NFRA

NATIONAL FOOD RESERVE AGENCY(NFRA)
Chang'ombe, Plot No. 35, Mboziroad
P.O Box 5384 Dar es Salaam.
Tel: 255 22 2862134
Email: info@ infra.go.tz

ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED EXPANSION OF GRAIN STORAGE FACILITIES ON PLOT NO. 20 & 21, BLOCK 'EE', AT NMC MTAA IN MAZWI WARD, SUMBAWANGA MUNICIPALITY, RUKWA REGION

CONSULTANTS:
ASSESS CONSULTING Co. LTD
3rd Floor, Togo Building Tower,
P.O Box 14466, Dar EsSalaam
Tel: +255 22 2666978, Cell. +255 715 691 438
Email: info@ assessconsult.co.tz

2nd November 2017

EXECUTIVE SUMMARY

ProjectTitle: PROPOSED EXPANSION OF GRAIN STORAGE FACILITIES
Project Location: PLOTS NO. 20 & 21, BLOCK 'EE', AT NMC MTAA IN MAZWI WARD, SUMBAWANGA MUNICIPALITY, RUKWA REGION

Proponent:

NATIONAL FOOD RESERVE AGENCY (NFRA)
Chang'ombe, Plot No. 35, Mbozi road,
P. O. Box 5384, D' Salaam, Tanzania
Tel.+255 (0)22 2862134
Fax. +255 (0) 22 2864069
Email: info@nfra.go.tz
Contact Person: **Chief Executive Officer**

EIA Consultant:

ASSESS CONSULTING COMPANY LTD
3rd Floor, Togo tower,Kinondoni Rd
P.O Box 14466,D'Salaam, Tanzania
Tel: +255 22 2666978
Cell. +255 787 6914 38
Email: info@assessconsult.co.tz
Contact Persons: OjungLongdare

INTRODUCTION

National Food Reserve Agency (NFRA) which is a government Agency under the Ministry of Agriculture, Livestock and Fisheries. NFRA intends to undertake construction of modern silos at Sumbawanga site. The proposed project is comprised of 6 silo bins for grain storage, canteen building, Qualification building, weighbridge, agrochemicals store room and administration office.
Environmental Management Act, No 20 of 2004, section 81 and regulation 11 of the EIA and Audit Regulations of 2005 require that, all proposed development projects which may significantly affect the environment be subjected to Environmental Impact Assessment. It is from this context, NFRA Contracted Assess Consulting Co. Ltd of Dar es Salaam to carry out the EIA study. The study was carried out between January and May 2017.

OBJECTIVE AND RATIONALE OF THE PROJECT

Rukwa region is one of the agricultural regions in Tanzania. The region is famous for agriculture productivity and rapid development has been witnessed through agriculture sector. To curb the increasing high demand for grain storage in the region, expansion of grain storage facilities is proposed. Also, the proposed project is in line with Government's development initiatives which aim to promote good quality of life, employment and sustainable economic investments which are highly needed and encouraged. The proposed project will positively affect the economy and

employment gains as it will reduce the problem of lack of reliable markets for local farmers' produce.

PROJECT LOCATION AND DESCRIPTION

The proposed expansion of grain storage facilities is located on Plot No. 20 and 21 Block EE at NMC mtaa, Mazwi ward in Sumbawanga municipal, Rukwa region. The project site is easily accessible through NFRA road, turning left at a junction after Rukwa regional hospital as one travels from Mbeya region through Tunduma – Sumbawanga road. The site is legally owned by NFRA and it is located within Mazwi industrial area, Sumbawanga Municipality. The total area of the site is 12200m^2. The site is bordered by residential settlements to the Southern and Western sides, while industrial premises to the Eastern side and Ruiche River is located North –West from the site which is approximately 200m away.

The site is currently used for storing grain, where there are four (4) warehouses with total storage capacity of 20,000MT. The whole project site is fenced with chain link and an iron-gate at entrance. The walkway within the proposed site is not paved and there is inadequate storm water drainage. There exists a septic tank for wastewater management. The existing structures at NFRA Sumbawanga site are neither subjected to EIA nor EA. The total area at NFRA Sumbawanga site is 12,200m^2 while the area proposed for construction of a modern silos is 2090m^2. The area marked for the silos construction is at present occupied by office building. No additional land is required as there will be demolition of the existing office building to pave way for silos construction. The site has few vegetation and trees which are planted at the boundaries. However, the topography of the site is a sloppy terrain. It slops from South to North, with very small water gullies.

PROJECT DESCRIPTION

The proposed project will involve construction of silos for grain storage facilities which will consist of various components from grain intake to grain storage. These components include intake unit, bins cleaning and drying unit, bulk conveyance unit (Conveyors and elevators), bulk storage unit (prefabricated grain storage and bagging bin), aeration system, and instrumentation. Main components designed for the proposed silos are 6 flat bottom cylindrical bins of galvanized steel for maize storage. Silo bins considered in this design will be of 3,350 MT with material handling rate of 60 Tone per hour for loading of silos and renovation of existing facilities in order to improve the efficiency for grain storage. The Project designed life span will be atleast 50 years and the total investment cost will 12 billion.

POLICY, ADMINISTRATIVE AND LEGAL FRAMEWORK

In carrying out the Environmental Assessment for the proposed development, various Policies and acts relevant to this project were reviewed, namely; National Environmental Policy (1997); Environment Management Act (2004); Environment Impacts Assessment and Audit Regulations (2005), Local Government (Urban Authorities) Act (1982), National Transport Policy (2003), National Water Policy (2002), The National Energy Policy, (2003), The National Policy on HIV / AIDS (2001), The National Employment Policy (URT, 1997b), The National Investment Promotion Policy (1996), National Gender Policy, (2000), Land Acquisition Act Cap 118 R:E 2002, Urban Planning Act 2007, The Water Resources Management Act, The Architects and Quantity Surveyor Act No. 16 of 1997, The Engineers

Registration Act No. 15 of 1997, The Contractors Registration Act No. 17 of 1997, The Occupational Health and Safety Act No. 5 of 2003, The HIV and AIDS (Prevention And Control) Act (2008), Land Act (1999), The National Land Policy (1995) and Land Use Planning Act No. 8 of 2007.

