The Public Health Act, No 1 of 2009 and The HIV and AIDS (Prevention and Control) Act, Cap 431

The HIV/AIDS prevention and control Act (Act No. 28/08) Cap 431, calls for prevention, treatment, care, support and control of HIV and AIDS for promotion of public health in general. It also calls for appropriate treatment, care and support by using available resources to people living with or at risk of HIV and AIDS and to provide for related matters. Apparently, for the Project the risk of population living in or nearby project area contracting HIV/AIDS during construction and operation phases is high and thus, the Act provides legal guidance to the cause.

The Act requires every employer to establish and coordinate a workplace programme on HIV and AIDS for employees

3.5.13 Industrial and Consumer Chemicals (Management and Control) Act, 2003 (No. 3)

Comprehensive legislation on management and control of industrial and consumer chemicals. Divided into 6 parts. Part 1 contains preliminary provisions. Part 2 deals with administration. Part 3 regulates control of production, importation, exportation, transportation, storage and dealing in chemicals. Part 4 provides for management of industrial and consumer chemicals. Part 5 contains financial, and Part 6 miscellaneous provisions.

Provisions for management of industrial and consumer chemicals which include

- Labelling and safe handling
- Chemical and chemical waste
- Disposal of chemical waste
- Prevention and management of accidents
- Decommissioning of plants

3.5.14 The Employment and Labour Relation Act, No6 of 2004

The act mandates that employers:

- Promote equal opportunity in employment and strive to eliminate discrimination in any employment policy or practice"
- Prohibits direct or indirect discrimination by employers, trade unions and employers' associations on several grounds, including gender, pregnancy, marital status or family responsibility, disability, HIV and AIDS, and age
- Requires employers to take "positive steps" to guarantee women and men the right to a safe and healthy environment.

The project will employ skilled and unskilled labour

3.5.15 The Fire and Rescue Force Act, Cap 427 of 2007

An Act to provide for the better organization, administration, discipline and operation of Fire and Rescue Force, the project will be subjected to fire and rescue act compliance

3.5.16 The Contractors Registration Act, No. 17, 1999

This Act requires Contractors at any site to abide by labour laws, and occupational health and safety regulations in construction industries. Furthermore, in the execution of the work, the Contractors are obliged to supply materials necessary for the work, and are authorized to exercise control over the type, quality and material used during Construction.

3.5.17 Standard Act of 2009

This Act aims at the promotion of specifications of commodities and services, re-establish the Tanzania Bureau of Standards (TBS), the designated national standards authority established under the TBS Act 1975 and repealed by this act. TBS is responsible for developing all kinds of national standards, including environmental standards.

The Standards Act has established National Environmental Standards Compendium (NESC) which is a collection of various standards prepared at different times and recognized by EMA 2004. NESC is divided into three parts. Part 1 comprises of standards that require compulsory compliance. Compulsory standards are categorized as generic or specific. Specific standards cover those industries with peculiar effects to the environment while other industries without a specific standard for Tolerance Limits of Emissions discharge including water quality, discharge of effluent into water, air quality, control of noise and vibration pollution, sub-sonic vibrations, soil quality, control of noxious smells, light pollution, and electromagnetic waves and microwaves

Part 2 of NESC contains those standards that may be implemented on voluntary basis. These include guideline standards, codes of practice, and other such standards that may not necessarily be directly enforced, but whose results are implied in some legal requirements. One of such standards include the Environmental Management Systems (EMS) standards, like TZS 701/ISO 14001 whose compliance specifications include the relevant legal requirements. Part 2 thus has important requirements for companies and developers who wish to demonstrate their commitment to sustainable development by way of self-regulation mechanism. On the other hand, some companies or developers may be compelled to follow these standards because of requirements from mother companies and for other various reasons like certification requirements by environment friendly banks or tenders. Part 2 also includes standards used in evaluating environmental performance.

Part 3 has the requisite test methods that should be followed when testing for compliance. The test methods included are referred to in at least one of the specification standards appearing under Part 1. Although it is not stated in the Act, in the absence of national standards, project proponents are encouraged to use international standards such as those of the World Health Organization (WHO), World Bank, British Standards (BS), European Union (EU), American Public Health Association (APHA), United States Environmental Protection Agency (US EPA) etc. Standards set by the relevant sectors, which also make use of the international standards, are also applicable. Such standards include the environmental standards set under the Mining (Environmental Management and Control) Regulations, 1999. Relevant national environmental standards include:

- TZS 860: 2005 Municipal and Industrial Wastewaters – General Tolerance Limits for Municipal and Industrial Wastewaters: This standard provides permissible limits of important environmental parameters such as BOD, COD, pH, colour, temperature range, total suspended solids and turbidity. It also gives permissible limits of a range of inorganic and organic components. All effluents discharged from the project will need to comply with these specifications.
- TZS 845:2005 Air Quality – Specification: This standard gives permissible emission limits of sulphur oxides, carbon monoxide, hydrocarbons (as total organic carbon), dust, nitrogen oxides and lead.

The emissions from earth moving equipment, power generation plant and other will include SO₂, CO, dust and NO_x; as such the project will have to observe these limits.

- TZS 983:2007 Air Quality - Vehicular Exhaust Emissions Limits: This standard is mainly derived from EU Directives 96/69/EC, 91/542/EEC and 97/24/EC. This Tanzania Standard gives permissible limits of some common substances found in exhaust emissions of motor vehicles, namely carbon monoxides, suspended particulate matter (PM), oxides of nitrogen, and hydrocarbons. The standard covers all types of vehicles namely, passenger cars, light commercial vehicles, heavy-duty vehicles, and two and four strokes motorcycles and scooters. In order to carry out quarrying activities and processing operations, the project will operate a fleet of heavy duty and light vehicles in addition to hiring other vehicular equipment. As such, the project will need to observe the provisions of these standards.
- TZS 932:2006: Acoustics - General Tolerance Limits for Environmental Noise: This standard focuses on urban environmental noise, and does not cover occupation environment. In the absence of other standards, it may be used to give indication of permissible noise levels in factory/workshop environment.
- TZS 789:2003 - Drinking (potable) water – Specification: This standard prescribes the quality requirements for drinking water other than packaged drinking water. It does not cover the requirements for natural mineral water. It prescribes the quality requirements for drinking water distributed in the food industry, domestic and catering purposes. It applies to bacteriological, biological, virological, physical, chemical and radiological quality criteria. It is intended also to community piped water supplies i.e. those water systems serving cities, municipalities and townships, community standpipes and wells and drinking water distributed by tankers.

3.6 National Regulations

3.6.1 Environmental Impact Assessment and Audit Regulations, 2005 amended in 2018

The EIA process is described under the Environmental Impact Assessment and Audit Regulations No. 349 of 2005 ('the EIA Regulations') promulgated in terms of the EMA Sections 82(1) and 230(2) (h) and (q). The objectives of the NEMC are to undertake the enforcement, compliance, review and monitoring of EIA in terms of the EMA, including the facilitation of the public participation process in environmental decision-making.

The regulations provide the basis for undertaking EIAs and Environmental Audits for various activities, which require mandatory EIAs, but also activities that require registration and may or may not require EIA. Part three of the EIA and Audit Regulation, deals with project registration and screening procedures, part four deals with the EIA and part five deals with the Environmental Impacts Statement. If the EIA is found to be satisfactory and the residual environmental impacts of the proposed project acceptable according to part six of the EIA and Audit regulations, NEMC recommends the Minister for Environment to issue an Environmental Certificate for the Project as annotated in part 7 of the EIA and Audit regulations.

Referring to Environmental Management Act (EMA) 2004, and the first schedule of The Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations (United Republic of Tanzania, 2018) which details types of projects requiring and not requiring EIA, this project falls in Type A which are requiring a mandatory EIA.

It should be noted that this assessment will also include a substantial social component and therefore is termed an Environmental and Social Management Plan. The EMA guides environmental management and

is administrated by the National Environmental Advisory Committee, the Directorate of Environment and the NEMC

3.6.2 Environmental Management (Water Quality Standards) Regulations, 2007

The objectives of the Water Quality Standards Regulations are to protect human health and conserve the environment; enforce minimum water quality standards prescribed by the National Environmental Standards Committee; enable the National Environmental Standards Committee to determine water usage for purposes of establishing environmental quality standards and values for each usage; and ensure all discharges of pollutants take account of the ability of the receiving waters to accommodate contaminants without detriment to the uses specified for the waters concerned.

During construction and operation phases, water quality was continuously monitored. Water samples was collected and tested periodically to detect any possible contamination and implement remedial measures

3.6.3 Environmental Management (Soil Quality Standards) Regulations, 2007

The objectives of the Soil Quality Standards Regulations are to set baseline parameters on soil limits for soil contaminations; enforce minimum soil quality standards prescribed by the National Environmental Standards Committee; prescribe measures designed to maintain, restore and enhance the sustainable productivity of the soil; prescribe minimum soil quality standards to maintain, restore and enhance the inherent productivity of the soil in the long term; enforce minimum soil standards prescribed by the National Environmental Standards Committee for such purposes as agricultural practices

3.6.4 Environmental Management (Control of Ozone Depleting Substances) Regulations, 2007

The objectives of the Regulations for Control of Ozone Depleting Substances are to eliminate the production and consumption of ozone depleting substances in accordance with the phase out schedule of the Montreal Protocol; to regulate the production, import, export, trade, disposal and use of ozone depleting substances and its products; to control and monitor the amount of ozone depleting substances entering or leaving the United Republic of Tanzania; to provide a system of data collection that will facilitate compliance with relevant reporting requirements under the protocol; to promote measures, strategies, programmes, incentives, equipment and technologies in favour of the use of ozone friendly substances, products and equipment in line with national obligation specified by the Montreal Protocol; and to facilitate the link between the National Ozone Unit and the Ozone Secretariat of the Protocol

3.6.5 Other Environmental Regulations

Other environmental regulations, which are enshrining environmental standards and crucial for implementation of environmental management plans, include:

- Environmental Management (Air Quality Standards) Regulation, 2007: gives permissible emission limits of sulphur oxides, carbon monoxide, hydrocarbons (as total organic carbon), dust, nitrogen oxides and lead. The standard is used as criteria in evaluation of impact significance
- Environmental Management (Soil Quality Standards) Regulation, 2007;
- Environmental Management (Water Quality Standards) Regulation, 2007; provides general tolerance limits for municipal/industrial wastewaters.
- Environmental Management (Control of Ozone Depleting Substances) Regulation, 2007;
- Environmental Management (Biosafety) Regulation, 2009;
- Environmental Management (Hazardous Waste Management) Regulation, 2009;
- Environmental Management (Solid Waste Management) Regulation, 2009; and
- Environmental Management (Quality Standards for Controlling Noise and Vibrations Pollution) Regulation, 2007: focuses on urban environmental noise, and does not cover occupation

environment. In the absence of other standards, it may be used to give indication of permissible noise levels in factory/workshop environment.

3.7 The World Bank Environmental and Social Framework (ESF)

3.7.1 World Bank Environmental and Social Standards

The World Bank's Environmental and Social Framework sets out the Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social standards that are designed to support Borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity. The E&S Framework comprises of: (1) Vision for Sustainable Development, which sets out the Bank's aspirations regarding environmental and social sustainability; (2) The World Bank Environmental and Social Policy for Investment Project Financing, which sets out the mandatory requirements that apply to the Bank; and (3) The Environmental and Social Standards, together with their Annexes, which set out the mandatory requirements that apply to the Borrower and projects.

The World Bank Environmental and Social Policy for Investment Project Financing sets out the requirements that the Bank must follow regarding projects it supports through Investment Project Financing. The Environmental and Social Standards set out the requirements for Borrowers relating to the identification and assessment of environmental and social risks and impacts and mitigation measures associated with projects supported by the Bank through Investment Project Financing.

The E&S standards are expected to: (a) support Borrowers in achieving good international practice relating to environmental and social sustainability, (b) assist Borrowers in fulfilling their national and international environmental and social obligations; (c) enhance non-discrimination, transparency, participation, accountability and governance; and (d) enhance the sustainable development outcomes of projects through ongoing stakeholder engagement.

The ten ESSs as per the WB ESF are: ESS 1: Assessment and Management of Environmental and Social Risks and Impacts; ESS 2: Labor and Working Conditions; ESS 3: Resource Efficiency and Pollution Prevention and Management; ESS 4: Community Health and Safety; ESS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement; ESS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; ESS 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities; ESS 8: Cultural Heritage; ESS 9: Financial Intermediaries; and ESS 10: Stakeholder Engagement and Information Disclosure. Given the nature of activities of this project, with the exception of ESS 9: Financial Intermediaries almost all the ESSs will be relevant. **Table 3-1** summarizes the Environmental and Social Standards (ESSs) that project entities responsible for the project implementation will apply during entire project cycle.

Table 3-1: The World Bank Environmental and Social Standards (ESS) Applicable to Project and Associated Instruments

SN	Instrument for project implementation	The Environmental and Social Standards (ESS)	Purpose/Objectives	Reason for its Application in the Project
1.	Environmental and Social Management Framework (ESMF)	ESS1: Assessment and Management of Environmental and Social Risks and Impacts	Identification of adverse impacts and respective mitigation measures	Sets out the Region's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing (IPF), in order to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs).
Enable screen and follow-up of remedies achieved through application of prevention, mitigation and compensation measures				
Enable allocation of responsibilities and resources to implement required mitigation measures				
2		ESS2: Labour and Working Conditions	Ensure the healthy and safe working environment during projects implementation. Ensure the provision of fair working conditions.	Recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Developer can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.
3	Resources Management	ESS3: Resource Efficiency and Pollution Prevention and Management	To promote the sustainable use of resources including energy, water and raw materials.	Recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle.
To avoid or minimize generation of hazardous and non-hazardous waste.				
4		ESS4: Community Health and Safety	To manage potential risks to the community during construction and operation of school infrastructures.	Addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of the developer to avoid or minimize such risks and impacts, with particular attention to people who, because of their circumstances, may be vulnerable

SN	Instrument for project implementation	The Environmental and Social Standards (ESS)	Purpose/Objectives	Reason for its Application in the Project
5	Resettlement Policy Framework (RPF)	ESS5: Land Acquisition, Restriction on Land Use and Involuntary Resettlement	To avoid or minimize involuntary resettlement and to avoid forced eviction To mitigate unavoidable adverse impacts from land acquisition and restrictions on land use.	Involuntary resettlement should be avoided. Where involuntary resettlement is unavoidable, it was minimized and appropriate measures to mitigate adverse impacts on displaced persons (and on host communities receiving displaced persons) was carefully planned and implemented.
6	Conservation	ESS6: Biodiversity Conservation and Sustainable Management of Living Resources	The SEQUIP project will avoid adverse impacts on biodiversity, habitats and ecosystem services. When avoidance of adverse impacts is not possible, the Borrower will implement measures to minimize adverse impacts and restore biodiversity in accordance with the mitigation hierarchy provided in ESS1 and with the requirements of the ESS6.	Recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development and it recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support. ESS6 also addresses sustainable management of primary production and harvesting of living natural resources and recognizes the need to consider the livelihood of project-affected parties, including Indigenous Peoples, who's access to, or use of, biodiversity or living natural resources may be affected by implementation of the project.
7	Local Communities	ESS 7: Sub-Saharan Historically Underserved Traditional Local Communities	To enable VGs to participate in project activities while taking care of their sociocultural interests and hindrances	Ensures that the development process fosters full respect for the human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities. ESS7 is also meant to avoid adverse impacts of projects on Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, or when avoidance is not possible, to minimize, mitigate and/or compensate for such impacts.
8		ESS8: Cultural Heritage	To enhance conservation of cultural heritage in both forms; tangible and intangible cultural heritage. To conserve ecological and socially sensitive places from possible impacts of project implementation.	Recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. ESS8 sets out measures designed to protect cultural heritage throughout the project life cycle.
9	Financial Management	ESS9: Financial Intermediaries	To set out how the FI will assess and manage environmental and social risks and impacts associated with the subprojects it finances	Recognizes that strong domestic capital and financial markets and access to finance are important for economic development, growth and poverty reduction. FIs are required to monitor and manage the environmental and social risks

SN	Instrument for project implementation	The Environmental and Social Standards (ESS)	Purpose/Objectives	Reason for its Application in the Project
			To promote good environmental and social management practices in the subprojects the FI finances.	and impacts of their portfolio and FI subprojects, and monitor portfolio risk, as appropriate to the nature of intermediated financing. The way in which the FI will manage its portfolio will take various forms, depending on a number of considerations, including the capacity of the FI and the nature and scope of the funding to be provided by the FI.
10	Stakeholder Engagement Plan	ESS10: Stakeholder Engagement and Information Disclosure	To develop a systematic approach to stakeholder engagement to develop good relationships and gather their views on issues that could affect them. To provide stakeholders with a mechanisms through which to raise grievances.	Recognizes the importance of open and transparent engagement between developer and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.

3.8.2 Project Classification According to the World Bank ESF

According to the WB ESF, The Bank will classify all projects (including projects involving Financial Intermediaries (FIs)) into one of four classifications: **High Risk, Substantial Risk, Moderate Risk or Low Risk**. In determining the appropriate risk classification, the Bank takes into account relevant issues, such as the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; and the capacity and commitment of the Borrower (including any other entity responsible for the implementation of the project) to manage the environmental and social risks and impacts in a manner consistent with the ESSs.