STAKEHOLDER CONSULTATION

Stakeholders consultation involved all individuals, groups or organizations that might be affected or might affect (positively or negatively) the proposed construction of silos complex. They are found at national, municipal and local levels. At municipal levels; consultant met with Municipal Executive Director, Municipal Environment Management Officer, Municipal land officer and Municipal Agricultural Officer. At the ward level, the Ward Executive Officer (WEO) Mtaa Executive Officer (MEO) and communities were consulted. Also interviews were held with officers at Rukwa region commissioner's office where consultation were held with the Regional Commissioner, Region Administrative Secretary and Region Agricultural Officer. Again consultation was held with officers at; Fire and Rescue Force-Rukwa region, Occupation Health Safety Authority (OSHA) North-Southern zone and TFDA-MbeyaNorth-Southern zone.

DESCRIPTION OF THE MAJOR SIGNIFICANT IMPACTS

Identification of the major significant impacts is based on issues of concerns raised at various stakeholder meetings or interview and expert's observations, experiences and judgment.

The identified impacts are also linked with project phases namely: - construction, operation as well as the decommissioning phase. The proposed project will generate a wide range of environmental and social impacts from the construction phase to the decommissioning phases. The impacts are both positive and negative in nature. Most adverse impacts will be of a temporary nature during the construction phase and can be managed to acceptable levels with implementation of the recommended mitigation measures for the project. Ways of enhancing positive impacts have also been suggested. Significant impacts are as shown below: -

Positive Impacts

- Benefit to local producers and suppliers of construction materials
- Income, skills and knowledge increase to local laborers during construction
- Enhanced income, employment opportunities and local business
- Ensure good food quality and availability of food in case of emergency
- The project will encourage local people to increase effort in agriculture activities

Negative impacts

- Noise pollution due to movement of construction equipment
- Air pollution due to dust emission
- Generation of excess soil/spoil materials
- Degradation at Points of Sourcing Construction Materials
- Occupational health and safety of construction workers
- Environmental degradation from mismanagement of used pesticides containers
- Spreading of HIV/AIDS and other STIs

- Loss of aesthetic value due to Abandonment of infrastructure
- Loss of employment, and business place
- Loss of lives and properties due to fire break out
- Change of the area outlook

ALTERNATIVE CONSIDERED

The ADB EIA Guidelines, Annex 2 (1992) states that EIA should provide project "options" within the constraints of the aim and broad economic, technical and environmental factors.

Alternative site

The project proponent has only one site for the proposed construction of modern silos complex for grain storage hence there was no assessment of an alternative site.

Alternative Power Supply

NFRA Sumbawanga site has been connected with electricity from TANESCO incorporated with ZESCO. However, diesel generator shall be used as an alternative source of power during operation phase. However, high running cost is considered to be a hindrance to this alternative hence diesel generator shall be used in case of power outages only

Alternative Water Supply source

The proposed project will use water from SUWASA supply network. Also the proponent plans to drill an onsite bore hole to be used as alternative water source.
Harvesting rain water from roof tops of all building has been considered as an alternative source of water supply but it is found to be insufficient to serve as a sole source of water.

Alternative Sewage Management System

- **Septic tank and soak away system**

Septic tanks are watertight chambers below the ground level made to receive excreta and liquid waste from flush toilets and other domestic sullage. The solids settle out and break down in the septic tank. The liquid remains in the tank for a short time before overflowing into a sealed soak away where it seeps into the ground. A permeable soil is essential for a soak away to function properly. Septic tanks must be emptied periodically when they are full.
Given the nature of operation and space unavailability for oxidations ponds at the project site, it has been proposed that a septic tank and soak away system be adopted for management of sewage in the area.

No Project Alternative (Zero Alternatives)

This alternative is considered not feasible from the following facts:

a) The benefits envisaged from the project and other incomes for local people will not be realized;
b) Availability of permanent grain market for the people in need will not be realized hence economic development of Rukwa will be thwarted.

c) It is against the Tanzania Development Vision 2025 to discourage developments of projects especially if there are no negative irreversible impacts associated to such project.

Based on the above, it is considered that No-Project alternative is not a plausible alternative.

MITIGATION MEASURES AND ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Environmental Impact Assessment is generally designed for systematic determination of environmental consequences that can arise from a proposed project. The EIA identifies potential adverse environmental impacts and proposed mitigation measures to minimize or prevent any adverse impacts. The environmental options to minimize or prevent the identified adverse impacts have been suggested in this report are contained in the EMP in the main report. Many of them are based on good engineering practice. On the other hand, he EMP describes the implementation schedule of the proposed mitigation measures as well as planning for long-term monitoring activities. It defines roles and responsibility of different actors of the plan. An EMP has been prepared and covers all the phases of the project life. Prior to mobilization, the contractors should also prepare their own environmental management plans, including a schedule of works, for review by the Environmental Officer and the Supervising Engineer.

ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN

This plan describes the mitigation monitoring, responsible agents, monitoring parameters, costs and frequency of their execution. The plan is proposed as one as a measures to help rectify the significant impacts as a result of the project undertaking. For instance, air quality, which in turn shall be analysed and compared to the baseline characteristics of air and thus establish the benchmark as whether it was polluted or not. This is therefore a working document, which can be updated whenever new information is received or site conditions change. Therefore, the environmental and social monitoring plans (ESMP) for this project will be operationalized at a number of levels of the project phases. It is based upon the anticipated impacts, required mitigation measures and degree of follow-up (monitoring) required. It is also advisable that, collaboration with different stakeholders at all levels in some aspects of the project is very important. However, the main responsibilities lie in the hand of the project proponent and the contractor.

ENVIRONMENTAL COST BENEFIT ANALYSIS (ECBA)

Environmental cost benefit analysis is assessed in terms of the negative versus positive analysis. Furthermore, the analysis is made to consider whether the impacts can be ameliorated and the costs of mitigating the impacts are reasonable. As it has been mentioned, the benefits of the project, in terms of financial and social benefit are substantial, the environmental impacts may be mitigated and the financial resources needed to mitigate the impacts are relatively small compared to the actual capital investment

DECOMMISSIONING

It is anticipated that the life span of the constructed silos will be 50 years based on the design of structures and materials to be used for construction. Activities undertaken in the silos may stop when it becomes unsuitable for habitation. At that

time when the proponent decides to demolish the structures there will be loss of markets to farmers as well as jobs to workers. Businessmen/women, who depend on transporting grain and providing other services to the grain storage silos may suffer market loss and some will go out of business. This will also involve the loss of income to the families supported by the employment at the project area
In the course of demolition and removal some environmental impacts may occur. Therefore, preparation of the decommissioning plan is aimed at ensuring that demolition, transportation, disposal and overall closure are done in a way that does not adversely affect the people surroundings.

DEMOBILIZATION

Upon completion of the contracted work, the contractor shall remove all of theirequipment, materials and other articles from the construction area. Some of the impacts that will arise from demobilization include:

- Termination of temporary jobs
- Noise pollution

CONCLUSION

The project has enormous socio-economic benefit to both Rukwa people and the Nation at large. The perceived positive impact of this project in terms of socio-economic development and poverty reduction is far greater to what would be seen as negative impact. Mitigation measures have been proposed to curb all negative impacts and incorporated in the project design and others will be covered and contained during the construction and operation phases of the proposed project.

DECLARATION

We, hereby certify that the particulars given in this report are correct and true to the best of our knowledge

SN	Name of Consultant	Qualification	Profession	Signature
1	Mr OjungLongdare	Registered EIA Expert	Environmental Engineer	
2	Mr Mgendi K Chota	Registered EIA Expert	Environmental Engineer	
3	Ms Rebecca Maingu	Registered EIA Expert	Geography and Environmental Studies expert	

ACKNOWLEDGEMENT

NFRA would like to acknowledge the following for their invaluable contribution to the successful completion of this EIA study:

- The National Environment Management Council for reviewing project brief,the scoping report and Terms of Reference. This has enabled the consultant to address all pertinent issues that would have been forgotten.
- Assess Consulting Limited for undertaking the study.

Finally, all stakeholders as listed in Appendix iii are also acknowledged for their invaluable comments, information and data

CONTENTS

LIST OF TABLES

LIST OF FIGURE/PHOTOS

ABREVIATIONS AND ACRONYMS.

DoE	Division of Environment
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMA	Environmental Management Act
ERB	Engineer Registration Board
ESMP	Environmental and Social Management Plan
GN	Government Notice
HIV/AIDS	Human Immune Deficiency Virus/ Acquired Immune Deficiency Syndrome
Km	Kilometre
kVA	Kilo-Volts Amps
LUP	Land Use Policy
M	Meters
M^2	Square Meters
MEO	Mtaa Executive Officer
NEMC	National Environment Management Council
NEP	National Environment Policy
NFRA	National Food Reserve Agency
NGO	Non-Governmental Organization
OSHA	Occupational Safety and Health Authority
SAGCOT	Southern Agriculture Growth Corridor of Tanzania
SCEP	Storage Capacity Expansion Project
SUWASA	Sumbawanga Water Supply Authority.
TAC	Technical Advisory Committee
TANESCO	Tanzania Electric Supply Company
TFDA	Tanzania Food and Drug Authority
ToR	Terms of Reference
TTCL	Tanzania Telecommunication Company Ltd.
URT	United Republic of Tanzania
WEO	Ward Executive Officer
ZESCO	Zambia Electric Supply Company
MT	Metric Tones

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

NationalFood Reserve Agency (NFRA)isthegovernment Agency undertheMinistry of Agriculture, Livestock and Fisheries. ItwasestablishedbytheAct No. 30 of 1997 and cameintoeffect in 2008. It'sHeadquarters arelocated at Chang'ombeareaplot No. 35 Mboziroad in Dar es Salaam City, Tanzania.

NFRA was established for an overall purpose of guaranteeing national food security in times of food shortages, this is for the purpose of meeting food emergencies in the country for post disaster needs and improving efficiency of grain storage management. The Agency is mandated to carry out three main functions namely;

- Procuring, reserving and releasing food stocks to address disasters
- Recycling and releasing food stocks in the market in order to stabilize food supply,
- Marketing food commodities and generating revenue

Through Storage Capacity Expansion Project (SCEP) loan, the National Food Reserve Agency intends to implement the envisaged project through the construction of modern silos, warehouses and other structures in the eight sites where Sumbawanga site is one of them. SCEP loan is aimed to assist on four major components, namely;

- ✓ Development of an improved silo storage system to store grain through the construction of modern grain storage silos at eight selected strategic sites;
- ✓ Modernization of existing storage facilities;
- ✓ Technical Assistance,
- ✓ Training and Strategic Studies.

The overall goal is to enhance storage capacity of grain in the country.Sumbawanga site package will include construction of six modern silos bins, administration block, canteen building, laboratory, weighbridge and agrochemicals store room. The site is located on Plots No. 20 & 21, Block 'EE' at NMC Mtaa in Mazwi Ward which is in Sumbawanga Municipality, Rukwa región. The site covers a total área of 12,200m^2.
At Sumbawanga site the Project cost is estimated to be in the tune of Tsh 12 Billion.

The construction of silos at NFRA Sumbawanga site for expansion of grain storage facilities is an indication of envisaged economic growth through agriculture sector. The authorities in Rukwa region are encouraging expansion in agricultural activities as this mode of building will ensure optimum space for grain storage. Construction of silos at NMC mtaa in Mazwi ward will allow development of business in the area and help the residents of Mazwi ward and nearby areas to benefit from the proposed project in one way or the other. Successful execution and completion of such a project will serve as an important source of revenue for Sumbawanga municipality and the country at large.

1.2 PROJECT OBJECTIVE AND RATIONALE

1.2.1 Objective

The main objective of the project for expansion of grain storage facilities from existing storage capacities of 20,000metric tones to new proposed 40,000metric tones at NFRA Sumbawanga site will save local farmer by ensuring them permanent market to sell their agriculture products. Apart from ensuring presence of quality and safe food product, the project will have other benefits such as contributing wealth to

local farmers who will sell their agriculture product and other who will be agents for buying food from NFRA and distributing it to all area with demand in Tanzania.