Other areas of risk may also be relevant to the delivery of environmental and social mitigation measures and outcomes, depending on the specific project and the context in which it is being developed.

These could include legal and institutional considerations; the nature of the mitigation and technology being proposed; governance structures and legislation; and considerations relating to stability, conflict or security. The Bank will disclose the project's classification and the basis for that classification on the Bank's website and in project documents. The Bank will review the risk classification assigned to the project on a regular basis, including during implementation, and will change the classification where necessary, to ensure that it continues to be appropriate. Any change to the classification will be disclosed on the Bank's website.

3.8 Other World Bank Instruments Applicable for SEQUIP

Environmental and Social Framework - Guidance Notes for Borrowers¹¹; The World Bank has developed several Guidance Notes to ensure the governments (borrowers) comply with the World Bank Environmental and Social Standards. These guidance are public documents that be accessed in the World Bank website¹². Among the applicable guidance notes for SEQUIP are:

3.9 International Agreements, Conventions and Treaties

Tanzania has ratified or acceded to a large number of international treaties and conventions. Among those the following are relevant to the project.

3.9.1 The 1991 Bamako Convention

On the ban of the Import in Africa and Control of Trans boundary Movement and Management of Hazardous waste within Africa was ratified in 1993.

3.9.2 The 1989 Basel Convention

On Control of Trans-Boundary Movements of Hazardous Waste and their Disposal. The project shall adhere to both Bamako and Basel conventions to ensure that the ships do not bring into the country hazardous waste by strictly abiding to the cargo declaration formalities.

3.9.3 1996 Convention on Biological Diversity

Developer must cooperate with other related contracting parties for the conservation and sustainable use of biological diversity. Article 14 of the Convention concerns impact assessments and minimizing adverse impacts.

3.9.4 ILO Minimum Age Convention (C138), 1973

The Convention is concerned with minimum age for admission to employment. The minimum age stated in Article 2 (3) of the Convention is not less than 15 years or 18 years' dependent on the nature of the work. The Convention prohibits child labor with a view to achieving the total abolition of child labour worldwide. Members of the Convention are committed to pursuing national policies that have been designed to ensure effective abolition of child labour and to increase progressively the minimum age for admission to employment or work to a level consistent with the fullest physical and mental development of young persons. During construction and implementation of SEQUIP project the Contractor will abide by the provisions of this Convention.

3.9.5 Labour and Working Conditions

- To establish, maintain and improve the worker-management relationship.
- To promote the fair treatment, nondiscrimination and equal opportunity of workers, and compliance with national labour and employment laws.
- To protect the workforce by addressing child labour and forced labour.
- To promote safe and healthy working conditions, and to protect and promote the health of workers.

3.9.6 Resource Efficiency and Pollution Prevention

- To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities
- To promote more sustainable use of resources, including energy and water
- To reduce project-related GHG emissions

3.9.7 Community, Health, Safety and Security

- To anticipate and avoid adverse impacts on the health and safety of the affected community during the project life from both routine and non-routine circumstances
- To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the affected communities

3.9.8 Land Acquisition and Involuntary Resettlement

- To avoid or, when avoidance is not possible, minimize displacement by exploring alternative project designs
- To avoid forced eviction
- To anticipate and avoid or, where avoidance is not possible, minimize adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected
- To improve, or restore, the livelihoods and standards of living of displaced persons
- To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites

3.9.9 Biodiversity Conservation and Sustainable Management of Living Natural Resources

- To protect and conserve biodiversity
- To maintain the benefits from ecosystem services
- To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities

3.9.10 Indigenous Peoples

- Indigenous people must be identified and treated in the manner that their well-being is not affected by the project.

3.9.11 Cultural Heritage

- To protect cultural heritage from the adverse impacts of project activities and support its preservation
- To promote the equitable sharing of benefits from the use of cultural heritage

3.10 International Convention

3.10.1 Convention against Discrimination in Education (1960) ratified by United Republic of Tanzania in 1978-12-08

Article 2 (a) of convention stated the establishment or maintenance of separate educational systems or institutions for pupils of the two sexes, if these systems or institutions offer equivalent access to education, provide a teaching staff with qualifications of the same standard as well as school premises and equipment of the same quality, and afford the opportunity to take the same or equivalent courses of study.

3.10.2 International Covenant on Economic, Social and Cultural Rights, 1966

Article 13 (2)(a) of this convention emphasizes that "Primary education shall be compulsory and available free to all; and (2)(b) Secondary education in its different forms, including technical and vocational secondary education, shall be made generally available and accessible to all by every appropriate means, and in particular by the progressive introduction of free education".

3.10.3 Universal Declaration of Human Rights, 1948

Article 26 of this declaration states that "Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all based on merit".

3.10.4 Convention on the Rights of the Child, 1989

The Convention recognize the right of the child to education and with a view to achieving this right progressively and on the basis of equal opportunity. Where in Article 28(1) (a) of the convention stated that "Make primary education compulsory and available free to all". Also this convention emphasizes in international cooperation in education sector stated in Article 28 (3) promote and encourage international cooperation in matters relating to education, in particular with a view to contributing to the elimination of ignorance and illiteracy throughout the world and facilitating access to scientific and technical knowledge and modern teaching methods.

3.10.5 Convention on the Rights of Persons with Disabilities, 2006

Article 28 (2) (a) of the convention emphasizes the right of persons with disabilities to education which stated "Persons with disabilities are not excluded from the general education system on the basis of disability, and that children with disabilities are not excluded from free and compulsory primary education, or from secondary education, on the basis of disability".

3.11 Strategies

The following are relevant sectoral and cross-sectoral policies which provide directives on how projects should be operated in/on concerned natural resources and sensitive ecosystems. The project proponent will consult these policies in the course of designing and implementing the proposed project activities.

3.11.1 National Strategy for Growth and Reduction of Poverty (2005)

The National Strategy for Growth and Reduction of Poverty (NSGRP) is viewed as an instrument and channelling national efforts towards broadly agreed objectives and specific inputs and outputs. Achieving the

target of accelerating growth with require significant efforts by different stakeholders to enhance productivity and increase investment in both human and physical capital.

Section 2.4.1 of the strategy considers education and illiteracy especially the pace of transition to secondary schools to be low despite the growth of private secondary schools. Vulnerability of girls to cultural beliefs and customs, early pregnancies and sexual abuse remain a challenge to enrolment and completion of schooling. As such this project contributes in the alleviation of some of these challenges in the energy education and illiteracy.

3.11.2 Water Sector Development Programme (WSDP) (2006 – 2025)

The objective of the WSDP is to alleviate poverty through improvements in the governance of water resources management and the sustainable delivery of water supply and sanitation services. It is designed to address shortfalls in urban and rural water supply infrastructure, to improve water resource management primarily through upgrading the country's nine Basin Water Offices (BWOs), and to strengthen the sector institutions and their capacities. The WSDP comprises of three main components: (i) water resources management; (ii) rural water supply and sanitation, and (iii) urban water supply and sewerage.

3.11.3 National Environmental Action Plan (NEAP) (2013) and new revised NEAP (2020)

The National Environment Action Plan (NEAP) of 2013 (under revision) is the country's effort towards a comprehensive incorporation of environmental concerns into natural resource planning and economic development. NEAP is intended to address pertinent issues significant in combating climate change, land degradation, biofuels, genetically modified organisms (GMOs), Invasive Alien Species (IAS) and promotion of Sustainable land management.

3.12 Sustainable Development Goals (SDGs)

The Sustainable Development Goals (SDGs) are a set of global goals for fair and sustainable health at every level from planetary biosphere to local community. The aim is to end poverty, protect the planet and ensure that all people enjoy peace and prosperity, now and in the future. **Table 3-2** below shows the Sustainable development goals which are relevant to this project.

Table 3-2: Sustainable Development Goals (MDGs)

Goal	Target
Goal 1: End poverty in all its form everywhere	Target 1.1 By 2030, extremely eradicates poverty to all people everywhere, currently measured as people living on less than \$ 1.25 a day Target 1.4 By 2030, ensure that all women and men, in a particular the poor and the vulnerable have equal rights to economic resources, as well as access to basic services, ownership and control over land and other form of property, inheritance natural resources, appropriate new technology and financial services include microfinance
Goal 3: Ensure health lives and promote for all at all stage	Target 3.5. Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol.
Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunity for all	Target 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and Goal-4 effective learning outcomes Target 4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations

Goal	Target
Goal 5 : Achieve gender equality and empower all women and girls	Target 5.1 End all forms of discrimination against all women and girls everywhere Target 5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation
Goal 6: Ensure access to water and sanitation to all	Target 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all Target 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all.	Target 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services
Goal 13: Take urgent to combat climate change and its impact	Target 13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries Target 13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
Goal 14: Conserve and sustainably use of oceans, seas and marine resources	Target 14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution
Goal 15: Sustainable manage forest, combat, desertification, halt reserve land degradation, halt biodiversity loss	Target 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally Target 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world

3.13 Institutional Framework

The administrative and institutional arrangements for environmental management for all sectors in Tanzania are stipulated in the Environmental Management Act No. 20 of 2004. There are several institutions mentioned by the Act, of which the Minister Responsible for Environment is the overall in-charge for administration of all matters related to the environment. The legal institutions for environmental management in the country explained below:

Authorities, institutions and sectors directly or indirectly related to the project development have been identified geographically by political boundaries as well as through regulations, institutional mandates and structures. These entities are adequately consulted in the ESMP process as prescribed through the institutional framework for environmental management. The relevant institution for handling EMP requirements is the NEMC with input from the District Environment Management Committees; Ward Committees and Street Committees.

According to the EMA of 2004 the institutional set-up for environmental management from a national level to village level includes:

- Minister Responsible for Environment;
- Director of Environment (DOE);
- National Environmental Management Council (NEMC);
- Sector Ministries;

- Regional Secretariats;
- Local Government Authorities, District, and Town Councils;
- Township, Village, Ward; Neighborhood (Kitongoji); and
- Street (Mtaa).

The DOE and NEMC are the main regulatory bodies for environmental management in Tanzania whilst the other sector ministries and agencies, play an important role in implementing and enforcing environmental decree. The environmental management functions of each institution are outlined in the Environmental Management Act.

3.13.1 Minister Responsible for Environment

The Minister is overall responsible for matters relating to environment and in that respect be responsible for articulation of policy guidelines necessary for the promotion, protection and sustainable management of environment in Tanzania.

The Minister may issue general guidelines to the Sector Ministries, Government Departments, the Council, National Environment Advisory Committee, City, Municipal or District Environmental Management Committee, agency or any other public or private institution necessary for the purposes of implementation of or giving effect to the provisions of EMA.

The Minister may designate and shall, where appropriate, direct any of the before mentioned institutions and within specified time, to perform any function or do any activity or desist from performing any function or doing any activity as a result of which the environment or part of it is or may be seriously endangered or detrimentally affected.

3.13.2 Director of Environment (DOE)

The DOE heads the Office of the Division (Directorate) of Environment under the Office of the Vice President and is responsible for coordination, monitoring and assessment of various environmental activities. The DOE is responsible to coordinate various environment management activities being undertaken by other agencies and promote the integration of environment considerations into development policies, plans, programmes, strategies, projects and undertake strategic environmental assessment with a view to ensuring the proper management and rational utilization of environmental resources on a sustainable basis for the improvement of the quality of human life in Tanzania.

3.13.3 National Environment Management Council (NEMC)

The object and purpose for which the Council is established is to undertake enforcement, compliance, review and monitoring of environmental impact assessment and in that regard, shall facilitate public participation in environmental decision making, exercise general supervision and coordination over all matters relating to the environment assigned to the Council, under the EMA or any other written law.

The Director General of NEMC is appointed by the President. The Council and the Board of Directors consist of:

- A Chairperson appointed by the President;
- The Director of Environment;
- Seven members appointed by the Minister; and
- The Secretary to the Council (Director General).

3.13.4 Sector Ministries

An environmental sector sits within each Ministry. The duties of the sector include:

- Responsibility for ensuring compliance by the sector Ministry with the requirements of this Act;

- Responsibility for ensuring all environmental matters contained in other written law falling under sector ministry are implemented and report of their implementation is submitted to the Director of Environment; and
- Liaising with the Director of Environment and the Council on matters involving environment and all matters with respect to which cooperation or shared responsibility is desirable or required under this Act.

3.13.5 Regional Secretariats

The Regional Secretariat is responsible for co-ordination of all advice on environmental management in their respective regions and liaison with the Director of Environment and the Director- General on the implementation and enforcement of this Act. The Regional Secretariats are headed by a Regional Environment Management Expert. The expert is responsible for advising the local authorities on matters related to the implementation and enforcement of the EMA. Furthermore, the expert links the region with the Director of Environment and Director General of NEMC.

3.13.6 Local Government Authorities

A local government Environmental Management Officers are designated or appointed at each City, Municipal, District and Town Council. The responsibilities of the Environmental Management Officers among others, include:

- Ensuring enforcement of EMA;
- Advising the Environment Management Committee on all matters relating to environment;
- Promoting environmental awareness relating to protection of the environment and the conservation of natural resources;
- Gathering and managing information on the environment and the utilization of natural resources;
- Preparing periodic reports on the state of the environment;
- The preparation, review and approval of environmental impact assessments for local investment by-laws on environmental management and on sector specific activities related to environment; and reporting to the Director of Environment and the Director General on the implementation of the EMA.
- The Environment Management Committee is responsible for functions set out under the Local Government Act. In addition, they perform functions as prescribed by the EMA and they may be assigned by the Minister to carry out directives related to the promotion and enhancement of sustainable management of the environment.

The Township Environment Management Committees are responsible for:

The proper management of the environment in respect of the area in which they are established;

- Performing duties as assigned under EMA or by the Minister or Council;
- Carrying out directives given by the Minister to promote and enhance sustainable management of the environment; and
- Performing any functions as set out under the Local Government (District) Authorities Act.

3.13.7 Ward/Mtaa/Kitongoji Level

The District Council designates an Environment Management Officer for each administrative area of a township, ward, village, kitongoji (neighbourhood/hamlet) and mtaa (street). The Environmental Management Officers are responsible for coordinating all functions and activities related to the protection of environment within their designated areas.

4 BASELINE CONDITIONS

4.1 Introduction

The purpose of this Chapter is to provide a brief description of the physical and social environment in the project site which could potentially be affected by positive and negative impacts of the project discussed in Chapter 6.

This information was mainly obtained from secondary data specifically the social economic profiles of the respective district municipals. Though, primary data attained during site visits were also applicable in this chapter. Impacts of lesser importance were screened out during scoping phase to ensure that the ESMP is focused on the potentially significant impacts.

The process of environmental baseline investigations included the combination of some/all the following tasks:

- An appropriate combination and balance of desktop studies, field surveys, site information collection and technical consultation.
- Consideration of all available documentary records, research papers and other relevant information.
- Use of recognized survey and analysis techniques.
- Identification and provision of appropriate (preferably quantitative) descriptions of the baseline environmental conditions.
- Identification of key environmental features that may enhance, constrain, or limit the direction and rate of environmental change.
- Explanation of links, interactions, and dependencies between environmental components.
- Verification of desktop and other information by systematic field surveys.
- Acknowledgement of the implications of gaps and limitations in information and data.

4.2 Project Core Area

This project was implemented in Kagera region, Karagwe District in Nyakakika ward, Kandegesho village. Kagera region is among the administrative regions in Tanzania with land area of 35,686 square kilometers. The region is bordered by Lake Victoria, Mwanza region and Mara region to the East, Geita region and Kigoma region to the South, Rwanda to the West, Uganda to the North and Burundi to the South west. The regional capital city is Bukoba. Kagera Region is the fifteenth largest region occupying about three percent of Tanzania Mainland's total area of 883,600 sq.km.

Karagwe District Council is one of the eight Councils of Kagera Region covering an area of 4,500 Km² out of which 4,342 km² is dry land and 158 km² is surrounded by water. The Council is bordered to the District of Kyerwa and Misenyi to the North, the Republic of Rwanda and Kyerwa district to the West, the Districts of Ngara and Biharamulo to the South and Muleba, Bukoba and Misenyi Districts to the East as shown in Figure 4-1. The distance from Karagwe to the Regional Headquarter (Bukoba) is about 108 km.

Map 2: Showing Kagera Region Administrative Unit and Boundaries, 2015



Figure 4-1: Karagwe District council map showing boundaries

4.3 General Conditions

4.3.1 Current Land Uses and Activities at the Proposed Project Site

The proposed land site which is located in Kandegesho village was once a property of the village government with a size of 12.8 hacters. The land was traditionally owned and used for agricultural activities before being leased, as indicated by the Local Land Use Plan. No development has occurred in the proposed project area; only small crop cultivation has been conducted.



Figure 4-2: Existing situation of the project site

4.3.2 Displacement and Relocation

No people relocation was envisaged for this location.

4.4 Socio-economic Baseline

4.4.1 Background

A development envelope (Area of Interest - AOI) is situated at Kandegesho Village, Nyakakika Ward, Karagwe District, and Kagera Region. Details of the study area for the ESMP is in Table 4-1.