The proposed project is in line with 'KILIMO KWANZA' resolve, National Strategy for Growth and Reduction of Poverty (MKUKUTA) II, Big Result Now (BRN) and Southern Agriculture Growth Corridor of Tanzania (SAGCOT). Furthermore the Tanzania Agriculture and Food Security Investment Plan (TAFSIP) emphasizes on improvement of food security and maintenance of a strategic grain reserve

1.2.2 Rationale

Investment in development is vital for environmental protection because the environment is the first victim of acute poverty, desertification, urban overcrowding, etc. Also it is clearly stated in various documents of the Governments' development agenda that, all development initiatives that aim to promote good quality of life, create employment opportunities and other sustainable economic investments are highly needed and encouraged.

Due to increase in population who going together with increase in agriculture products, the demand for storage facilities will increase also. So to curb such a demand for agriculture storage facilities the proposed construction of silos for grain storage will be a solution. The proposed project for expansion of grain storage facilities will be in line with the sustainable development goal especial goal No. 2 (2.1) which insists that by 2030 will be no hunger and safe and sufficient food will be available round year. Also support for local farmers to increase agriculture product by ensuring them permanent market to sell their products and the project will balance food circulation within local market.

1.3 OBJECTIVES OF THE SCOPING STUDY

1.3.1 Main objectives

The main objectives of the scoping study for the proposed project for the construction of modern silos at NFRA Sumbawanga site is to ensure the key relevant environmental and social – economic issues are well identified and all stakeholders are well involved in the EIA study. Also the scoping study provides information that is necessary for developing the terms of reference for carrying the full EIA study for the named project.

1.3.2 Specific Objectives

Scoping is a process that ensures relevant and focused environmental assessment is undertaken. Usually, scoping is undertaken as a first step in the environmental Impact Assessment (EIA) of new development projects. Therefore, the specific objectives of the scoping exercise were to: -

- Ascertain key issues that are likely to be important during Environmental Impact Assessment
- Identify stakeholders and issues of their concerns
- Document current environmental management practices
- Establish the level of interactions of the Institution and participation of the interested / affected stakeholders
- Determine key policy, legal and institutional frameworks relevance to the operation of Institution in the area.

- Define the Terms of Reference for the Environmental Impact Statement (EIS)

The following key Issues were identified during scoping and given attention during EIA study.

- Occupational health hazard and safety risks to NFRA workers,
- Enhanced income, employment opportunities and local business,
- Generation of solid waste and its management,
- Impairment of environment due to discharge of domestic effluent
- Impairment of environment due to mismanagement of empty pesticide containers
- Noise pollutionduring to project implementation,
- Air pollution/dust emission during project operation,
- Human health impact from application of grain storage chemicals,

1.4 OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENT

NFRA undertook an Environmental Impact Assessment for its proposed project in Mazwi area to comply with the law and ensure that the project will not cause significant negative environmental and socio-economic impacts.

1.4.1 Main objectives

In accordance with Section 12 (part IV) of the Environmental Impact Assessment (EIA) and Audit regulations (2005), which provides the general objectives for carrying out the EIA, among others. The list includes the following:

- To ensure that environmental considerations are explicitly addressed and incorporated into the development of decision making process;
- To anticipate and avoid, minimise or offset the adverse significant biophysical, social and relevant effects of the development proposal;
- To protect the productivity and capacity of natural systems and ecological processes which maintain their functions;
- To promote development that is sustainable and optimise resources use and management opportunities.

1.4.2 Specific objectives of the EIA include:

(i) Establishment of baseline information on both natural and the built environment including socio-economic activities of the proposed project area;
(ii) Ensure that environmental legal requirements are met by NFRA prior and during implementation of the project;
(iii) To identify, predict and evaluate foreseeable environmental and socio-economic impacts, both beneficial and adverse, of the proposed investment;
(iv) Proposing effective measures to mitigate the negative impacts during the construction and operation of the entire project that aim at eliminating or minimizing the potential negative impacts and promote positive ones;
(v) Outlining an environmental and social management plan to manage the impacts; and
(vi) Preparing an environmental and social monitoring plan to keep track of the environmental performance of the project.

1.5 METHODOLOGY

This study followed procedures that address the requirement of EIA exercise stipulated in the Environment Impact Assessment and Audit Regulations, GN No 349

of 2005, Regulation 12. This EIA study was undertaken between January and May 2017 and was mainly based on checklists developed by Consultants which was complimented by past experience in undertaking similar studies. Observations of the proposed project site and surrounding habitats were made. Also literature review, i.e.reading relevant reports, policies and documents, was undertaken. The study adopted the following approach:

1.5.1 Communication with Stakeholders

1.5.1.1 Stakeholder groups identification

Stakeholder's identification was based on the role and relevance of an organization, group or individual to the proposed project. Stakeholders were pre-determined based on the nature of the project and their role. Further, selection of stakeholders was done based on the categories and levels of stakeholders' i.e. national, municipal and local government authority levels. Classification by levels allows the establishment of adequate planning and strategies for the development of the consultation meetings. The following were key stakeholders identified and consulted for the proposed project;

- Regional Commissioner's Office
- Regional Administrative Secretary's Office
- Sumbawanga Municipal Council,
- NFRA management and staff,
- Fire and Rescue Force Rukwa region
- The Occupational Safety and Health Authority (OSHA),
- Tanzania Foods and Drugs Authority (TFDA)
- Leadership- Ward Executive offices
- Local Communities of NMC Street

1.5.1.2 Involvement of stakeholders

The EIA study applied different participatory methods to involve all the concerned stakeholders. One on one interviews were held with every identified stakeholder. Every individual was given an opportunity to give his or her comments freely. Every detail of each stakeholder's comment was considered important and was noted down.

1.5.1.3 Identification of stakeholders' concerns

Through interviews and discussions, stakeholders pointed out a number of issues and concerns. Relevant issues were noted and have been included in this EIA study report.

1.5.2 Process of Identifying Information for EIA

In identifying information and data required for impact assessment, a strategy for collecting information before or during the impact assessment study is required to be put in place. For the proposed project for construction of modern silos, baseline information was gathered and missing gaps are detailed in the succeeding section below as it will be shown. Generally, baseline information on the bio-physical, socio-economic environment, institutional and legal conditions was collected from a variety of sources as shown hereunder.

1.5.2.1 Literature review

A review of existing information from previous studies, government publications, and project documents was done. Where available, records of organizations have also been used for clarification purposes. Baseline information on the socio-economic environment (focusing mainly on the area of influence), environmental settings and, relevant documents on the institutional and legal framework were consulted. Other sources include internet based information from relevant websites and, relevant reports and Google maps

1.5.2.2 Field data / information collection

Field surveys were conducted by the consultant to obtain an overview of the existing situation at the site. Activities included:

- Appraisal of physical and environmental conditions of the project site and areas that might be impacted by the project i.e. soils, hydrology, flora and fauna;
- Appraisal of land use and assessment of other relevant socio-economic parameters;
- Review of literature: reports, policy, plans and legislation etc.;
- Review of available maps of the project area;
- Field data / information collection
    - Interviews with experts and other stakeholder groups;
    - Observations and other technical methods related to the sector in question

1.6 REPORT STRUCTURE

This report is organized in twelve chapters. Chapter one is on the introduction while chapter two entails the project background and its description. Chapter three is on the policy, administrative and legal framework within which the project will operate. Chapter four presents the baseline or existing conditions of the project site, surrounding areas and area of influence. Chapter five entails Stakeholders' consultation and public participation while chapter six deals with assessment of impacts and identification of alternatives. Chapter seven deals with mitigation measures while chapter eight present the environmental and social management plan. Environmental and social monitoring plan is presented in Chapter nine. Chapter ten is on resource evaluation or cost benefit analysis while chapter eleven is on decommissioning. The last chapter is twelve which gives the summary and conclusions of the report.

CHAPTER TWO: PROJECT BACKGROUND AND DESCRIPTION

2.1 PROJECT AREA

2.1.1 Location and Size

The proposed site for construction of modern silos complex and associated structures is located on Plot No. 20 and 21 Block EE at NMC mtaa, Mazwi ward in Sumbawanga municipal in Rukwa region. It is on Latitude 7º57' South of the Equator and Longitude 31º36' East of Greenwich Meridian. It is about 1,815m above the mean sea level. The site is located about 1209km from Dar es Salaam, and it is within Sumbawanga Municipality along Tunduma-Sumbawanga highway to the North-West. The project site is easily accessible through NFRA road, turning left at a junction after Rukwa regional hospital as one travels from Mbeya region through Tunduma – Sumbawanga road. The total area at NFRA Sumbawanga site is 12200m^2.

Table 2.1 coordinates of proposed NFRA Sumbawanga site

Point	Coordinates
A	S 07.96611^0, E 031.60928^0
B	S 07.96549^0, E 031.60894^o
C	S 07.96571^o, E 031.60865^o
D	S 07.96632^o, E 031.60899^o

Source; Field study on January 2017

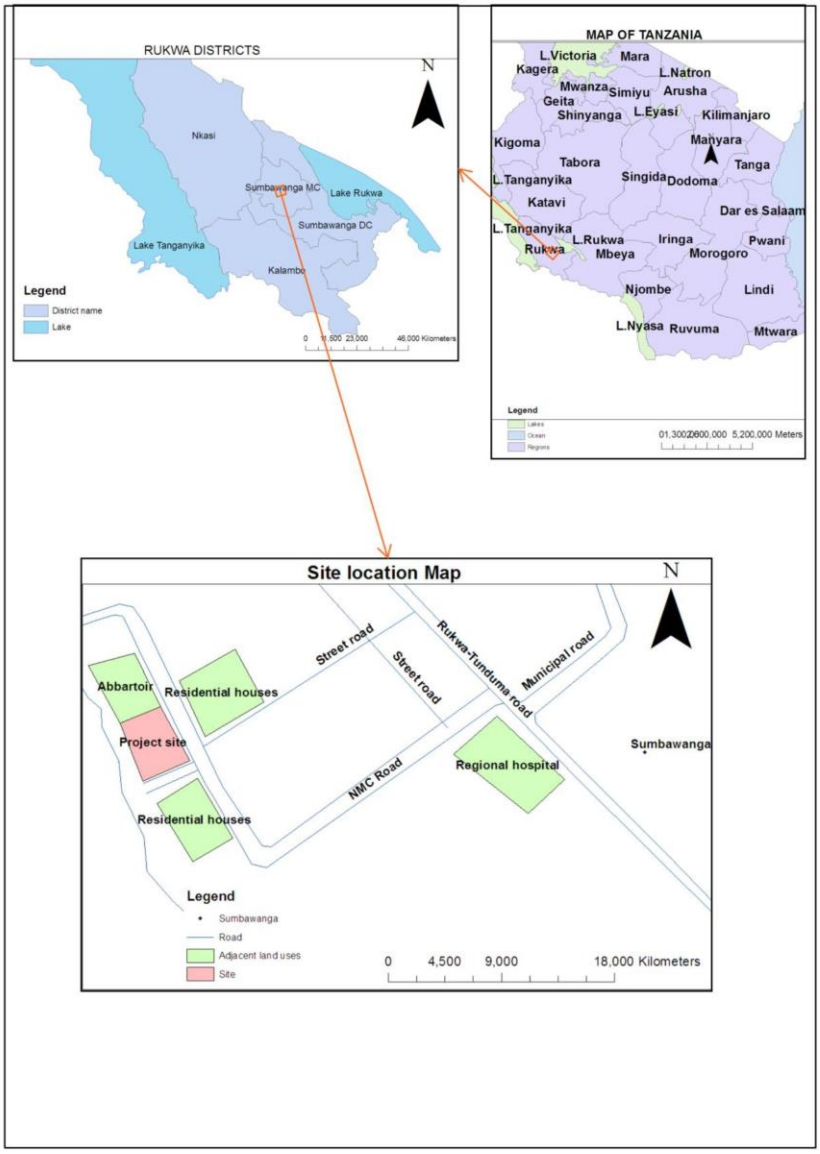

Figure 2.1: Map of Sumbawanga municipal showing location of NFRA site
Source; National Bureau of Statistics, 2007