Table 4-1: Study Areas for the SIA

Study Area	Definition	Areas included for this project
Site-specific study area	Area likely to experience impacts associated with project infrastructure and activities	The project footprint, excluding the access roads, etc.
Local study area	Areas likely to experience impacts related to population influx, etc.	The neighboring settlements in Nyakakika ward and Kandegesho village
Regional study area	Area likely to experience economic impacts of the project	Karagwe (since most of the development envelope falls within this district). This is set against the backdrop of Kagera Region and Tanzania as a whole

4.4.2 Administrative Set up

Administratively Karagwe District consists of five divisions namely Bugene, Kituntu, Nyaishozi, Nyabiyonza and Nyakakika which in turn comprises of 23 Wards, 77 Villages and 629 Hamlets. 5 wards are situated in Prospective Kayanga Township and 18 wards are in rural area. Looking at land area, Bugene Division covers the largest part of land of the council, about 26.3 percent followed by Kituntu Division with about 21.6 percent of the total land area. Nyakakika has the smallest land area in the council constituting only 13.8 percent.

Table 4-2: Land Area and Administrative Units (Wards, Streets, Villages and Hamlets) by Division, Karagwe District Council; 2015

Division	Land Area (Sq.m)	No. of wards	No. of villages	No. of Hamlets	Percent of Land Area
Bugene	1,140	7	13	127	26.3
Nyakakika	600	3	11	111	13.8
Nyabiyonza	732	4	16	85	16.9
Kituntu	937	5	22	168	21.6
Nyaishozi	933	4	15	138	21.5
Total	4,342	23	77	629	100

Source: District Executive Director's Offices, (Administration Department), Karagwe District Council, 2017

4.4.3 Demographic Condition

Kagera region is divided into eight administrative councils, Karagwe DC, Bukoba DC, Muleba DC, Biharamulo DC, Ngara DC, Bukoba MC, Missenyi DC and Kyerwa DC affiliated with wards with a population of 2,989,299 (1,530,019 females and 1,459,280 males). Considering the project will be implemented in Karagwe district among all the districts thus population development in Karagwe district as well as related information and services will be provided.

Karagwe
424,841 Population projection of 2019 (210,514 males, 214,327 females) 4,500 km ² Area Karagwe District: district in Kagera Region, Tanzania

It is anticipated for the population to have risen as the population growth rate as per 2022 census has increased by 3.2%.

4.4.4 Ethnic Composition

The main indigenous ethnic group is the Haya tribe. Other groups with significant numbers of persons are the Nyambo, Hangaza, Subi, Ha, Sukuma, Nyarwanda, Zinza, Rundi and the Kerewe. The Hangaza, Subi and Sukuma are found in all the councils while the Ha and Kerewe are mainly in Karagwe, Ngara and Biharamulo district councils. The Nyarwanda on the other hand are mainly in Kyerwa and Muleba district councils. The Sukumas who are mainly herders are found in Kyerwa, Muleba, Ngara, Biharamulo and Karagwe district councils.

4.4.5 Education sector

4.4.5.1 Primary education

By 2015, Karagwe district had a total number of 117 primary schools, out of which there is an average of 5.1 schools per ward and an average of 1.5 schools per village.

Table 4-3: Number of Primary Schools and Average Number of Schools per Ward and Village by Council, Kagera Region, 2015

Council	Number of			Average Number of Schools per	
	Wards	Villages/ Mitaa	Schools	Ward	Village
Karagwe DC	23	77	117	5.1	1.5
Bukoba DC	29	94	147	5.1	1.6
Muleba DC	43	166	226	5.3	1.4
Biharamulo DC	17	74	88	5.2	1.2
Ngara DC	22	75	119	5.4	1.6
Bukoba MC	14	66	42	3.0	0.6
Misenyi DC	20	77	103	5.2	1.3
<u>Kyerwa DC</u>	<u>24</u>	<u>99</u>	104	4.3	1.1
Total	192	728	946	4.9	1.3

4.4.5.2 Secondary education

By 2015, Karagwe district had a total number of 19 secondary schools out of which there is an average schools per ward and an average of 4 schools per village.

4.4.6 Health sector

Kagera Region has made remarkable achievements in the health sector reflected by increased number of facilities, from 142 in 1980 to 219 in 2001 and 297 in 2015. For instance in Kagera Region the number of dispensaries increased from 118 in 1980 to 189 and 244 in 2015.

The number of health centers increased from 13 in 1980 to 18 in 2001 and 32 in 2015, while the number of hospitals increased from 11 in 1980 to 21 in 2015.

In spite of the achievement reached so far in health sector, the Region lags behind in the implementation of the health policy which requires each ward to have a health center and a dispensary in each Village or Mtaa.

Table 4-4: Distribution of Public Health Facilities by Council, Kagera Region, 2015

Council	No. of Wards	No. of Health Centers	Health Centres per Ward	No. of Village/ Mitaa	No of Dispensaries	Dispensaries per Village/ Mtaa
Karagwe DC	23	2	0.1	76	37	0.5
Bukoba DC	29	6	0.2	94	34	0.4
Muleba DC	43	4	0.1	166	39	0.2
Biharamulo DC	17	5	0.3	74	22	0.3

Council	No. of Wards	No. of Health Centers	Health Centres per Ward	No. of Village/ Mitaa	No of Dispensaries	Dispensaries per Village/ Mtaa
Ngara DC	22	4	0.2	75	45	0.6
Bukoba MC	14	3	0.2	66	8	0.1
Missenyi DC	20	5	0.3	77	29	0.4
Kyerwa DC	24	3	0.1	99	28	0.3
Total	192	32	0.2	727	242	0.3

Source: Compiled data from District Executive Directors' Offices, Kagera Region, 2017

4.4.7 Economic Activities

61% of manpower are engaged in private sector, 35% are self-employed and 4% are employed in public sector. The activities engaged are private companies, institutions, business, petty traders, fishing, livestock keeping and agricultural activities.

4.4.7.1 Agriculture sector

Agriculture is the major economic activity in the District. The predominant farming system is subsistence under rain-fed conditions, practiced by over 90% of the population. Major crops grown are banana, beans and maize for local consumption. Coffee (Robusta), maize and Irish potatoes are the main cash crops. The average farm size is two (2) hectares per household; the limitation being availability of fertile soils.

There are three main farming systems in Karagwe. These are Kibanja, Kikamba and Rweya. The Kibanja system comprises of banana plot normally inter cropped with coffee, beans, maize and other annual crops and tree species. The Kikamba system is practiced in the periphery of Kibanja and is used for cultivation of annual crops and sometimes left fallow. The soils in the Kikamba are of medium quality. Rweya system is found in areas of poor quality land and mostly used for provisional farming of mulching grasses, as well as fodder and tree planting. The main coffee marketing organization is the Karagwe District Cooperative Union (KDCU), though there are other private coffee buyers.

4.4.7.1.1 Irrigation schemes

Karagwe has enormous potential areas for irrigation. The water of small Lakes like Lake Burigi, Lake Lwakajunju; the Kagera River are all enormous sources. This is in addition to enormous groundwater potentials. The enormous irrigation that has been carried out is at Kagera Sugar Company, in this area irrigation is carried out as a matter of course in the production of sugar cane through advance technologies of Centre pivot.

There are also minor traditional irrigation practices which bring some water to banana, coffee, fruits and vegetables. Apart from Kagera Sugar Company, another **irrigation activities are conducted at** Mwisa Irrigation scheme.

4.4.7.2 Livestock sector

Livestock keeping is the second most important economic activity after agriculture. There are distribution of estimated livestock by species in each ward of Karagwe District Council in 2015. Goats (94,475) were the leading in numbers for large and medium size livestock followed by cattle (87,610) and pigs (7927). STATISTICS also show that there was a large population of poultry especially indigenous chicken and significant population of improved chicken for both broilers and layers.

Analysis among the wards shows that Chanika (11,081 cattle) was leading in cattle population while Ndama ward had the least number of cattle of 534. Most populous goat's population of 31,600 were observed in Nyakahanga ward and the least populous goat's population of 204 were seen in Ihanda ward. On the other hand, concentration of pigs was highest (1,413) in Nyakabanga ward whilst the lowest of 43 in

Nyabishonza ward. Sheep were mostly found in Kamagambo (709) than in any other ward. Looking at poultry population which comprises of indigenous, broilers and layers, Rugu ward is very rich in indigenous chicken (23,000) while Kayanga has the largest number of improved chicken (broilers and layers) at 1,843 in 2015.

4.4.7.3 Fisheries sector

Tanzania is one of the largest fishing Country in Africa. According to FAO; it is ranked in the top ten countries in terms of total capture fisheries production. Inland production is from water bodies. The main location of fishing activities in Karagwe District Council is Rugu, Bweranyange, Kamagambo, Nyaishozi, and Kanani, Nyakahanga, and Rugera wards. The statistics show that the district council had 257 fishing licences, 257 fishermen and 11 registered fishing vessels and 95 unregistered fishing vessels. Rugu, Bweranyange and Kamagambo were leading in the sector.

4.4.7.4 Beekeeping

Beekeeping is widely practiced in Karagwe area especially to communities living adjacent to natural vegetation. However in Karagwe, there are modern beekeeping groups who associate in beekeeping activities. Medium scale and small operators are likely to benefit most because of the individual care required to service each beehive. From 2011 to 2015, Karagwe District Council had a total of 26,996 traditional beehives which on average 5,399.2 traditional beehives per annum were introduced in the beekeeping industry.

Number of traditional beehives were in increasing trend and reached the peak of 8,666 (32.1 percent) in 2015. Looking at traditional beehives at ward level, (28.18 percent) of the total beehives were in Bweranyange with a total of 7,607 traditional beehives, Rugu (2,540) was the second ward in number of traditional beehives.

The statistics shows that from 2011 to 2015 Karagwe District Council had a total of 9,954 modern beehives which on average 1,990.8 modern beehives per annum were introduced in the beekeeping industry. Number of modern beehives were in increasing trend and reached the peak of 2,637 (26.5 percent) in 2015. At ward level, Kihanga ward led in number of modern beehives.

4.4.7.5 Tourism sector

The tourism sector is another attraction to investors in the region where it's an economically viable area. The region has three National Parks which are Burigi - Chato, Ibanda and Rumanyika where wild animals such as Zebra, impala, water buck, buffalo, elephant, giraffe, leopards, hippos and crocodiles can be found.

Apart from those, Karagwe District Council is one of the unique destinations in Kagera Region that has yet been discovered by many. The Kimisi and Burigi Game Reserves are favorable for walking safaris, bird watching is part of tourism and beautiful camping sites for hunters from Europe and United States every year to hunt Lions, Buffaloes, elephants, Zebras, Giraffes being the main attraction. The chiefdom palace located at Bweranyange ward about 47 km from Karagwe town is where the German and British explorers met with the traditional/local leaders.

Karagwe is centered between the Akagera National Park in Rwanda, Queen Elizabeth National Park in Uganda and Rubondo Island National Park to the West of Lake Victoria. There is every reason to justify the establishment of inter- territorial tours between Uganda, Rwanda and Serengeti in Tanzania.

Advertising tourism potentials through mass media such as organizing investors' forum are among the strategies that can make tourism potentials known to the public. Moreover, initiatives taken to promote tourism in Karagwe District Council should go hand in hand with improvement of road infrastructures as well as financial and accommodation services.

4.4.8 Economic infrastructure

4.4.8.1 Road network

The total road network for Karagwe District Council in 2015 was 1,394.7 kilometer out of which 276.9 km (19.8%) of the total road network are district roads, 67kms (4.8%) are Regional roads, and 1,050.8 km (75.3%)

were feeder roads and no trunk roads in the District. This implies that the largest part of road network in Karagwe District Council is feeder roads. Nyakahanga Ward had the longest road network (109 km) in the council followed by Bweranyange Ward with 88 km.

4.4.8.2 Telecommunication services

In Karagwe District Council there is a moderate availability of internet and telephone services for both cellular phone and land line based telephone services and postal services. In 2015, the council had two radio stations with no television stations. The council was having 11 internet café and 3 post offices. However, in 2015 the Council had access to mobile phone services which include Tigo, Vodacom, Airtel, Zantel, Halotel and TTCL Mobile.

4.4.9 Sources of Energy

Karagwe utilizes major sources of energy in its daily operations, TANESCO's national grid. The project may cause the increase in energy demand due to number of people that will be accommodated. Though, electricity is still a challenge at the project site due to the land scape of the area and a challenge of presence of hard rocks.

4.4.10 Sanitation and water supply

The main source of water for Karagwe residents specifically Rwambaizi village is managed by Rural Water and Sewerage Authority (RUWASA). In Karagwe district , rural water supply has reached about an average of 67 percent through which households have access to clean and safe drinking water from different sources.

4.4.10.1 Waste Management

Solid waste management in Kandegesho village is currently carried out by digging and covering the waste with soil. Additionally, the waste is collected and then picked up by the municipal authorities. I believe this approach can be adopted and implemented properly during the project.

4.4.10.2 Liquid Waste Management

The project will adopt septic tank and soak away pit for waste water management therefore its anticipated that this result to changes in Kandegesho village.

4.5 Physical- Geographical Environment

This is a very hilly area whose altitude ranges from 800 to 1,500 m and annual rainfall 1,100 to 1,300 mm. Soils are deep, dark reddish brown to red sandy clay loams and vegetation is woodlands.

4.5.1 Climate, Soil Topography and Vegetation

Karagwe District Council normally receives adequate annual rainfall. The rainfall pattern is bi-modal, which occurs between September to December every year (Long rains) and March to April/May (short rains). The quantity of rainfall received tends to differ from place to place depending on the altitude of the locality, with lowlands recording relatively less rain than the highlands. According to records, rainfall averages between 1,040 mm and 1,200 mm annually.

The mean and maximum temperature ranges between 25 and 28 degrees Celsius during the hot season and between 13 and 15 degrees Celsius during the cold periods which are experienced during the months of March, April and May. The months of June, July and August are the hottest months with an average temperature of about 26 degrees Celsius. The district council is situated at an altitude ranging between 1,500 metres and

1,800 meters above sea level while lowlands and wetlands range between 1,150 meters and 1,450 meters above sea level.

Soil condition in the council favors production of various crops like maize, beans, cassava, species, sweet potatoes etc. The soil can be classified into four distinguished soil types that are clay, sand, loam and clay loams. However, soil fertility has been deteriorating due to continuous cultivation. Fortunately, farmers have been made aware of this situation and a number of measures are being taken including the use of farmyard manure. The land is flat but associated with few hills. Seasonal streams are also found in the eastern part of the council. Physical features of the council include a number of man-made water bodies mainly charco dams located at Kihanga and Kahundwe.

The altitude of Karagwe District Council ranges from 1,500 and 1,800 meters above sea level while valley bottoms and wetlands are 1,150 and 1,450 meters above sea level and the council has bimodal rainfall pattern which consists of short and long rains. The councils' mean temperature is 26°C. This climatic condition favors the production of various agricultural crops. Basing on the climatic condition as explained above, the council has two main Agro Economic zones which are Northern and Southern Zones

4.6 Biological environment

4.6.1 Flora

In term of vegetation, the area contains variety of tree species including the *Leucaena* sp. *Tamarindus indica*, *Senne spectabilis* and other shrubs and grasses. The vegetation of the project area is wooded grass land under succession process. Vegetation is dominated with trees which are not indigenous e.g *Lucaena* sp. However, 78% of the site is opened area because at the area has been demarcated as a village open land.

4.6.2 Fauna

In terms of fauna the area is a habitat for a number of insects like the grass hoppers, butterflies, beetles and praying mantis. Also contains some few species of birds like cattle egrets, hammer cope and other small birds migrating between the project area and other part of country. Also, sometimes the area is visited by small animals which consume in grasses. Physical geography of the project area is hilly by nature and escarpment landscape ranging to 1200m above the sea level.

5 STAKEHOLDERS IDENTIFICATION AND INVOLVEMENT

5.1 Introduction

This chapter describes the main stakeholders that have been identified and contacted to date

Stakeholders are identified as “those people and institutions that have an interest in the successful design, implementation and sustainability of the project and will either be negatively, positively or not at all impacted by the proposed development”. ESS 10 of the Environmental and Social Framework directs borrower to assess the level of stakeholder interest and support for the project and enable stakeholder’s views to be taken into account during project design and environmental and social performance together with ensuring that appropriate project information on environmental and social risks and impacts are disclosed to stakeholder’s in a timely, understandable, accessible and appropriate manner and format.

Also, Section 89 of the Environmental Management Act (EMA, 2004) provides directives on public participation and its importance to ESMP. Furthermore, section 17 of the EIA Regulations provides details and procedures for public participation in the ESMP process.

Stakeholder participation aims to involve processes whereby all those with a stake in the outcome of a project actively participate in decisions on planning and management. Stakeholders may share information and knowledge, and contribute to the project, to enhance the success of the project and hence ultimately their own interest.

5.2 Stakeholder Engagement Process

The Constitution of United Republic of Tanzania recognizes the sovereignty of the people and that people possess the power to guide development within their areas either directly or indirectly. The public should therefore be involved in the evaluation process because the Environment Management Act (2004) demands it to be so.