2.1.2 Site description

NFRA Sumbawanga site is currently used for storing grain, where there are four (4) warehouses with total storage capacity of 20,000MT. The whole of the site is fenced with chain link and an iron-gate at entrance. The walkway within the proposed site is not paved and there is inadequate storm water drainage. There exists a septic tank for wastewater management. The existing structures at NFRA Sumbawanga site are neither subjected to EIA nor EA. The total area at NFRA Sumbawanga site is 12,200m^2 while the area proposed for construction of a modern silos is 2090m^2. The area marked for the silos construction is at present occupied by an office building. No additional land is required as there will be demolition of the existing office building to pave way for silos construction. The site has few vegetation and trees which are planted at the boundaries. However, the topography of the site is a sloppy terrain. It slops from South to North, with very small water gullies. It is expected that grass and flowers will be planted on a special designed parcels of the landscape. There will also be paved surfaces for walkways and car parking. Trees for provision of shade and beauty will also be planted.

The proposed project involves construction of modern silos for grain storage and demolition of other existing facilities to give space for silos bin construction. The project intends to ensure that:

1. Food supplies from domestic production stocks and imports are sufficient to meet the nation's needs;
2. Stability of food supply throughout the year
3. The population has sufficient purchasing power to access food
4. Proper waste management system at the facility is in place in order to safeguard the environment and community health.

Below are some features at the proposed site observed during site visit;

Photo 2.2: Showing Proposed area for silos construction
Source: Field data, 2017

Photo 2.3: Existing drainage and septic tank at NFRA Sumbawanga site
Source: Field data, 2017

2.1.3 Accessibility

The project site is easily accessible through NFRA road, turning left at a junction after Rukwa regional hospital as one travels from Mbeya region through Tunduma – Sumbawanga road. The site is approximately 250m from Rukwa regional hospital.

2.1.4 Existing Structures

Existing structures at the site include four grain storage warehouses with total capacity of 20,000MT. There is one security guard house at the entrance gate, one house for generator, two houses for administration, one weigh bridge with control room, one house for chemical storage and one old weigh bridge office. The land is not paved and dust emission is expected during dry season. The site is not connected with sewer system but there is septic tank which is used for wastewater management.The whole site is fenced with a chain link fence. Water from Sumbawanga water supply authority is available at the site and power from TANESCO/ZESCO is available. The existing facilities at NFRA Sumbawanga site are neither subjected to EIA nor EA.

2.1.5 Overall Adjacent Developments

Although the site is within an industrial area, it is also bordered by residential settlements to the Southern and Western sides at about 40m away. The site is bordered by industrial premises to the Eastern side at about 5m away. Ruiche River is located to the North –West from the site which is approximately 200m away. There are no ecologically sensitive areas in close proximity to the location of the project area as the land is already occupied by an office building which is to be demolished in order to give way for the project development

2.1.6 Project Scope and Description

2.1.6.1 Project Scope

The nature and type of the project is that of a medium scale development whereby modern silos structures will be situated in the urban environment. There are no ecologically sensitive areas such as water bodies in close proximity other than Ruiche river. The total investment cost for the proposed project is estimated to be 12 billion only. The proposed project will operate for 50 years when proper maintainance will be done.

2.1.6.2 Project Description

NRFA Sumbawanga site is owned by the National Food Reserve Agency (NFRA) under the Ministry of Agriculture, Livestock and Fisheries. It consists of an already built up and mainly occupied by an old office and warehouse with 20,000MT capacity. There are also other facilities and equipment currently used for the ongoing grain storage activities as shown on table 2.2 below. At present, the storage capacity is lower than the demand. Waste management system is not functioning in a manner that meets the environmental and public health compliance requirements especially during peak seasons. Internal roads within the site are not paved which results into dust emissions due to trucks maneuvering and the place becomes muddy during rainy seasons.

The proposed project will involve construction of six silos which will consist of various components from grain intake to grain storage. These components include intake unit, bins cleaning and drying unit, bulk conveyance unit (Conveyors and elevators), bulk storage unit (prefabricated grain storage and bagging bin), aeration system, and instrumentation. Main components designed for the proposed silos are 6 flat bottom cylindrical bins of galvanized steel for maize storage. Silo bins considered in this design are of 3,350MT with material handling rate of 60Tone per hour for loading of silos and renovation of existing facilities in order to improve the efficiency of grain

storage. Also qualification building will be constructed to accomodate electronic equipment for grain quality checking for the purposes of identifying grain moisture contents, biotic factor and etc.

Table 2.2: Available equipment at NFRA Sumbawanga site

S/N	Component	Equipment	Number
1	Reception Point	Sampling Probe	-
		Moisture meter	18
2	Weighing Zone	Weighbridge 40 T	1
		Weighbridge 100 T	1
		Small scale	15
3	Cleaning	Manual Sieve	-
4	Stacking	Elevators	5
		Ladders	1
		Pallets	7,361
		Packing Bags	241,011

Source; NFRA, 2017

As NFRA present facilities are not fully complying with environmental and industrial requirements. Table 2.3 below shows additional equipment and machinery which are needed to attain the required storage capacity.

Table 2.3: Proposed additional equipment and machinery for Sumbawanga site

S/N	Component	Equipment	Number
1	Reception	Moisture meter	3
2	Weighing zone	Weighbridge 100 T	1
		Digital scale	-
3	Cleaning	Manual Sieve	-
		Electrical Sieve	1
4	Stacking	Elevators	4
		Electrical Sewing	5
5	Machinery	Fork lift	1
		Tractor	1
		Trailer	1

Source: NFRA, 2017

2.1.7 Impact area of the project

The impact area may be categorized into the core impact area, the immediate impact area and the area of influence.