The main objectives of the stakeholder engagement process are to:

- Inform the stakeholders about the proposed project and provide opportunities for influencing/amending the plans;
- Collect stakeholders’ views on the proposed project including potential positive/negative impacts the stakeholders may associate with the project
- Get an idea of Stakeholders’ preferred approaches to implementation of the project;
- Get local knowledge on any sensitive areas within the project area of influence (physical, environmental, cultural or proposed facilities); and
- Get expert advice on land use/ area zoning, water availability and supply, power and road infrastructure

6 IMPACTS IDENTIFICATION .

6.1 Introduction

Impact identification is the process designed to ensure that all potentially significant impacts are identified and taken into account in the ESMP preparation process. A number of tools are available to assist impact identification. The simplest and most used are checklists of impacts, although matrices, network diagrams and map overlays are also commonly used. In this ESMP simplest checklist were used. These checklists are the simplest types that provide lists of potential impacts. These are designed to help practitioners to avoid overlooking potential some of the impacts. Based on this simplest simple tool, planning issues of concern were identified during stakeholder consultation and involvement. The most important issues and concerns that provide the basis further analysis of significant impacts were grouped together according to Construction, Operation and Decommissioning phases of the projects as identified hereunder and mitigated based on the recommendations of the World Bank and other International Financial Institutions (EBRD, IFC, and ADB).

The following scheme will be used for environmental and social impact assessment of the planned activities:

Step I: Determination of basic impact types

Determination of the impact is based on general analysis of activities, which may be important for these types of projects. This is incorporated in Chapter 2 in Page.

Step II: Study of the environmental baseline – search and analysis of the existing information

Analysis of the socioeconomic and environmental status quo of the project affected. This shall also involve identification of the receptors, which are expected to be affected by the planned activities, determination of sensitivity of the receptors

Step III: Characterization and assessment of the impact

Impact character, probability, significance other characteristic determination by considering the sensitive receptors, description of the expected changes in the environment and assessment of their significance. This is covered in this Chapter.

Step IV: Determination of the mitigation measures

Significant impact mitigation, prevention, or compensating measure determination. This is detailed in subsequent Chapter 7.

Step V: Residual impact assessment

Determination of the expected value of change in the environment after implementation of the mitigation measures

Step VI: Monitoring and management strategy development

Monitoring the effectiveness of the mitigation measures is needed to ensure, that the impact must not exceed the predetermined values, effectiveness of the mitigation measures must be confirmed, or the necessity of the corrective measures must be identified.

Table 6-1: Sources, Receptors and Magnitude of Environmental Impact all Planned Phases

Receptor \ Phase	Construction	Operation	Maintenance	Decommissioning
Air				
Soil				
Water				
Flora				
Fauna				
Protected area				
Landscape & visual impact				
Land ownership				
Infrastructure				
Traffic flow				
Cultural heritage				

Socioeconomic				
---------------	--	--	--	--

Key

Negative	Positive
----------	----------

Table above gives information about sources, receptors and magnitude of environmental impact for construction and operation phase of the proposed school structures.

6.2 Impact Receptors and their Sensitivity

Implementation of the works may cause such qualitative and quantitative characteristic changes of socioeconomic, physical and biological resources in the impact area, such as:

- Socioeconomic baseline
- Air quality and acoustic background of the environment.
- Soil stability and quality.
- Capacity and quality of surface and groundwater.
- Visual changes of the landscapes.
- Flora and fauna baseline.

The population, which may be impacted by the planned activity, includes people living, working, or involved in other activities (e.g., vacation, travel) nearby the designed facility. Facility staff is considered as a potential sensitive receptor.

Receptor sensitivity is related to the impact volume and ability of the receptor to counteract the change or restore after the change, as well as with its relative ecological, social, or economic value.

6.2.1 Impact Characterization

To estimate environmental impact major impact factors are identified for mobilization, commissioning, decommissioning, and demobilization phases. Anticipated impact is assessed according to the following classification:

- **Character** – positive or negative, direct, or indirect.
- **Magnitude** - insignificant, low, medium, high or very high.
- **Likelihood** – low, medium, or high risk.
- **Impact area** – working site, project area or region.
- **Duration** – short, mid, or long-term.
- **Reversibility** – reversible or irreversible.

That is, for both project phases and for each potential impact has been determined anticipated alteration of environment and its character, area and duration of impact, reversibility, and likelihood of occurrence; based on this information has been defined significance.

Some impact types were estimated quantitatively. Assessment of impact on environmental elements is based on relevant environmental quality standards, whenever appropriate. If qualitative assessment was impossible impact was estimated based on its characteristics and elaborated criteria

The criteria applied for environmental and social impact assessment is given in the below table. They are developed only for those receptors, which may experience significant changes.

Impacts Associated with the Phase I Construction phase The following issues were identified to be occurring during this phase of the project.

Activity 1; Vegetation clearance which results to: -

- Soil erosion due to loosened top soil and surface run off effect.

- Loss of Fauna and flora, as a consequence of the clearing of the trees so as to open up an area for the project to commence.
- Loss of carbon sink

Activity 2; Removal of top soil which will lead to the following impacts

- Loss of microorganisms
- Bare land will result and can lead to change the scenic view of the area which was previously covered by various tree species and grasses.
- Dust emission
- Noise pollution
- Soil compaction
- Soil erosion

Other effects that are not of vegetation clearance nature are;

- Dust emission that would happen as a result of trucks/lorries movements, loading off of the materials like gravel, cement, sand.
- Soil compaction,
- Noises due to trucks, Lorries, compressors, crushing equipments
- Solid wastes generation
- Accidents to workers

Activity 3; Trench Excavation and filling may lead to the following effects

- Solid waste generation,
- Oil spillage resulting to soil and ground water pollution,
- Soil compaction
- Accidents to workers

Activity 4; Drainage works and landscaping

- Storm water generation,
- Soil compaction
- Increase of Surface run off due to paving
- Noise pollution
- Air pollution due to dust generated during construction
- Solid waste generation
- Accidents to workers
- Prostitution and disease spreading

However, during Construction phase, there are also positive impacts that will occur;

- Employment opportunities – Skilled, semi skilled and unskilled job opportunities will be generated.
- Income generation to e.g. Food vendors, drivers and suppliers of construction materials
- Aesthetics view generation
- Improvement of social relations

Phase II-Operation phase

The Bashungwa secondary school is expected to enroll 820 students and 35 teachers and other 12 non teachers workers.

Negative impacts

a) Both solid and liquid waste generation.

Wastes such as human wastes, foul water from all project related facilities, i.e. Administration block, Conference rooms, science laboratories and Pharmacy centre. Other related waste and girls pads which will therefore need pre-treatment before being Disposed.

b) Air pollution

Chemical pollution could arise from spillage or leakages of laboratory chemicals, domestic disinfectants, generators, compressors and 50 vehicles that could be accommodated within the compound.

- Increased in cost of living in the neighboring places
- Noise pollution due to ambulances or standby generators during power cuts
- Influx of people to the project area which might accelerate crime
- Risk of fire outbreak

XXX

Positive impacts

- Improvement of education service delivery
- Employment opportunity appear for both skilled, semi skilled and unskilled labors such as teachers, administrators, matron, cooks, cleaners, watchmen and other workers in related fields.
- Attraction of formal and Informal sectors of economy after commence of the project like, Food vendors, Motorcycle riders "*bodaboda*", book shops, Pharmacies, stationeries and tax drivers.

Phase III – Decommissioning phase

Should the project be decommissioned in 50 years, depending on the activities involved, the following impacts will be encountered.

Activity 1; Retrenchment of workers,

- This will lead to change in life style and life quality of workers
- Loss of income generation capacity of the people that depended on the school generation to earn their living e.g. petty traders

Activity 2; Demolition of buildings and uploading of wastes will lead to the following impacts

- Accidents to workers
- Soil erosion
- Solid waste generation,
- Oil spillage resulting to soil and ground water pollution
- Noises due to trucks, Lorries, compressors, crushing equipment, dynamites and other construction machines.
- Dust emission that would happen as a result of trucks/lorries movements, uploading materials like gravel, cement, sand.

NEGATIVE IMPACTS

Liquid waste generation

The project of the proposed district School is expected to have different building blocks and storey. These structures are expected to generate both solid and liquid wastes. However, liquid waste will be mainly from toilets, birth rooms, kitchen, theatre, labour related operations and laboratory (blood, body fluids chemicals), pharmaceutical wastes (expired drugs), general treatment as well as cleanliness. As depicted in the project description, such waste and storm water would be connected to septic tank and later to the communal oxidation pond about 500M from the blocks and then released by pipe to the oxidation ponds. The ponds must be constructed for receiving and holding wastes which will be generated by the School and other economic building.

Mitigation measures

The following mitigation measures are proposed for the developer and Karagwe District Council to implement and diminish such generations.

- The developer should pre-treatment before being discharge into septic tanks or sewer.
- The developer should consider establishment of independent sewers which could accommodate liquid waste generation.
- The developer should adhere to Tanzania National Health Management Plan.

ii. Loss of flora and fauna

Within the proposed project area, this is the negative impact which can occur during the period of site preparation and construction phase. This is caused by the vegetation clearance, cutting down of trees, burning of the vegetation cover, removal of the top soils, trench excavation, and drainage works. All of these results to the disturbance of the ecosystem habitats and cause the species extinction.

Mitigation measures

The following are the mitigation measure which needed to minimize the impact within the proposed project area.

- In project area where vegetation clearing will not take place, those species should remain as they are in its natural environment also to maintain the aesthetic beauty.
- Awareness creation to site workers on how to conserve the remaining flora and fauna during construction phase by constructing pavements/ path which the heavy lorries/trucks will pass through so as to reduce more loss of flora and fauna
- Trees in the area which are unnecessary to be cut should remain standing

iii. Solid waste generation

The construction phase is expected to generate solid wastes from vegetation clearance, top soil removal and trench excavation. These wastes will be dumped to other area away from the project. That impact will be felt more in areas where dumping of solid wastes will be taken place.

Mitigation measures

- Some of the removed top soil cover can be used in landscaping since it is fertile
- Proposed soil waste dumping, the top soil can be used to fill in the eroded areas.
- The contracts have to ensure that those pits located adjacent the projects have been filled up by using those soil cut off

Mitigation measures

- Some of the removed top soil cover can be used in landscaping since it is fertile
- Proposed soil waste dumping, the top soil can be used to fill in the eroded areas.
- The contracts have to ensure that those pits located adjacent the projects have been filled up by using those soil cut off

6.3 Impact No. 1: Atmospheric Air Quality

6.3.1 Impact Description

This impact occurs in all phases of the project, i.e., mobilization, commissioning, construction, and decommissioning.

6.3.1.1 Mobilization and Commissioning Phases

Activities of mobilization and commissioning phase, which are causing impact, arise from emissions associated with stationary sources and vehicles – typically dust, Sulphur dioxide (SO₂) and oxides of nitrogen (NO_x).

Combustion related emissions (such as NO_x, SO₂, CO, and dust) will occur from stationary sources (generators) and vehicles; this can affect ambient air quality. But considering that works are temporary, and the infrastructure facilities will be supplied with energy via existing networks, which will reduce the necessity of diesel generators use to minimum, impact, should not be significant. Emission of fugitive gases is expected to be of **high significance** since the project implementation so far has been using generators as sources of power.

Dust distribution will be related to vehicles movement. Mechanical dust removal may take place by wind, or by temporary suspension of the vehicles.

6.3.2 Impact Characterization

Impact is expected during mobilization, commissioning, and decommissioning phases. Emissions related to mobilization may affect population of Kandegesho village.

Table 6-2: Impact Characterization

Characterization	Phase	Mobilization, Commissioning and Decommissioning	Operation/ construction.
Character		Direct Negative	Direct Negative
Magnitude		Medium	Low
Likelihood		High risk	High risk
Impact area		Nyakakika ward	Nyakakika ward
Duration		During mobilization and commissioning (2-4 months)	During operation (3-5 month)
Reversibility		Reversible	Reversible

Based on characterization, the impact of dust shall be of **medium significance** during mobilization and commissioning and **low significance** during construction.

6.4 Impact No. 2: Noise Pollution

6.4.1 Impact Description

The effect of noise is highly subjective, and limits are designed to ensure that nuisance effects are minimal. Some people will consider lower sound levels to be a nuisance, while others will consider higher sound levels

to not be a nuisance. There tends to be less perception of nuisance by people who are financially or otherwise involved in the project or have some other incentive.

Most international noise limits incorporate an absolute or “flat” limit that is applicable when the background noise is low, as well as a “background plus” limit to account for the masking effect of the background noise, requiring the noise to be no more than a margin, typically 5 dB(A), above background noise.

The noise effects of the proposed project development must be determined by the local circumstances, such as terrain and wind direction, and other site-specific factors. A typical (subjective) comparison of indicative noise levels are given in **Error! Reference source not found.** and an indication of noise levels.

Table 6-3: Comparison of indicative noise levels

Indicative Noise Level in dB (A)	
Threshold of pain	140
Jet aircraft at 150m	105
Pneumatic drill at 150m	95
Truck at 30mph at 100m	65
Busy general office	60
Car at 40mph at 100m	55
Rural night-time background	20-40
Quiet bedroom	20

Error! Reference source not found. provides a summary of sources of noise during the project activities and their consequences.

Table 6-4: Summary of Source, Impacts and Consequences of Noise in all Project Phases

Phase	Source	Impacts	Consequences
Construction Grading, earthworks & construction of the structures, clean-up, and revegetation	Grader or bulldozer [about 85 dB(A)] Heavy-duty or medium-duty trucks	Noise level increase to the area about 80 to 90dBA	<ul style="list-style-type: none"> Hearing impairment is typically defined as a decrease in the threshold of hearing. Severe hearing deficits may be accompanied by tinnitus (ringing in the ears) difficulty in falling asleep; and Awakenings and alterations of sleep stages or depth Disturbance/Shifting of ecological system for animals living in the area Speech interference incapable of being understood during conversation
Operation	construction	The Sound level of the rigs ranged from 85dBA to a peak noise level of 105dBA when measured at 30m	
Decommissioning		Noise level increase to the area about 80 to 90dBA	

6.4.1.1 Construction Phase

The following activities have the potential to give rise to noise impacts during the construction phase:

6.4.1.1.1 Grading and building of structures.

The noise impacts associated with each of the above are provided in table 6.4 the impacts to the area will be medium as to the workers performing duties at the project site and the sources of noise will be from vehicles and machines for excavating and clearing the area.

The impacts will be unavoidable and with some of significance; this will be mitigated by using Personal Protective Equipment for casual workers and personnel and chosen equipment must be well checked on noise levels to reduce it to the lowest level.

Table 6-5: Noise Impacts during the Construction Phase

Impact		Nature	Intensity	Extent	Duration	Probability	Confidence	Significance
Grading and building of access roads	Before Mitigation	Neutral	Medium	Local	Short-term	Highly probable	High	Medium
	After Mitigation	Neutral	Medium	Local	Short-term	Highly probable	High	Medium
earthworks & construction	Before Mitigation	Neutral	Medium	Local	Short-term	Highly probable	High	Medium
	After Mitigation	Neutral	Low	Local	Short-term	Probable	High	Low

6.4.2 Operational Phase

During the operational phase where the school will be functioning, two aspects are important when considering potential noise impacts of a project:

- The increase in the noise level; and
- The overall noise level produced,

6.4.2.1 Decommissioning Phase

The following activities have the potential to give rise to noise impacts during the decommissioning phase:

- Removal of infrastructure; and
- Rehabilitation of areas.

The potential noise impacts identified for the decommissioning phase of the project are set out in table 6.5. The impact during the removal of infrastructure will be of neutral consequences although some of the mitigation measures will still be employed.

The impacts will be unavoidable and with some of significance, this will be mitigated by using Personal Protective Equipment for casual workers and personnel's and chosen equipment must be well checked on noise levels to reduce it to the lowest level. This will last until the end of the project though a small portion of area (nearby) will be affected by noise.

Table 6-6: Noise Impact Assessment during the Decommissioning Phase

Impact		Nature	Intensity	Extent	Duration	Probability	Conf.	Significance
Removal of infrastructure	Before Mitigation	Neutral	Medium	Local	Long-term	Highly probable	High	Medium
	After Mitigation	Neutral	Low	Local	Long-term	Probable	High	Low
Rehabilitation of areas	Before Mitigation	Neutral	Medium	Local	Long-term	Highly probable	High	Medium
	After Mitigation	Neutral	Low	Local	Long-term	Probable	High	Low

6.4.2.2 Assessment of compliance with limits

To assess compliance with a noise limit, it will, in general, be necessary to consider the average of several measurements. The noise levels measured should be within the standards as indicated in the Baseline.

6.4.3 Impact Characterization

The noise environment of the surrounding area by the proposed project is rural settings which according to Standards is 55dBA and the existing noise levels at proposed site were below the guidelines for Rural Settings.

No significant noise impacts are expected during the Decommissioning Phase of the proposed project. This impact is expected to be Very Low and of short duration at the end of the proposed project. The noise levels within and around the site are expected to return to that existed prior to the operations. Therefore, no residual or latent noise impacts are expected.

6.5 Impact No. 3: Visual/Aesthetic Pollution

6.5.1 Impact Description

Visual elements comprise the aesthetic quality of an area. For example, structure with notable elevation, non-blending colors, shape or texture may degrade the visual quality of an area. Due to the fact that the area is not a tourist and recreational destination, project structures stand out in contrast to the surrounding environment might not create an eyesore. At night, the use of lighting may make contrasts more apparent.

6.5.2 Impact Characterization

According to Oberholzer (2005) a visual 'trigger' means a characteristic of either the receiving environment or the proposed project which indicates that visibility and aesthetics are likely to be key issues and may require a visual impact assessment.