2.1.7.1 Core Impact Area

The core impact area refers to the area immediately and directly affected by the actions which are undertaken during the project implementation. For the proposed construction of modern silos project, it is expected to cover2090$m^2$of the total area.

2.1.7.2 Immediate Impact Area

The immediate impact area is the immediate surrounding the project site. These areas will be directly affected by the project development through for example dust and noise impacts. Such areas include the rest of area and Mazwi ward.

2.1.7.3 Area of Influence

The area of influence refers to the greater area that is not subjected to directly contact with the development but may be indirectly affected by, for example traffic movement, sources of construction materials and labour.

2.2 UTILITIES AND SERVICES TO SUPPORT THE PROJECT

2.2.1Wastewater Management

There is neither sewerage network system within the neighborhood nor oxidation ponds near the area. Therefore, existing septic tanks and soak away pit will be used for the management of liquid waste generated at site during construction of proposed project or operation. Existing storm water drains will be modified to channel all run off from the roof top and paved areas and connected to the public drains out of the project site.

2.2.2 Power

Sumbawanga depends on one thermal power plant and the 66kVA Zambia's grid which is connected as the major currently available energy source. It is expected that Sumbawanga will be connected to the Tanzanian national grid system in the near future. There is a small sized transformer that is used to supply power to the existing warehouses and other facilities within NFRA Sumbawanga site. Power need for the proposed project is estimated to be 530kwh during operation phase.

2.2.3 Solid waste management

The modern silos complexdevelopment project will generate various types of solid wastes amounting to 50kgper day. Solid wastes will include pesticides containers and poly bags, maize husks,paper, packaging materials, organic waste (vegetation and food wastes) and plastics. The proponent shall establish a proper solid waste management system that entails collection, transportation and disposal of solid waste at a designated solid waste disposal site at Mbarika area.

Private solid waste collector will collect and dispose the solid waste generated according to Sumbawanga municipal solid waste disposal regulations. All solid waste will end up at Mbarika disposal site.

2.2.4 Labor Force

Employment opportunity that will be provided directly by the project is of a medium term to long term. During construction phase more than 100 people will be employed either direct or indirectly as temporary employees while during operation phase more than 200 people will be employed as temporary employees while 36 people will be permanent employed.

2.2.5 Water supply

The site is connected to Sumbawanga water supply authority (SUWASA). During peak season the site will be populated with more than 200 laborers working as temporary employee and 36 labors working as permanent employees. The proponent should take action for providing water storage tanks which will be used in case of water shortage from SUWASA.

The project proponent plans to drill a borehole which will be used as an alternative water source in the area during peak operation for the time when there is water

shortage from SUWASA. Proponent will consult Lake Rukwa Basin (a government organ responsible to release water use permit) for more information regarding ground water use permit which will consider quantity of water plan to withdraw per day and quality of such water. Also detail of hydrological survey which includes quantity of water to be available, depth of such borehole and diameter of such borehole shall be submitted to water board (Lake Rukwa Basin) for more detail.

2.3 PROJECT ACTIVITIES

2.3.1 Site Selection

The site on which the proposed construction of modern silos shall sit on is owned by NFRA and the site is within NMC mtaa in Mazwi ward. Currently, there are other existing structures at the Site namely: two administration buildings, four grain storage warehouses, one security guard house, one generator house, weigh bridge office and chemical storage warehouse. The site has been selected based on the fact that there will be rehabilitation of some structures and construction of silos for grain storage.

2.3.2 Project Design

According to designs the main component planned for the proposed project are 6 flat bottom cylindrical bins of Galvanized steel for maize storage. Silo bins considered in this design are of 3,350 MT with material handling rate of 60 tones per hour for loading of silos. All design parameters for sizing storage have been considered, these include specific volume of maize (1.8 m^3/t); stacking height of 5m; main handling area of 3m wide along the axis of warehouse; a gang way of 2m wide across the centre of the warehouse, an inspection space of 1-meter-wide around the entire stacking area. Whereas in determining the size of silo bin is based on the material flow in the bin using the formula $H = m/(\rho_{avg}A)$ where **H** is the height of bin; ***m*** is the mass of grain $\boldsymbol{\rho_{avg}}$is average bulk density of grain and **A** is the cross section of the bin. According to available space designed modern silos will have storage bins of diameter ø= 17m, height to eve = 18.8m, overall Height = 23.9m; Bin storage capacity = 3,350MT.

For the proposed project, there is no area designated for trucks parking but an area for trucks to offload grain and for load grain. The proposed project will serve two trucks at once such as one for offloading and another one for loading and the maximum time will be 30 minutes per round of 2 trucks.

The drainage system for rain water collection within the project area will be designed in way that it will follow the slope of the terrain in the project area and eventually drain into Ruicher river. But for all area where there is possibility of contamination with hydrocarbon/oil especially the garage, the developer should drain it into oil/water interceptor. It is expected that about 10litres of used oil will be generated per month from servicing of NFRA trucks. All oil used oil generated will be collected into special containers of 50litres and given to authorized oil dealers for disposal.

The design of project and its supporting component considered the following;

2.3.2.1 Topographical of the area

The project existing site has upland landform about 100% with dominant gradient of less than 5.6% sloping to the northern side. There are short grasses in undeveloped

parts within the project premises and planted trees along project boundaries. There are no any endangered trees species found within or near project premises (NFRA feasibility study 2016).

2.3.2.2 Existing facilities

Within the project proposed site there are existing structure which support the existing activities of Grain storage, the structures include; four warehouse used for grain storage, two administration offices, one security house at entrance, one generator house, weighbridge office, chemical storage room, TANESCO infrastructure, septic tank with soak away pit, storm water channel and toilet for workers. Also water infrastructures are at site and the site is connected with water from SUWASA. Walkway within project site is not paved and existing storm water channel need improvement.

2.3.2.3 Geographical survey

Topographical survey has revealed that the amount of land available will be sufficient for proposed construction of silos with associated structures for expansion of grain storage capacity.