The following potential visual indicators have been identified that could trigger a visual impact assessment based on the nature of the receiving environment and the nature of the project (Oberholzer 2005):

Table 6-7: The Potential Visual Indicators Identified That Could Trigger a Visual Impact Assessment Based on the Nature of the Receiving Environment

The Nature of the Receiving Environment	Presence in or Near AOI
Areas with protection status, such as national parks or nature reserves	No
Areas with proclaimed heritage sites or scenic routes	No
Areas with intact wilderness qualities, or pristine ecosystems	No
Areas with intact or outstanding rural or townscape qualities	No
Areas with a recognized special character or sense of place	Yes
Areas lying outside a defined urban edge line	Yes
Areas with sites of cultural or religious significance	Yes
Areas of important tourism or recreation value	Yes
Areas with important vistas or scenic corridors	Yes
Areas with visually prominent ridgelines or skylines	Yes

Table 6-8: The Potential Visual Indicators Identified that Could Trigger a Visual Impact Assessment Based on the Nature of the Project

The Nature of the Project	Potential Aspect of Project
High intensity type projects including large-scale infrastructure	Yes
A change in land use from the prevailing use	Yes
A use that is in conflict with an adopted plan or vision for the area	No
A significant change to the fabric and character of the area	Yes
A significant change to the townscape or streetscape	No
Possible visual intrusion in the landscape	Yes
Obstruction of views of others in the area	No

Based on the information above and the assessment of significant done in **Error! Reference source not found..** The fair conclusion is that Impact is of **low significance** and the impact is not **cumulative** due to lack of other eyesore activities within the project area.

Table 6-9: Characterization of Visual Impact

Characterization	Phase	Commissioning	Operation/ construction
Character		Direct Negative	Direct Negative
Magnitude		Medium	Medium (especially during the night)
Likelihood		Low risk	Low
Impact area		Kandegesho village	Kandegesho village
Duration		During commissioning (1 month)	During operation (3 month)
Reversibility		Reversible	Reversible

6.6 Impact no. 4: Soil Pollution

6.6.1 Impact Description

Impact to soil is caused by leakages of hydrocarbons, waste (solid and wastewater) and disposal of lubricant during servicing of vehicles. The impact is bound to happen during mobilization and operational phase of the project.

6.6.2 Impact Characterization

Impact characterization shall be based on the criteria detailed in Table 6-10

Table 6-10: Impact Assessment Criteria on Soil

Category	Destruction of the fertile soil layer	Soil/Ground Pollution
Very low	Less than 3% of the project area has been destroyed for ever	Soil/ground background conditions have changed unnoticeably
Low	3%-10% of the project area has been destroyed for ever	The concentration of pollutants has increased by less than 25%, but less than the permitted value, 6 months will be needed for the soil/ground quality restoration
Medium	10%-30% of the project area has been destroyed forever	The concentration of pollutants has increased by 25-100%, but less than the permitted value, 6-12 months will be needed for the soil/ground quality restoration
High	30-50% of the project area has been destroyed forever; small areas are damaged outside of the project area, re-cultivation of which is possible after completion of the project activities	The concentration of pollutants has increased by more than 100%, or exceeds the permitted value, 12 years will be needed for the soil/ground quality restoration
Very high	More than 50% of the project area has been damaged or destroyed; small areas are damaged outside of the project area, re-cultivation of which is possible after completion of the project activities	The concentration of pollutants has increased by more than 100%, or exceeds the permitted value, more than 2 years will be needed for the soil/ground quality restoration

Soil pollution is considered likely, rated **moderate significance** due to the possible regional scale impact and possible longer length of time over which the impact may be felt.

Table 6-11: Potential Environmental and Social Impact of Project by Phases

Activity	Receptor	Impact Source	Description of Impact
<p>Preparatory works</p> <ul style="list-style-type: none"> • Arrangement of construction site including water supply, sanitation and power supply • Parking of materials and special equipment • Material delivery and stocking. 	<ul style="list-style-type: none"> • Atmospheric air • Soil • Water • Flora • Fauna • Infrastructure • Population and personnel 	<ul style="list-style-type: none"> • Diesel generators • Personnel • Produced waste 	<ul style="list-style-type: none"> • Emission of dust and exhaust due to transportation • Emissions of diesel generators • Dust produced by ground works • Noise and vibration (machinery) • Noise (personnel) • Soil pollution (spilt fuel/oils, waste) • Soil tramping due to traffic • Damage of topsoil • Temporary change of land ownership type • Water pollution by split fuel/oils, sediments and waste (whenever construction operations occur next to surface waters) • Damage, clearance and tramping of vegetation (direct impact) • Damage of vegetation due to emissions, fuel/oil spills (indirect impact) • Fauna disturbance by personnel and vehicles • Impact of electric transmission line /electromagnetic field on fauna and other receptors (personnel, population) • Impact on downstream fauna due to surface water pollution throughout construction operations • Impact of electric transmission line /electromagnetic field on fauna and other receptors (personnel, population) • Waste – solid, liquid • Possible traumatism of personnel during works • Impact on infrastructure (e.g. road cover)
<p>Road arrangement rehabilitation</p>	<ul style="list-style-type: none"> • Atmospheric air • Soil • Water • Flora • Fauna • Infrastructure • Cultural heritage • Population and personnel 	<ul style="list-style-type: none"> • Vehicle movement. • Personnel • Produced waste 	<ul style="list-style-type: none"> • Emission of dust and exhaust due to transportation • Emissions of diesel generators • Dust produced by ground works • Noise and vibration (machinery) • Noise (personnel) • Soil pollution (spilt fuel/oils, waste) • Soil tramping due to traffic • Damage of topsoil • Soil (slope) stability risk • Change of land ownership type during construction of new roads

Activity	Receptor	Impact Source	Description of Impact
			<ul style="list-style-type: none"> • Water pollution by split fuel/oils, sediments and waste (whenever construction operations occur next to surface waters) • Damage, clearance and tramping of vegetation (direct impact) during construction of road segments • Damage, clearance and tramping of vegetation (direct impact) during construction of road segments • Damage of vegetation due to emissions, fuel/oil spills (indirect impact) • Fauna disturbance by personnel and machinery • Impact on traffic flow • Temporary restriction of traffic due to road rehabilitation activities • Possible traumatism of personnel during works • Disturbance due to landscape alteration • Impact on downstream inchyofauna due to surface water pollution throughout construction operations • Opportunity to employ local population for construction operations or associated service (positive effect)
Construction phase	Atmospheric air	<ul style="list-style-type: none"> • Vehicle • Building machinery • Diesel generators 	<ul style="list-style-type: none"> • Dust and exhaust • Welding aerosols
	Soil	<ul style="list-style-type: none"> • Vehicle building machinery • Diesel generators • Ground works • Waste 	<ul style="list-style-type: none"> • Soil tramping by traffic and building machinery • Soil pollution (split fuel/oils, waste including liquid ones) • Impact on soil stability • Topsoil damage • Temporary and permanent change of landownership type
	Water	<ul style="list-style-type: none"> • Vehicle/building machinery • Ground works • Waste 	Water pollution (split fuel/oils, waste including liquid ones) Stream flow obstruction alteration of hydrological regime
	Flora and Fauna	<ul style="list-style-type: none"> • Vehicle/building machinery • Personnel 	Direct impact (collision, disturbance) Temporary and permanent fragmentation of habitats Noise and vibration

Activity	Receptor	Impact Source	Description of Impact
	Population and personnel	Vehicle/building machinery	<ul style="list-style-type: none"> Dust and exhaust Noise Disturbance due to landscape alternation Possible traumatism of personnel during works Opportunity to employ local population for construction operations or associated service (positive effect)
Operation	Soil	Waste	Soil pollution in case of improper waste management
	Water	Waste	Water pollution in case of improper waste management
	Flora	Spillway/water intake Substation	Impact on floodplain vegetation/fauna during floods or water shallowness Cleaning area from vegetation cover during maintenance works
	Fauna		Possible impact on fish migration Noise Electromagnetic field
	Population and personnel		Noise Electromagnetic field Possible traumatism of personnel during works
Maintenance service/repairs	Impact of maintenance services /repairs will depend on specifics and volume of work and operation area. Possible impact of maintenance service will be similar to those of similar activities done during construction		
Decommissioning	<p>There are two possible options:</p> <ol style="list-style-type: none"> 1. Conservation – in this case all the existing structures are to be preserved. Territory should be enclosed and protected. 2. Decommissioning – in this case all the infrastructure and equipment should be dismantled, waste removed/land filled, tunnel closed and territory cultivated. Though after lifespan period usually instead of liquidation the system is thoroughly rehabilitated and the object continues operation. <p>In case of decommissioning proper acting plan should be worked out. Anticipated impact will be similar to the potential impact of construction. Special attention should be paid to waste management including hazardous waste. Cultivation plan for the area should be designed.</p>		

6.7 General Principals of ESMP Methodology

This section includes expected environmental and social management Plan during construction and operation process of school in Kagera. Methods used for impact assessment, as well as quantitative and qualitative criteria were developed to unify and standardize the assessment system, which ensures the objectivity of the assessment. Impact assessment methodology preparation was based on the recommendations of the World Bank and other International Financial Institutions (EBRD, IFC, and ADB).

In the quantitative criteria are used environmental quality indicators introduced by **Tanzania and IFC/WB** for various environmental bodies (air, water, soil, etc). Wherever qualitative indicators are not preset for environmental factors (e.g. impact to ecosystems or population), the quantitative criteria are introduced analyzing the background data and considering value and sensitivity of impact recipients. If an impact cannot be estimated in quantitative terms, the qualitative criteria are developed envisaging international practices.

Impact on natural and social environment has been assessed in accordance with the determined criteria. During the assessment, special attention was paid to the impact which has been considered as significant in the given conditions.

In order to assess expected changes in natural and social environment, it is necessary to collect and analyze the information about the current situation in the project impact area. The volume of the expected changes is determined on the basis of obtained information, impact recipient objects – receptors would be identified and their sensitivity will be assessed, which is necessary for determining the importance of the impact. After determining the significance of the impact its acceptability is determined, alternative options with less negative impact, necessity of mitigation measures and mitigation measures themselves.

6.7.1 Impact Receptors and their Sensitivity

Implementation of the works may cause such qualitative and quantitative characteristic changes of physical and biological resources in the impact area, such as:

- Air quality and acoustic background of the environment;
- Soil stability and quality;
- Capacity and quality of surface and groundwater;
- Visual changes of the landscapes;
- Amount of habitats, flora and fauna;
- Historical archaeological values of the study area; etc.

The population, which may be impacted by the planned activity, includes people living, working or involved in other activities (e.g. vacation, travel) nearby the designed facility. Facility staff is considered as a potential sensitive receptor.

Receptor sensitivity is related to the impact volume and ability of the receptor to counteract the change or restore after the change, as well as with its relative ecological, social or economic value.

Table 6-12: Terrestrial and Aquatic Ecology Impact Assessment Criteria

Range	Category	Impact on habitat integrity	Impact on behavior of species	Restoration ability of habitats/species	Impact on protected habitats
1	Very low	Insignificant impact on habitat integrity	No changes in behavior, death of small mammal/fish species of no importance is anticipated, no danger of invasive species spreading	Fully restored after re-cultivation works (<1 year)	No impact on protected areas of national or international importance
2	Low	Noticeable impact on low value habitat integrity, including loss of 10-20 ha land habitat	Changes in behavior can be detected using standard methods. Death of less valuable species of small mammals/fishes is expected. No danger of invasive species.	Restoration in 2 years after re-cultivation works	Temporary, short-term, small impact on protected areas of national or international importance, which will not cause long-term ecological integrity violation
3	Medium	Noticeable impact on integrity of habitats, reduction of valuable habitats, loss of less valuable lands (20-50 ha)	Changes in behavior of valuable species can be detected using standard methods, death of less valuable species, invasive species are expected	Restoration in 2-5 years after recultivation works	Small impact on protected areas of national or international importance, but ecosystem will be restored within 3 years
4	High	Decrease of protected or locally important habitats, loss of 50-100 ha of less valuable habitats	Changes in behavior of valuable species can be detected using standard methods, death of valuable animal species is expected, invasive species spread	Restoration in 5-10 years after Re-cultivation works	Impact on protected areas of national or international importance is expected, mitigation measures will help to restore ecosystem, which will take around 5 years
5	Very high	Decrease of protected or locally important habitats or loss of >100 ha of less valuable habitats	Changes in behavior of valuable species can be detected using standard methods, death of valuable animal species is expected, invasive species spread	Restoration in more than 10 years after Re-cultivation works	Impact on protected areas of national or international importance is expected.

- Defensive and ecological value of impact receptors, such as species, populations, communities, habitats, landscapes and ecosystem;
- Impacts on protected receptors are high impacts.

Established criteria for assessment of ecological system impacts are given in the **Error! Reference source not found..**

6.7.2 Impact on Flora

This impact may happen in mobilization, commissioning, operation and decommissioning phase and may be direct (damage, loss) and indirect (emission) loss will involve the loss of plant habitants. Activities of bush clearing on a proposed area, will result on massive cutting of different plant species, may damage the vegetation cover of the area. Project related impact on flora could be reduced with right organization/management of the works and via implementing corresponding mitigation measures.

This impact is considered, **medium significance** because the effects will be experienced only for short-term and at local scale, affecting valuable resources in the immediate area of activity. The impact is not cumulative as there are no other similar activities in the area.

6.7.3 Impact on Fauna

Mobilization, commissioning, and decommissioning phases are related to temporal disturbance of fauna and possible migration from areas of influence. These may affect animal biodiversity specifically on the existing wetland which is an area of influence as follows:

- Vibration and noise levels will increase, plants will be covered with dust, which will affect feeding base for vertebrate and invertebrate species;
- Concern factors will increase for birds and bats living near the project area
- Cutting plants on some locations will destroy whereabouts of animals, this will especially affect bats, which live mainly in trees near the forest and snakes. Destruction of such trees will cause decrease of number of bats; number of plants and trees within the project to be cut is relatively not big;

Having said that, direct (collision/damage, fragmentation of habitats and destruction) and indirect (migration due to noise/vibration, emissions and etc.) impacts are expected. Sources of impacts are: Transport; Machinery; and people.

This impact is considered, **medium significance** because the effects will be experienced for long-term and at local scale, not affecting valuable resources in the immediate area of activity. The impact is cumulative as there are no other similar activities in the area and it can happen during construction and operation phases of the project.

6.7.4 Impact Assessment Methodology

Impact on District Council landfills and sewage systems/treatment facilities as a result of project implementation is assessed here, which is connected to increase of their loading. The impact depends on the type and capacity of the formed waste.

Table 6-13: Impact assessment criteria associated with the waste management

Range	Category	Description
1	Very low	Insignificant increase of load on the household/operational waste District landfill/waste recycling facility

Range	Category	Description
2	Low	Increase of load up to 10% on the household/operational waste District landfill/waste recycling facility
3	Medium	Increase of load from 10-50% on the household/operational waste District landfill/waste recycling facility, landfill expansion is not necessary
4	High	Increase of load from 50-100% on the household/operational waste District landfill/waste recycling facility, landfills expansion or arrangement of the new landfill may be necessary
5	Very high	Increase of load with more than 100% on the household/operational waste District landfill/waste recycling facility, landfills expansion or arrangement of the new landfill is necessary

6.7.5 Impact Description

Waste management measure must be implemented, to minimize generation of the waste during activities (mobilization, commissioning, and decommissioning), increase their recycling and reuse to maximum and finally, to dispose waste at appropriate locations. Responsible person should be appointed for implementation of these measures, who will control temporary and final waste disposal processes and will keep the register.

Among non-hazardous waste the following are likely to be generated:

- Waste due to vegetation clearance;
- Polyethylene waste (packaging/sealing materials);
- Ferrous and nonferrous scrap metal;
- Domestic waste, etc.

Household waste will be collected in adequately labelled lidded containers. Domestic waste will be delivered to the domestic waste utilization landfill.

Generation of following types and volumes of hazardous waste is expected during implementation of project activities:

- Paint residues and cans under paints;
- Residues of fuels and lubricants;
- Oil filters from machinery and vehicle;
- Used rubber tires;

Soil/ground polluted with petroleum hydrocarbons due to accidental oil spills – volume depends on spill scale.

Hazardous waste generated shall be transported to the temporary storage facility by waste management personnel of a contractor using special vehicles (waste should be removed as accumulated, but at least once per three days interval). Final waste management measures (taking put of temporary storage, neutralization, utilization, and disposal) should be carried out by correspondingly licensed contractor. Adoption of registering mechanism of such waste is a must.

Violation of rules of above-mentioned waste management may cause a number of negative impacts on different environmental receptors, for example:

- Incorrect waste management (dumping into water, littering on the adjacent territory) may cause pollution of soil and water, as well as deterioration of sanitary conditions and negative visual changes;

- Disposition of scrap metal on the improper area, May lead to a road barricading and negative impact on traffic flows and etc.

Therefore, it is necessary to implement waste management rules. Hazardous waste management measures are given in the regulation for management of hazardous waste.

This impact is considered, **medium significance** because the effects will be experienced only for short-term and at local scale, affecting valuable resources in the immediate area of activity. The impact is not cumulative as there are no other similar activities in the area.

6.8 Impact No 8: Cultural Heritage Impacts

The potential impacts of the Project to indigenous heritage values during the construction phase are:

- Indirect contamination to indigenous heritage sites due to run-off, unintentional spills, erosion of contaminated soil and dust.
- Indirect contamination to indigenous heritage sites due to contamination of groundwater and surface water flows because of clearing, spills, run-off and contamination.
- Ground disturbance resulting in disturbance of known or unknown indigenous sites of significance; and
- Impact on indigenous landscape and cultural value.

6.9 Impact No. 9: Socioeconomic Impacts

6.9.1 Impact Assessment Methodology

During socioeconomic impact assessment both, negative and positive impacts are considered. Three category schemes are used for assessment of such impacts – low impact, medium impact, and high impact. See assessment criteria in Table 6-14.

Table 6-14: Criteria for Socioeconomic Impact Assessment

Category	Socioeconomic impact
Low	<ul style="list-style-type: none"> • Short-term restriction of resources' and infrastructure accessibility, which will not affect income of local population; long-term negative impact on economic activity of local population also is not expected; • Short-term deterioration of living quality of local population, which will not result in long-term negative impact • No impact on health • Insignificant impact on safety • Long-term, although easy adoptable impact on environment; • Increase of local population by 1% due to migration
Medium	<ul style="list-style-type: none"> • Short-term restriction of resources' and infrastructure accessibility, which will affect lifestyle of population for a short period of time, although this will not have long-term negative impact on economic activity of local population; • Short-term deterioration of living quality, which will not result in long-term negative impact; • Certain impact on health is expected, but mortality risk will not increase; • Certain safety related risks are expected; • Complaints regarding some impacts are expected; • Increase of population by 10-30% due to migration
High	<ul style="list-style-type: none"> • Some resources and infrastructure becomes unavailable for local population, due to which they have to change their lifestyle and this brings by long term negative impact on their economic activity; • Significant deterioration of local population life quality; • Significant impact on health, resulting in high mortality risk; • Certain safety related risks are expected • Corrupt deals regarding employment and nepotism are expected • Population constantly complains about impacts, resulting in conflict situations between population and staff • Local population increased by more than 30% due to migration, creating unacceptable cultural environment for local population, creation of new settlements is expected

6.9.2 Description of Impact

6.9.2.1 Health and Safety

During the activities (mobilization, commissioning, decommissioning, and demobilization) some health and safety related risks (for population and personnel) are expected. Impacts could be:

- Direct (e.g.: accidents, power stroke, falling from heights, injuries from mobilization and demobilization, commissioning and decommissioning as well as drilling machinery); and
- Indirect (emissions, increased acoustic background, climate change, contamination of water and soil).

Social risks are also related to health and safety, namely risk of infectious diseases' spread (including AIDS and STDs). This risk is related to migration of personnel during all phases of the project. Appropriate preventive measures must be implemented. Considering, that most of personnel will be local population, this risk is minimum.

Population health and safety risks related to movement of transport and drilling machinery, would not be high, as for transportation operations only existing roads will be used and some footpaths might require to be widened to accommodate passage of wide loads.

6.9.2.2 Demographic Changes

Basically, residents will be employed both for all phases of the project. Correspondingly, no important demographic changes are expected at any stage of the project implementation.

6.9.2.3 Contribution to Economy

The positive impact of local population employment is also noteworthy. Also, due to influx of foreigners in the area, the hospitality and catering industry might experience a boom as requirement for good quality hospitality and catering establishment shall be required.

Publishing of the research report resulting from the project activities, might increase popularity of project area to scientific and academic communities hence might significantly increase influx of people with disposable income.

6.9.2.4 Road Damage, Traffic Load, Limited Movement

At present, the technical condition of roads is satisfying. Road damage is expected due to intense transport movement especially during mobilization and demobilization phases.

Less impact is expected on operation phase, namely during repair maintenance works, as traffic of heavy machinery will be less. To reduce the impact to minimum, proper planning of work sequences is important. During works and especially after, all damaged sections of roads must be rehabilitated and restored to their original condition.

Mitigation measures will reduce the impact even more, namely: routes must be predefined, which will limit use of roads in settled areas. Impacts on traffic flows on operation phase are very low and may be assessed as insignificant.

6.9.3 Impact Assessment

Table 6-15: Socioeconomic Impact

Impact and Impact Sources	Impact Recipients	Description and Assessment of Residual Impact
Mobilization/Commissioning/Decommissioning and Demobilization Phase		
Health deterioration and safety risks: Direct (e.g.: accidents, power stroke, falling from heights, traumatism, injuries from equipment, etc.); and Indirect (emissions, increased acoustic background, climate change, contamination of water and soil).	Personnel and local population	Direct or indirect impact. Duration – mobilization, commissioning, decommissioning and demobilization phases Certain impact on health and safety related risks <u>Significance:</u> Medium, considering implementation of mitigation measures very low
Changes in demography: Migration; Construction of settlements and migration of foreigners.	Local Population	Direct negative Increase of migration is not expected. <u>Significance:</u> low
<i>Contribution to economy and employment</i> Stimulation/development of catering/hospitality business and its satellites business activities Establishment of work places Increased budget receipts	Regional economics, including project activities and other businesses, local population	Direct positive temporary impact A number of impacts will be long-term (e.g. improvement of infrastructure) Increase of employment, income and budget receipts. Improved infrastructure <u>Significance:</u> High
Damage of road cover Movement of heavy machinery <i>Intensification of traffic</i> Movement of any machinery Limitation of movement Blocking roads for safe works	Local Infrastructure, population	Direct negative, duration – project activities phase Road infrastructure usage can be limited. Complaints expected from local population <u>Significance:</u> medium, considering implementation of mitigation measures low
Construction Phase		
Health deterioration and safety risks: Direct (e.g.: accidents, power stroke, falling from heights, traumatism, injuries from project activities, etc.); and Indirect (emissions, increased acoustic background, climate change, contamination of water and soil).	Mainly personnel involved in operation phase, as well as local population	Direct or indirect. Long-term impact. Impact on health is less expected. Safety related risks are insignificant. <u>Significance:</u> Low considering implementation of mitigation measures – very low

Impact and Impact Sources	Impact Recipients	Description and Assessment of Residual Impact
<i>Contribution to economy and employment and improve in tourism</i> Stimulation/development of hospitality/catering business and its satellite business activities Creation of new job opportunities Increased budgetary income.	State economic conditions, local production and population	Direct positive, temporary impact improvement of infrastructure which will improve living conditions for local population and promote country's economic development <u>Significance: high</u> 20 people will be employed during operation phase <u>Significance: low</u>
<i>Damage of road cover</i> Movement of heavy machinery required for maintenance/repairing works <i>Intensification of traffic</i> Movement of any machinery <i>Limitation of Movement</i> Not anticipate	Local Infrastructure population	Direct negative, impact Due to arranging of diversion pipeline impact may be long-term. Otherwise impact duration is maintenance works <u>Significance: low</u> , considering implementation of mitigation measures – very low

6.10 Residual Impacts

The impacts that remain once mitigation has been put in place will be described as residual impacts adversely affects one or more environmental and social receptors. The identified residual negative impacts were subjected to a critical assessment and review and ensure that they meet the residual impacts acceptability threshold.

The assessment of impacts was conducted in the identified categories these categories were subjected to all stages of project development from mobilisation, construction, operation, and decommissioning (where applicable). The identified residual impacts are presented with respect to the specific development stage as derived from the interaction matrices. Table 6-16 presents the identified residual impacts.

Table 6-16: Identified Residual Impacts

S N	Stage	Nature	
		Positive	Negative
1	Mobilisation		<ul style="list-style-type: none"> Biodiversity loss Habitat loss and/or alteration Habitat fragmentation
2	Construction		<ul style="list-style-type: none"> Change in landscape and aesthetics
3	Operation	<ul style="list-style-type: none"> Employment creation Provision of education Minimization of vulnerability to girls 	
4	Decommissioning		<ul style="list-style-type: none"> Loss of employment

6.10.1 Cumulative Impacts

Cumulative residual environmental effects are defined as the sum of residual environmental and social effects from all past, current, and reasonably foreseeable projects and/or activities on the physical, biological, and socio-economic components of the environment.

These include not only residual risks and impacts associated with this project but also arising from other projects implemented or planned to be implemented in the Project Area of Influence and drought, flood, and earthquake (Natural disaster)

The Project will implement mitigation measures to limit incremental environmental effects that might occur however, as noted above, implementation of mitigation measures is expected to result in minor changes to the biophysical and socio-economic environments from the Project relative to baseline conditions.

Therefore, the Project implementation arrangement should consider collaboration with other projects in the area to reduce the effect of the residual impacts in ways that are possible and feasible. Focusing on the development of a site-specific mitigation measures that will result to further reduce the potential cumulative residual risks and impacts.

SEQUIP project is implemented under series of works and in phases therefore cumulative impacts will occur, these cumulative impacts include:

- Loss and creation of job opportunity
- Creating expectation in the community
- Generating tax revenue
- Increase of pressure on the provision of public services
- Changes in land value and increase in the collection of property taxes
- Changes in noise level,
- Changes in air quality

6.11 Ergonomics impacts

Ergonomics is the way you use your body to work and fitting the job or task to you to reduce your risk of injury. These musculoskeletal injuries develop slowly over time and occur in the soft tissues of your body like the nerves, tendons, muscles, ligaments and joints.

Generally, the greater the exposure to a single risk factor or combination of risk factors, the greater the probability of an ergonomic injury or illness, also called Work-Related Musculoskeletal Disorders (WMSD). The big three ergonomic risk factors are:

- Force (how much you lift/push/pull),
- Repetition (how often you perform the task), and
- Posture (body position).

Other potential ergonomic risk factors include vibration, contact stress, sustained exertions, and cold temperatures Examples of these injuries are low back strain, carpal tunnel syndrome, and tendonitis. These injuries are called musculoskeletal disorders or MSDs. This impact is likely to occur to all phases of the project cycle, mobilization, implementation and decommissioning phases

6.12 Activity Risk Assessment

Risk Assessments are elaborated for all tasks performed at the work fronts, detailing the steps and frequency of the task, the known hazards and the appropriate precautionary measures, procedures/work

releases, controls, environmental and industrial hygiene methods, collective and personal protective equipment to minimize or eliminate hazards.

The purpose of the Risk Assessment is to make it a routine to verify the safety items before the start of any activities, assisting with the detection and prevention of risks of accidents and with task planning. Table 6-17 shows the risk assessment criteria.

Table 6-17: Risk Assessment

S/ N	Impact & Aspect Description	Nature	Magnitude	Extension	Duration	Significance of Impact	Probability of Occurrence	Risk
Mobilization/Construction phase								
1	Loss of biodiversity due to bush clearing	Direct	High	DIA	Long-term	Major	Definite	Significant Risk
2	Effect on human health due to change in ambient air quality caused by emissions from exhaust gases and dust from vehicles and earth works	Direct	Very high	IIA	Short-term	Major	Probable	Significant Risk
4	Soil erosion due to bush clearance	Direct	Very low	RIIA	Short-term	Minor	Probable	Low Risk
5	Climate change (global warming) due to emissions from vehicle movement, bush clearance	Indirect	Medium	NIA	Long-term	Minor	Probable	Low Risk
6	Degradation of natural beauty, greenhouse emissions and outbreak of diseases due to mismanagement of waste generated (solid and liquid waste) from construction materials, bush clearance and sanitary facilities	Direct	High	DIA	Short-term	Major	Definite	Significant Risk
7	Employment Opportunities (activities will require man power)	Direct	High	NIA	Short-term	Major	Definite	Negligible Risk
8	Injuries and fatal accidents to workers due to heavy duties taking place	Direct	Medium	DIA	Long-term	Major	Probable	Significant Risk
9	Public health and hazard (due to emission of dust and performance of heavy duties)	Direct	Medium	NIA	Long-term	Major	Probable	Significant Risk
10	Hearing impairment, stress, headaches, fatigue due to noise and vibration pollution from transportation of material and equipment	Direct	Low	DIA	Short-term	Minor	Probable	Low Risk
Construction Phase								
1	Loss of biodiversity due to site clearing	Direct	Medium	IIA	Long-term	Major	Definite	Significant Risk
2	Effect on human health due to change in ambient air quality caused by emissions from exhaust gases and dust from vehicles and earth works	Direct	High	DIA	Short-term	Major	Probable	Significant Risk
3	Hearing impairment, stress, headaches, fatigue due to noise and vibration from vehicle movement, equipment and material used during construction	Direct	Low	DIA	Short-term	Minor	Probable	Low Risk
4	Injuries and fatal accidents to workers due to heavy duties	Direct	High	DIA	Long-term	Major	Definite	Significant Risk

S/ N	Impact & Aspect Description	Nature	Magnitude	Extension	Duration	Significance of Impact	Probability of Occurrence	Risk
5	Public health and hazard (due to emission of dust and performance of heavy duties)	Direct	Medium	IIA	Short-term	Moderate	Probable	Low Risk
6	Employment Opportunities (activities will require man power)	Direct	High	NIA	Long-term	Major	Definite	Negligible Risk
7	Degradation of natural beauty, greenhouse emissions and outbreak of diseases due to mismanagement of waste generated (solid and liquid waste) from construction materials, bush clearance and sanitary facilities	Direct	High	DIA	Short-term	Major	Definite	Significant Risk
8	Unemployment due to decommissioning of construction activities	Indirect	Medium	NIA	Short-term	Moderate	Definite	Low Risk
Operation Phase								
1	Employment Opportunities due to recruiting of teachers and other staff for school operation	Direct	High	NIA	Long-term	Major	Definite	Negligible Risk
2	Loss of biodiversity	Direct	High	DIA	Long-term	Major	Definite	Significant Risk
2	Degradation of natural beauty, greenhouse emissions and outbreak of diseases due to mismanagement of waste generated (solid and liquid waste) from sanitary facilities, classrooms, offices, dining area and other areas within the school compound	Direct	High	IIA	Long-term	Major	Definite	Significant Risk
3	Health and safety (due to fire outbreak and poor housekeeping within the school compounds)	Direct	Medium	DIA	Long-term	Moderate	Probable	Significant Risk
5	Benefit to the government through taxes from the employed staff(economically and man power)	Indirect	High	NIA	Long-term	Major	Very low	Negligible Risk
Decommissioning Phase								
1	Degradation of the urban landscape and danger to the public as illegal activities are attracted due to abandoned infrastructure as a result of the project decommissioning	Indirect	Medium	DIA	Medium-term	Minor	Probable	Low Risk
2	Unemployment due to decommissioning of the project	Direct	High	NIA	Short-term	Minor	Definite	Negligible Risk
3	Degradation of natural beauty, injuries due to solid waste from dismantling of buildings	Direct	Low	DIA	Long-term	Minor	Very low	Low Risk

7 CONSIDERATION OF ALTERNATIVES

7.1 Introduction

The EMA EIA regulations of 2005 requires that alternatives be identified during the scoping process. An important function of the Scoping Phase is to screen alternatives to derive a list of feasible alternatives that need to be assessed in further detail in the ESMP Phase. The environmental and Social Management Plan shall contain an assessment of impacts of the identified alternatives.

According to the EMA EIA regulations, analysis of alternatives includes project site, design and technologies and reasons for preferring the proposed site, design, and technologies. An alternative can be defined as a possible course of action, in place of another, that would meet the same purpose and need.

7.2 Project Site Alternative

The selection criteria for the location depends on the availability/ease access and ownership of the proposed land parcel for Kagera region. In that regards various economic considerations which include the feasibility of the project in terms of financial and technical perspectives have been considered to select the project location.

Furthermore, the location shall not require demolition of property (houses and other infrastructure) to pave way for the construction and accessibility of the drilling site. In that regards, alternative location shall not be further considered in the ESMP. Alternatives analysis in this project considered the following:

- a) No-Go alternative,
- b) Design and technological considerations
- c) Location

7.2.1 No-Go alternative

The assessment of alternatives must always include the “no-go” option as a baseline against which all other alternatives must be measured. The option of not implementing the activity must always be assessed and to the same level of detail as the other feasible and reasonable alternatives.

The no-go will see the status quo activities persist without the construction and drilling of an exploration well on the proposed site. The “no-go” option is taken to be the existing rights on the property, and this includes all the duty of care and other legal responsibilities that apply to the owner of the property.

7.2.2 Design and technological considerations

The schools design will consider several aspects which were previously not part of the school design system. The current design which will be implemented will utilize the standardized updated design from the MoE which will be customized when implemented. The designs prepared so far are prototypes to be utilized in specific site in this case the school to be constructed in Kandegesho village-Nyakakika Ward. The utilization of prototype will involve the fit in exercise to include all experts in the respective district.

8 ENVIRONMENTAL MITIGATION MEASURES

8.1 Introduction

This chapter provides a summary of mitigation measures of those impacts which are considered of moderate to high significance, by matching the predicted impact, possible mitigation measure, the target levels, responsible entity and approximate cost. It also presents a detailed plan to monitor the implementation and success of the mitigation measures.

For each impact identified assessed in this study, mitigation measures will be proposed to reduce and/or avoid negative impacts and enhance positive impacts. Typical mitigation measures are detailed in **Error! Reference source not found.**

Table 8-1: Impact Mitigation Measures

Aspects/Impacts,	Mitigation and Management Actions
Environmental Social Health and Safety: General	<p>Obligatory environmental social health and safety induction (training programme) for all personnel (well locations, suppliers). Induction materials delivered in written format and/or verbally with defined procedures, work instructions and responsibilities on key themes/project aspects:</p> <ul style="list-style-type: none"> • Contents of ESMP, H&S Policy etc; • Use of PPE, fire facilities, good site practices and housekeeping; • Sound waste management (handling/clean-up of contaminating spills, storage, use and disposal of hazardous materials/waste); • Economic, social and cultural sensitivities and values at project primary impact locations, areas in vicinity and area of influence; • Interactions with the resident local community; • Community awareness-raising (Information and Communication) programme - for various stakeholders and project affected parties and groups. Delivered in written format or verbally, focusing on drilling activities/scheduling, supply route, employment and procurement plan, drilling and support operation hazards, and stakeholder's roles in case of potential accidental events.
Impact No. 1: Air Pollution– General	<ul style="list-style-type: none"> • Combustion of solid waste on the territories of site and camps is prohibited; • A speed limit for trucks should be observed; • Prohibit of work without Personal Protective Equipment (masks, respirators) in the dusty work areas; • There will be no excessive idling of construction vehicles at sites • The surrounding environment shall be kept free of garbage and solid waste (clay) to minimize dust.
Impact No. 2: Noise (From Equipment, Vehicles and Construction Activities)	<ul style="list-style-type: none"> • Noise will be limited to restricted times agreed to in the permit • Machinery and equipment undergo regular inspection/maintenance; fitted with silencers and mufflers, use of noise insulation. • Personal Protective Equipment: provide and enforce use by all personnel working in noisy zones; • Provide education to crew about noise-sensitive aquatic life; • Limit noise generating activities,
Impact No. 3: Visual and Aesthetic Impacts	<ul style="list-style-type: none"> • Maintenance and packaging waste: incineration or disposal or recycling should be done at appropriate location • Lighting shall be maintained at minimum necessary to fulfil operational and safety requirements during project activities

Aspects/Impacts,	Mitigation and Management Actions
Impact No. 4: Soil Pollution	<ul style="list-style-type: none"> • Inspection and preventive maintenance of equipment should be undertaken as per schedule to limit spillage of oils; and carried out at approved workshop (service station); • Restriction of refueling/maintenance of the machinery/equipment on the sites. In case of urgent need, these activities should be carried out at least 60 m away from the water, with consideration of certain mitigation measures for preventing the spills (and consequently soil/water contamination); • Control of the fuel/oil storage and usage rules; • Proper waste management. Waste collection and temporal storing on the special allocated area; • Restriction of machinery and equipment washing on the territory; • In case of fuel/oil spill, localization of the spilled material and immediate cleaning of the contaminated area. Personnel should be provided with appropriate means (adsorbents, shovels, etc.) and personal security equipment; • Contaminated soil and ground for further remediation should be taken out from the territory by the contractor holding an appropriate permit on these activities; • Cleaning the territory and re-cultivation after completion of the project activities; and • In case of fuel/oil spill, cleaning of the territory and withdrawal of the contaminated soil and ground for further remediation.
Impact No. 5: Waste Discharge and Disposal (General and Hazardous Waste)	<ul style="list-style-type: none"> • Waste collection and disposal pathways and sites will be identified for all major waste types expected from all activities; • Domestic Solid waste will be collected and disposed properly in accordance with Local Government Authority directives; • The records of waste disposal will be maintained as proof for proper management as designed. • Waste management must be conducted by properly trained personnel who will undertake training periodically; • Hazardous waste must be removed from project site by the contractor having corresponding permission for the mentioned activity; • Waste disposal is allowed only in hermetic packages, which must have proper labeling. • Site vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface water bodies
Impact No. 6: Waste Management,	<ul style="list-style-type: none"> • If necessary, the waste/cuttings should be mixed with an appropriate quantity of subsoil (typically three parts of subsoil to one part of waste by volume); • Topsoil should not be used but it should be placed over the subsoil to fully reinstate the area;
Impact No. 7: Cultural Heritage	<ul style="list-style-type: none"> • Ensure that provisions are put in place so that any cultural artifacts or other possible “chance finds” encountered during field works are noted and registered, secured, responsible officials contacted, and further activities delayed or modified to account for such finds

Aspects/Impacts,	Mitigation and Management Actions
Impact No. 8: Socioeconomic Impacts (General Health and Safety)	<ul style="list-style-type: none"> • Prepare emergency response plan for all kind of emergencies such as well blowout; fire and explosions, hazardous gas etc; • While working on height personnel must be secured with special ropes and locking carabineers; • Maximal implementation of safety rules during execution of transport operations; • Roads, passing through settlements, must be restricted during transport operations as much as possible; • HIV/AIDS Awareness Training; • Personnel medical insurance; • Procedures and guidelines: operations, certified operation equipment, work procedures. Inspections and Maintenance system; • Use trained/qualified and competent personnel: operators, mechanics, supervisors; • Personal Protective Equipment (PPE), reasonable working hours, safe working conditions and facilities; • In-house health and safety manual /guidelines; • Emergency Response Equipment and Procedures (especially for fire, drowning and snake bites); • Registering of discontent/complaints from the local community, if any, and proper response. • Corresponding warning, prohibiting and directing signboards must be arranged at the operational areas for personnel and local population, for health and safety purpose;
Impact No. 9: Socioeconomic Impact (Traffic and Pedestrian Safety)	<ul style="list-style-type: none"> • Road rehabilitation during preparatory works – positive factor; • All the damaged road objects must be rehabilitated after completion of works and it should have restored to their initial condition; • Ensure minimal disturbance of the population/passenger movement during road rehabilitation; • Ensure maximum limitation of machinery movement on public roads; • Employ well qualified drivers (Class C for large vehicles and Class D for small vehicles and training certificates from approved driving schools); • Due diligence on vehicles to ensure they are roadworthy (road safety sticker) and comprehensive insurance; • Zero tolerance of drugs and alcohol use for drivers and all staff during working hours; and • Population will be informed about time and period of mobilization and demobilization of large equipment.
Impact No. 10: Socioeconomic Impacts (Infrastructure)	<ul style="list-style-type: none"> • Employ locals for most of unspecialized labour • Procure local for most consumables available within the district • Manage local expectations by not overpromising • Registering of discontent/complaints from the local community, if any, and proper response.
Impact No. 11: Socioeconomic Impact (Land Leasing)	<ul style="list-style-type: none"> • Researching and clarifying site ownership • Ensuring owners are paid rental fees before accessing site • Notification of owners of commencement of works, if required prepare and sign a works completion handover protocol • Notification of owners of all activities and any site damages • Notification of owners of termination of works, if required prepare and sign a works completion handover protocol

Aspects/Impacts,	Mitigation and Management Actions
Ergonomics impacts	<ul style="list-style-type: none"> • Use a buddy system or the proper lifting device to carry heavy loads. To the extent feasible, use your legs to push up and lift the load, not the upper body or back. Do not twist the body during a lift - step to one side or the other to turn. • Design work activities so employees do not have to work on their knees. If the job requires it, use knee pads. • Avoid repeatedly twisting the hands and wrists. Provide proper hand tools that are designed to keep the hand and wrist in a comfortable, neutral position • Avoid stretching or unnecessary stress to do overhead work where possible. For example, adjust scaffolds to the appropriate working height and use a lifting device to hold drywall or other material in place for overhead work.

9 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The following sections describe measures that shall be followed by the contractor/ project implementing team to ensure that the anticipated environmental and social impacts are avoided, abated, or remediated.

This layout the systematic plans packaged as the environmental and social management plan (ESMP). The goal of the ESMP developed is to address the key impacts identified in the preceding Chapter as well as setting the relevant policies and actions plans needed to achieve an environmentally sound and sustainable project venture.

Table 9-1: Impact Mitigation Measures

Approach	Example
Avoid	Change of route or site details, to avoid important ecological or archaeological features
Replace	Regenerate similar habitat of equivalent ecological value in different location
Reduce	Filters, precipitators, noise barriers, dust, enclosures, visual screening, wildlife corridors, and changed time of activities
Restore	Site restoration after construction
Compensate	Relocation of displaced communities, facilities for the affected communities, financial compensation for the affected individuals etc.

These mitigation measures will be incorporated into an Environmental and Social Management Plan (ESMP) to facilitate implementation during the planning, construction, operational and decommissioning phases. The ESMP, its implementation will become binding on the project applicant and any contractors, should this project be authorized.

The ESMPs for the project should consists of the following:

- Management Policies;
- Management Plans; and
- Decommissioning Plan

Example of negative impacts are land degradation, loss of vegetation, scarcity of water, sexual Harassment etc. As elaborated in tables below.

9.1 Environmental Management Policy

The environmental policy developed should be one that enables project implementers and Project management and sustainable utilization of environmental resources therein. The policy should therefore cover the following, among other issues:

- Ensure that all Project activities operate within legal requirements of all relevant national legislation covered in Chapter Four;
- That there are continuous environmental improvement and performance through monitoring of Project activities;
- Ensure that utilization of natural resources is optimal with measures in place to ensure resource availability for future generation;
- Awareness creation to the surrounding community regarding sustainable utilization of natural resources, protection of sensitive ecosystems and bio-diversity maintenance for communal livelihood; and
- Balancing between natural resource use, environmental conservation, and economic development.

9.2 Occupational Health and Safety Policy

The Occupational Health and Safety Policy developed for the Project should enable establishment of appropriate measures that ensure that the health, safety and welfare of all users is cared for as well as the health requirements of the local community in which the project is located. The policy should highlight on the following, among others:

- Medical examination of workers;
- Sanitation in the Project area;
- Proper liquid and solid waste management and disposal;
- Emergency preparedness;
- Fire safety;
- Necessity and availability of personal protective equipment
- Safety measures for cold storage equipment;
- Appropriate safety and rescue equipment are availed to Project users;
- Risk minimization of accidental damage, community, and environment; and
- Training in safety.

Preventive and protective measures should be introduced according to the following order of priority:

- Eliminating the hazard by removing the activity from the work process. Examples include substitution with less hazardous chemicals, using different manufacturing processes, etc.;
- Controlling the hazard at its source through use of engineering controls. Examples include local exhaust ventilation, machine guarding, acoustic insulating, etc.;
- 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.
- Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE.

9.3 Local Community Policy

The Local Community Policy are developed by management of the Project to ensure that the management of the project develops and maintains sound relations with its all users and the local community on mutual respect and active partnership. The policy should highlight on ways the management should:

- Work with the local community and relevant government departments and agencies to achieve sustainability of the project;
- Come up with ways of enhancing information flow from management to the community and Project users, and vice visa;
- Active engagement of the local community in all Project activities that impact on the local community.

9.4 Coordination and Review of the ESMP

The ESMP forms the basis for environmental and Social management on site. Based on the results of the performance assessment and review process, the ESMP may be modified as the project progresses. Modifications will only be permitted by the District Environmental Officer. Changes to the ESMP will only be allowed:

- a) If alternative measures with equal or improved outcomes have been identified after the compilation of the report.
- b) Prior to non-compliance, therefore requiring pro-active evaluation.

9.5 Reporting

In addition to all reporting requirements identified in the ESMP, records shall be kept by the District Environmental Officer of all monitoring results, monitoring reports, incident records, audit reports and management reviews. Minutes of all environmental project meetings shall be submitted to the Environmental officer.

Table 9-2 Summary of Environmental and Socioeconomic Management Plans

Phase	Potential Impacts	Management/Mitigation Measures	Target Level/Standard	Responsibility
Pre-Construction	Atmospheric air pollution due to emissions of exhaust and fugitive gases	<ul style="list-style-type: none"> Combustion of solid waste on the territories of site and camps is prohibited; A speed limit for trucks should be observed Bush clearance through burning should be avoided 	CO-4.5g/kWh NOx-1.1 g/kWh HC-8.0 g/kWh PM-0.612 g/kWh Smoke 0.15g/m	DED Karagwe District Council
	Loss of biodiversity (both Flora and Fauna)	<ul style="list-style-type: none"> Remove, without destroying, large Plants and ground cover where possible Replant recovered Plants and other flora from local ecosystem after construction The project proponent shall consult the experts for advice and for potential flora and stocks for re generation of disturbed vegetation in plant areas 	As minimum disturbance as possible	DED Karagwe District Council
	Climate change due to vehicle movement, bush clearance	<ul style="list-style-type: none"> Transition to Low-Emission Vehicles: Promote the adoption of low-emission vehicles, such as electric vehicles (EVs) or hybrid vehicles, which have lower or zero tailpipe emissions. Encourage incentives for purchasing EVs and develop charging infrastructure. Improve Fuel Efficiency: Encourage regular vehicle maintenance, proper tire inflation, and efficient driving practices to improve fuel efficiency and reduce emissions. Promote the use of cleaner fuels, such as biodiesel or renewable natural gas, where available. 	As minimum emission of greenhouse gases into the atmosphere	DED Karagwe District Council

Phase	Potential Impacts	Management/Mitigation Measures	Target Level/Standard	Responsibility
		<ul style="list-style-type: none"> Restoration and Conservation: Support initiatives for the restoration and conservation of natural habitats and ecosystems, as intact ecosystems contribute to carbon sequestration and climate regulation 		
Construction Phase stage	<i>Atmospheric Air Pollution</i> due to emissions of exhaust and fugitive gases	<ul style="list-style-type: none"> Combustion of solid waste on the territories of site and camps is prohibited; A speed limit for trucks should be observed Haul roads should be routinely maintained in good condition The project proponent shall plant indigenous trees and grasses over a period of time on area. This will prevent fine dust entering ambient area. The project proponent shall observe the standards for air quality throughout the operations and comply accordingly. Person Protective Equipment should be well observed 	CO-4.5g/kWh NOx-1.1 g/kWh HC-8.0 g/kWh PM-0.612 g/kWh Smoke 0.15g/m	DED Karagwe District Council
	Hearing impairment due to increased noise levels from construction vehicles and machinery	<ul style="list-style-type: none"> Machinery and equipment undergo regular inspection/maintenance; fitted with silencers and mufflers, use of noise insulation. Personal Protective Equipment: provide and enforce use by all personnel working in noisy zones; 	As minimum emission as possible	DED Karagwe District Council

Phase	Potential Impacts	Management/Mitigation Measures	Target Level/Standard	Responsibility
		<ul style="list-style-type: none"> The contractor should adhere to relevant noise regulations and guidelines set by the authorities. Limiting the duration and intensity of noisy activities during sensitive hours. The contractor should also consider scheduling noisy activities during periods when they would cause the least disruption to nearby residents and businesses. 		
	Injuries and fatal accidents due to occupational health and Safety issues	<ul style="list-style-type: none"> Noise will be limited to restricted times agreed to in the permit Machinery and equipment undergo regular inspection/maintenance; fitted with silencers and mufflers, use of noise insulation. Personal Protective Equipment: provide and enforce use by all personnel working in noisy zones; Provide education to crew about noise-sensitive aquatic life; Limit noise generating activities 	As minimum emission as possible	DED Karagwe District Council
	Occurrences of Emergencies	<ul style="list-style-type: none"> Preparation of an emergency plan for attending emergencies that poses an immediate risk health, life, property, or environment Installation of fire extinguisher and smoke detectors in the school, and science labs. Training to treat emergencies of fire, drought and earthquake Establish assembly Point 		

Phase	Potential Impacts	Management/Mitigation Measures	Target Level/Standard	Responsibility
	Waste generation	<ul style="list-style-type: none"> • Prepare site waste management plan prior to commencement of construction works • Designate appropriate waste storage areas, • Develop collection and removal schedule, • Unusable construction waste will be disposed of at an approved dumpsite 	Environmental Management (Solid Waste Management) Regulations, 2009 as amended in 2016	DED Karagwe District Council
	Employment Opportunity	<ul style="list-style-type: none"> • Employ locals for most of unspecialized labour • Procure local for most consumables available within the District • Manage local expectations by not overpromising • Registering of discontent/complaints from the local community, if any, and proper response 	Local procurement and Local employment	DED Karagwe District Council
Operation Phase	Disruption of air quality and effect on human health due to emissions of exhaust and fugitive gases	<ul style="list-style-type: none"> • The school can adopt renewable energy sources, such as solar panels and gas to meet the energy needs of the school such as lighting and cooking. • The school should prioritize energy-efficient designs and equipment within the school. This can involve the use of energy-efficient lighting systems, insulation materials, and energy-saving appliances. • The school can promote sustainable transportation options such as organizing carpooling initiatives for their staffs. • Develop a comprehensive cleaning program that includes regular dusting, vacuuming, and cleaning of surfaces to minimize dust, allergens, and contaminants. Use environmentally friendly and non-toxic cleaning products. 	TZS 845:2005 Air Quality – Specification; TZS 983:2007 Air Quality - Vehicular Exhaust Emissions Limits	DED Karagwe District Council

Phase	Potential Impacts	Management/Mitigation Measures	Target Level/Standard	Responsibility
		<ul style="list-style-type: none"> Regular monitoring of air quality and implementation of appropriate air pollution control measures should also be undertaken. 		
	Noise emissions	<ul style="list-style-type: none"> Installation of soundproofing materials in classrooms and common areas to reduce internal noise transmission. Strategic planning of school facilities, such as locating noisy areas away from residential areas or utilizing buffer zones, can help minimize the impact on nearby communities. Proper maintenance of equipment and facilities within the school premises can also contribute to noise reduction. Regular monitoring of noise levels and compliance with relevant noise regulations and standards should be prioritized. This can involve periodic assessments and inspections to ensure that noise pollution levels remain within acceptable limits 	<p>45dBA during a day and 35dBA during night</p>	DED Karagwe District Council
	Waste Generation (Waste Management)	<ul style="list-style-type: none"> Establishment of waste segregation systems, encouraging composting initiatives for the kitchen waste, and providing sufficient waste bins and collection points throughout the school premises. The school should establish dedicated storage areas for hazardous waste such as laboratory chemicals, faulty electrical appliances, ensuring they are secure, properly labeled, and equipped with appropriate safety measures. The school should also establish partnerships with authorized entities to ensure the waste is handled and 	Environmental Management (Hazardous Waste Control and Management) Regulations, 2021.	School Administration

Phase	Potential Impacts	Management/Mitigation Measures	Target Level/Standard	Responsibility
		<p>disposed of in compliance with environmental regulations.</p> <ul style="list-style-type: none"> • Designate bins specifically for the disposal of sanitary pads. These bins should be placed in female restrooms and other private areas, and they should have lids to maintain hygiene and provide privacy. • Construction of an incinerator for the management of the sanitary pads. • Waste management equipment, sites and transportation mechanisms will be put in place. • Contractor will construct temporary toilets. 		
	Employment Opportunity	<ul style="list-style-type: none"> • Employ locals for most of unspecialized labour • Procure local for most consumables available within the District • Manage local expectations by not overpromising • Registering of discontent/complaints from the local community, if any, 	Local procurement and Local employment	PO-RALG and DED Karagwe District Council
	Occupational Health and Safety hazards	<ul style="list-style-type: none"> • Establishment of a comprehensive health and safety policy. • Conducting regular inspections to identify and mitigate any potential hazards, such as faulty electrical systems, structural weaknesses, or unsafe equipment within the school premises. • Adequate emergency preparedness plans should be in place, including fire safety 	Zero incidents and accidents	DED Karagwe District Council

Phase	Potential Impacts	Management/Mitigation Measures	Target Level/Standard	Responsibility
		<p>measures, first aid provisions, and clear evacuation procedures.</p> <ul style="list-style-type: none"> • The school should prioritize maintaining a clean and hygienic environment to prevent the spread of diseases and ensure the availability of adequate sanitation facilities. • Promoting health and wellness among students should also be a focus, with initiatives like health education programs, access to clean drinking water, and appropriate waste management practices. • Implement security measures such as fencing of the school premises. Establish anti-bullying policies and procedures to address and prevent bullying incidents. • Standard drawing will ensure safety of school. • Safety precaution will be adhered to. • When possible fence the school compound 		
Decommissioning	Injuries and fatal accident	<ul style="list-style-type: none"> • Effective communication and coordination among project stakeholders, including contractors, workers, and relevant authorities, are vital for maintaining a safe working environment. • It is crucial for the contractor to prioritize safety measures and adhere to strict guidelines and regulations by 	Zero accident	DED Karagwe District Council

Phase	Potential Impacts	Management/Mitigation Measures	Target Level/Standard	Responsibility
		<p>implementing comprehensive safety protocols, providing appropriate personal protective equipment (PPE), conducting thorough risk assessments, and ensuring proper training for workers to significantly reduce the likelihood of accidents and injuries during the demolition activities.</p> <ul style="list-style-type: none"> • 		
	Unemployment	<ul style="list-style-type: none"> • Preparing the workers to be employed anywhere else in the different sectors through provision of extensive training. • Preparing the workers for forced retirement by providing skills for self-employment, wise investment. • Ensuring that all employees are members of the National Social Security Fund and the employees should ensure that the Proponent contributions are made. 	All employees	DED Karagwe District Council

10 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

Environmental and Social Management Plan (ESMP) intends to set forth “environmental and social conditions” that are to be abided by the proponent. It aims at ensuring effective implementation of the proposed mitigation measures

The Project requires regular monitoring and auditing of key environmental, health and safety indicators to:

- assess the overall performance of the project;
- to comply with local environmental, health and safety legislation; and
- Benchmark its project with other similar drilling projects for improved management.

Key environmental parameters of concern with the operation of such a project are:

- water consumption,
- energy consumption; and
- solid and liquid waste handling;

Additionally, the following social parameters need to be keenly monitored to ensure benefits to the community and its sustainability:

- Health status of workers;
- Employment opportunities to local community; and
- Corporate Social responsibility programs.

With these factors in mind, there are a need to put in place elaborate and sound environmental management system and mechanisms of monitoring on a continuous basis the environmental performance of the Project. Undertaking monitoring and auditing of key environmental parameters and putting in place of all approved recommendation of the environmental management plan, this Monitoring undertaken are both active and reactive.

With increased urban development come the challenges of waste handling and disposal. The monitoring programme developed must consider possible impacts of solid waste disposal. All waste emanating from the Project and its disposal must be monitored to ensure no environmental nuisance or degradation arises.

10.1 Parameters are Monitored

Monitoring involves measuring, observing, recording and evaluation of physical, socioeconomic and ecological variables within the project area and the neighborhood. This may include the following:

Table 10-1: Recommended Environmental and Social Monitoring Plan

Phase	Potential Impacts	Parameters to be Monitored	Target Level/Standard	Monitoring Area	Monitoring Frequency	Responsibility	Estimated Cost
Pre-Construction Phase	<i>Atmospheric air pollution</i> due to emissions of exhaust and fugitive gases	SO ₂ , NO _x , CO ₂ , CO, Particulate matter (TSP, PM ₁₀ , PM _{2.5})	CO-4.5g/kWh NO _x -1.1 g/kWh HC-8.0 g/kWh PM-0.612 g/kWh Smoke 0.15g/m	Established Monitoring Area	Monthly	Karagwe District Council	5,000,000
	Loss of biodiversity (both Flora and Fauna)	Biodiversity	Continuously As minimum disturbance as possible	Project area	Before commissioning and once every three months	Karagwe District Council	N/A
	Climate change due to vehicle movement, bush clearance	Greenhouse gases (CO ₂ ,CH ₄ ,NO ₂ ,O ₃ and HCFCs)	As minimum emission of greenhouse gases into the atmosphere	Established Monitoring area	Monthly	Karagwe District Council	2,000,000
Construction Phase	<i>Atmospheric Air Pollution</i> due to emissions of exhaust and fugitive gases	SO ₂ , NO _x , CO ₂ , CO, Particulate matter (TSP, PM ₁₀ , PM _{2.5})	CO-4.5g/kWh NO _x -1.1 g/kWh HC-8.0 g/kWh PM-0.612 g/kWh Smoke 0.15g/m	Established Monitoring Point	Before commissioning and once every three months	Karagwe District Council	5,000,000
	Hearing impairment due to increased noise levels from construction	Noise and vibration level	As minimum emission as possible	Established Monitoring Point	Once Every three months	Karagwe District Council	10,000,000

Phase	Potential Impacts	Parameters to be Monitored	Target Level/Standard	Monitoring Area	Monitoring Frequency	Responsibility	Estimated Cost
	vehicles and machinery						
	Injuries and fatal accidents due to occupational health and safety issues	Incident and accident register	As minimum emission as possible	Project site	Once Every six months	Karagwe District Council	1,000,000
	Water Pollution(Ground and surface water)	Heavy Metals	Bi annually	Project site Downstream of project area	Bi annually	Karagwe District Council	2,000,000/=
	Waste generation	Waste disposal Inspection of amount of waste not contained in specified collection containers/skips	Zero waste	Transfer stations and disposal areas	Monthly	Karagwe District Council	700,000
Operation Phase	Disruption of air quality and effect on human health due to emissions of exhaust and fugitive gases	SO ₂ , NO _x , CO ₂ , CO, Particulate matter (TSP, PM ₁₀ , PM _{2.5})	TZS 845:2005 Air Quality – Specification; TZS 983:2007 Air Quality - Vehicular Exhaust Emissions Limits	Established Monitoring Area	Once every six months	Karagwe District Council	5,000,000
	Noise emissions	dBA	Noise and Vibration Levels Regulations (United Republic of Tanzania, 2011) 45 dBA (Leq) Day and 35	Established Monitoring Area	Once every six months	Karagwe District Council and School Administration	4,000,000

Phase	Potential Impacts	Parameters to be Monitored	Target Level/Standard	Monitoring Area	Monitoring Frequency	Responsibility	Estimated Cost
			dBA (Leq) Night and baseline of 50dBA (Leq)				
	Waste Generation	Waste disposal Inspection of amount of waste not contained in specified collection containers/skips	Zero Waste	Transfer stations and disposal areas	Monthly	School administration	1,000,000
	Employment Opportunity	Employees	Local procurement and Local employment	Number of Employees	Quarterly	Karagwe District Council	N/A
	General Health and Safety hazards	Accident and incident register	Zero incidents and accidents	School compound	Once every six months	Karagwe District Council	2,000,000
Decommissioning phase	Injuries and fatal accident	Accident and incident register	Zero accident	Project area	Monthly	Karagwe District Council	2,000,000
	Unemployment Loss of income to workers	NSSF remittance	All employees	School Compound	Once every year	Karagwe District Council	N/A

10.2 Environmental Health and Safety Auditing

Annual Environmental Health and Safety Audits should be carried out as provided for in the Environmental (Impact Assessment and Audit) Regulations of 2005.

The Audits serve to confirm the efficacy and adequacy of the Environmental Management Plan. The audits should include but not limited to the following:

- Air, soil, and water pollution
- Waste generation, management and disposal;
- Resources utilization
- Occupational Health and Safety
- Traffic Safety;
- Monitoring and

Views and comments from neighbors and progress in implementation of Environmental Health and Safety Management Plan.

10.3 Awareness and education

The project proponent with collaboration with contractor or local workers shall encourage environmental awareness among his foremen before and during implementation of the project. The education will include:

- Provide copies of the ESMP and discuss its contents with all construction foremen and workers
- Discuss techniques and answer questions about erosion and pollution control at regular site safety meetings
- Demonstrate proper housekeeping methods
- Inform the workers of actions to take in the event of spill of hazardous materials (oil, fuel, bitumen, concrete, etc.)
- Post sign at key locations reminding workers how to properly store construction materials, handle and dispose of toxic waste, wash water, and similar instructions
- Remind workers of fines, penalties that may be levied against the project by the local permitting agencies control environmental destruction is not adhered to

11 RESOURCE EVALUATION/COST BENEFIT ANALYSIS

11.1 Introduction

The aim of cost-benefit analysis is to inform the project developer to make a decision on: whether it makes economic sense to continue with the project; whether the chosen option is a cost-effective alternative; and the estimate of the size of a project. For this project, the costs will include: capital expenditures; operating and maintenance costs; staff costs; materials; research and development; and environment, health and other social costs.

Benefits may include: build on the achievements of previous projects in the education sector which have supported quality improvements. It will support the expansion of the secondary school network in order to substantially reduce travel distances by bringing secondary schools closer to children's homes through an expansion of the secondary school network. Construction will be guided by a minimum infrastructure package based on the School Construction and Maintenance Strategy and minimum construction standards aligned with the Projects Environmental and Social Framework.

11.2 Environmental Cost and Benefit Analysis

Environmental cost benefit analysis is assessed in terms of the negative and positive impacts. Furthermore, the analysis is considering whether the impacts are mitigatable and the costs of mitigating the impacts are reasonable. As it has been mentioned in Chapters 7 and 8, the potential benefits of the project, in terms of economic advancement and social benefit are substantial.

Total project investment cost is TZS **4 billion** in this regards monitoring costs which are less are more less than project costs, therefore this project is resourceful viable.

The environmental impacts are reasonably mitigatable. So to mitigate negative impacts, when compared to the required data are relatively small.

11.3 Effect on the Local Community

The benefits from project development can be judged in terms of employment, social welfare, education development, and the local economy (wages, goods and services). Thus, there will be a substantial spread of the benefit within the community through the provision of food, accommodation and other regular services to the employees and students.

11.4 Infrastructure Development

The upgrading, development and maintenance of local infrastructure are benefits that will extend far beyond the project's scope and lifetime. Also, during operation of the project there will be storage rooms and temporarily office that will be constructed with engineering standards at the site especially at Kandegesho village nearby or within project area

11.5 Advantages for the Broader Community and Country

The earnings of the project will in the final analysis it will contribute the following,

- Creating a gender sensitive, learner-friendly school environment through investing in supportive structures in the school and community including trained school guidance counselors, stronger links with the community through Parent Teacher Associations and life skills training.
- Supporting female students to avoid getting pregnant and dropping out of secondary school through measures that include
 - Encouraging community awareness of risks for girls; and
 - Supporting safe passage and reducing the distance to schools to reduce the risks of gender-based violence on the way to school.
 - Supporting girls who become pregnant to access recognized, quality Alternative Education Pathways (AEPs)
- To obtain lower secondary certification and continue with upper secondary education or post-secondary education.

- Improving the quality of secondary school teaching and learning environments through the hiring of additional qualified teachers in core subjects and providing textbooks in core subjects.
- Increasing the number of secondary school spaces through the construction of new classrooms that meet minimum infrastructure standards and supporting the expansion of the school network to bring schools closer to communities.
- Using innovative digital technology to facilitate mathematics and science teaching and improve learning

12 DECOMMISSIONING PLAN

12.1 Introduction

Decommissioning is the last phase of project life. It involves terminating project activities and operations and rehabilitating site to or close to its original state. It is anticipated that the project shall continue as long as there is a demand for a project, however, individual components of the project shall be decommissioned as need be.

12.2 Components

This decommissioning plan presents a conceptual framework on how the Project can be demolished if need. The plan takes into consideration on how materials and equipment, support infrastructure and land on which the buildings are standing on can be handled.

12.3 Disposal/Demolition of Project Storage Buildings

Decommissioning of project shall only involve dismantling of the temporary office and store room that will be constructed during construction phase.

12.4 Considerations

- All employees involved in the decommissioning and demobilization exercises must have proper protective gear throughout;
- Decommissioning and demobilization activities should be done during day time only unless it's an emergency;
- Waste resulting must be disposed at designated waste disposal sites;
- All relevant lead agencies must be involved in the exercise; and
- Emergency services such as first aid and ambulance services must be on standby in case of any eventualities.

13 CONCLUSION AND RECOMMENDATIONS

13.1 Conclusion

The **Bashungwa Secondary School** aims at improving the education services to local community living at Nyakakika ward and Karagwe District even outside the district. The project is expected to have pressure on noise pollution, air quality and waste generation. Some mitigation measures and enhancement measures have already been included on this Environment and Social Management Plan (ESMP).

With the implementation of the recommended mitigation measures and an effective monitoring, the potential quarry dust and odor impacts will be minimized and kept within the relevant criteria. Noise assessment has been undertaking the cumulative impacts arising from project in the vicinity of the study. Mitigation measures of noise and other pollution have been recommended. Also there are hidden Social, Geological and Environmentally project effects which have not been identified during the study. If the project shows negative impacts in long run; **we recommend the responsible authority to carry out further assessment.**

13.2 Recommendations

A rapid tension and a concerned warning alarm is need at a construction site with aim of reducing the risk to human community and environments. The Council, developer and constructors should take their role to ensure protection of possible negative impacts of that project to environments and community as prescribed in chapter seven above. There are should be construction of two standard toilets for both male and female basing on gender and sexual point of view. The authorities are supposes to allocate solid and waste water sites which will be used for collecting and disposing wastes.

There are should be also human special needs such as first aid for constructors, workers, labourers, venders, suppliers and all communities dwelling adjacent the construction site.

However, the District Executive Office through Environment department will be closely following up to see that the project remains friendly to the neighboring community and free from negative environmental impacts. Nevertheless, social responsibilities of the neighboring community will be observed throughout the project cycle.

Lastly, due to social economical education service demand to the community, the developer did not conduct an EIA for this project. Therefore, we prefer to conduct the ESMP which will guide and be used as a framework to the constructors and other responsible individual to follow during construction, operation and decommission of the Project so as to mitigate negative environmental Impacts. We still recommend that whenever negative impacts prevail, at construction phase the authority will be supposed to conduct an environmental audit during operation phase as prescribed by EMA section 81 (2).

REFERENCES

1. Kagera Regional Profile, 2017
2. Karagwe DC Environmental Brief
3. United Republic of Tanzania, Occupation Health and Safety Act (2003)
4. United Republic of Tanzania, Public Health Ordinance 1955
5. United Republic of Tanzania, Tanzania Development Vision 2025
6. United Republic of Tanzania, The Environment Impact Assessment and Audit Regulations, 2005
7. United Republic of Tanzania, The Environmental Management Act No. 20 of 2004
8. United Republic of Tanzania, The National Employment Policy
9. United Republic of Tanzania, The National Energy Policy (2003)
10. United Republic of Tanzania, The National Environmental Policy (1997)
11. United Republic of Tanzania, The National Investment Policy (1996)
12. United Republic of Tanzania, The National Land Act, No. 4 of 1999
13. United Republic of Tanzania, The National Land Policy (URT, 1995)
14. United Republic of Tanzania, The National Poverty Eradication Strategy (2000)
15. United Republic of Tanzania, The National Water Policy (2002)
16. United Republic of Tanzania, The National Water Policy, 2002
17. United Republic of Tanzania, The Local Government (District Authorities) Act No. 7 of 1982
18. United Republic of Tanzania. (2007). *Environmental Management (Air Quality Standards) Regulations*. Dar es Salaam: Government Printers.
19. United Republic of Tanzania. (2007). *Environmental Management (Soil Quality Standards) Regulations*. Dar es Salaam: Government Printers.
20. United Republic of Tanzania. (2007). *Environmental Management (Water Quality Standards)*. Dar es Salaam: Government Printers.

APPENDIX: Proposed area