2.3.2.4 Technological aspect

Proposed silos to be constructed for expansion of grain storage capacity will be of medium scale for grain storage. The structure will be constructed vertically upward for total height of 23.9m and it will be of corrugated iron sheet, black sheet, sand, cement, timber or round pipe, aggregate and steel bar. The proposed silos will use electricity to run storage activities including drying and mixing to support air aeration to reduce moisture inside the bin. The main technology to be employed will be rotation technology. The proposed structure will constructed in a way that side heat loose will not occur.

2.3.2.5 Project components

The proposed project will comprise various components to be used from grain intake to grain storage which include; intake unit, bin, cleaning and drying unit, bulk conveyance unit (conveyor and elevators), bulk storage unit (grain storage, bagging bin and aeration system). Other components will includes new chemical storage room, new administration house, new weighbridge with office, new toilets for workers and

2.4 PROJECT PHASES

2.4.1 Mobilisation Phase

This is the first phase in the course of the project implementation; it is the planning phase through which a proponent identifies all the requirements of the project. These requirements include obtaining all required insurance, bonds and permits; preparatory work and operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; preparation of a construction schedule; furnishing and erecting site offices, stores and other facilities necessary for work on the project; badging and training of flaggers, escorts, gate guards and other employees; site clean-up by demolition of the existing building and proper disposal of all wastes, and levelling to give space for the proposed development; and all other work which must be performed or cost incurred prior to the beginning of the work at the project site.

2.4.2 Construction Phase

Construction and rehabilitation will begin after completion of preparatory works like site clearing and construction of temporary facilities. Since the site is located in the urban settings, it is not expected that workers will reside at site, thus temporary facilities will be office and materials storage and security huts.

The major construction activities will include excavation of foundation, transportation of the construction materials to the site which will be done by trucks and passes on earth road linked to proposed site and the truck will be covered to avoid material evaporation due to wind effects, concrete works, vertical construction, structural work, installation of electrical and water conduits, finishing work, painting and other minor associated civil works. Main activities of the proposed project during construction will include but not limited to the following;

- Earthworks: This entails excavation of soil / earth at the required foundation level, hauling away excavated material and depositing at the designated site for disposal, dewatering of excavated area, protection of excavated sites from falling, backfilling with the excavated material around the foundations and walls, hard-core filling.
- Acquisition and transportation of construction materials from licensed suppliers.
- Concrete works: Steel reinforcement, cutting, bending and fixing, concrete mixing, transportation, vibrating, curing, masonry walling and plastering.
- Roofing of the main structure and other supporting structures like guard's house, power house, pump house and others.
- Metal and steel works for the entire structure.
- Electrical installation works: laying of PVC conduits in structural members, electrical wiring and such other related works.
- Plumbing and drainage works: installation of drain pipes, water distribution pipes, water tanks and general plumbing.

Decorative and miscellaneous provisions

i. Landscaping: - the site will be landscaped planted with grasses and flower plants. The top soil will also be treated with organic manure to enhance plant growth.
ii. Emergency appliances: - safety devices like fire extinguishers and sand buckets will be installed at appropriate places and emergency assembly area will be designated.

Table 2.4:List of construction materials

Type of materials	Quantity	Potential Source
Aggregates	1800 tones	Sumbawanga
Fill-in materials *(kifusi)*	2,500 tones	Sumbawanga
Sand	700 tones	Sumbawanga
Water	200m^3 per month	SUWASA
Cement	100 tones	Local dealers in Sumbawanga
Reinforcement(iron bars)	250 tones	Sumbawanga
Galvanized steel	100 tones	Dar es Salaam

Source: NFRA Feasibility study report, 2015

Transportation of construction materials

The contractor will be responsible for transportation of all construction materials and equipment from point of sourcing to the site mainly by trucks. Most of the construction material such as cement, steel, wood, sand, stones and aggregates need to be transported will be brought from places nearby or far away to the project site. Proponent will ensure that the contractor deals with suppliers of construction materials such as sand and aggregates are certified and licensed for that task of supplying raw material.

2.4.2.1 Waste management

Solid waste

Solid waste to be generated during construction phase will include spoil and excess soil, plastic wrappings and polybags, remains of construction materials like iron sheets. It is estimated that 50kg of solid waste will be generated per day. All solid waste will be disposed at designated solid waste dumping site at Sumbawanga.

Liquid waste

During construction phase liquid waste generation will mainly originate from toilets and washrooms used by construction crew. All waste water shall be managed through onsite treatment systems particularly septic tanks and soak away pits

2.4.3 Operation Phase

Project operation phase will involve storage of grain (maize) mainly purchased from local farmers within Sumbawanga and adjoining areas in Rukwa region. The means of transporting maize from local farmers to NFRA site will be through roads, where trucks will be used. Regarding labour force, during peak seasons the site will have more than 200 laborers working as temporary employee and 36 labors working as permanent employees

Main activities expected during grain storage process from receiving stage to final point will include the following;

i. Receiving raw material/grain from local farmers. The received grain will be identified its quality by measuring the moisture contents/temperature, size of maize, colour of maize/grain and weight of grain.
ii. Weighing of grain/maize. All received grain will be measured it quantity and recorded for feature use. Since received maize/grain will be transported by truck it will easy to measure the weight of truck together with loaded materials by weighbridge.
iii. Offloading and cleaning for grain/maize. After weighing truck loading grain, it will be directed into offloading area where people will be employed to work for offloading it. We expect that one truck of 30tons will be offloaded for not more than 45minutes. The loaded maize will poured into cleaning machine for removing maize husk, dust and stones. A machine will use sieve analysis technology for cleaning grain.
iv. Loading of cleaned grain into storage facilities. Cleaned grain will be loaded into silos for storage by using Elevator machine. Loaded maize/grain will be out of bags
v. Grain storage and dispatch. To ensure that grain will be maintain throughout storage period, proponent will ensure that internal silo temperature will always meet recommended one for grain storage. Also spray chemical will be used to stop any possibility of insect attack.

The following will be considered during operation phase;

2.4.3.1 Grain Storage facilities

The silo bins will be made of galvanized steel, which makes it durable and weather resistant. It will be specifically used for grain storage, i.e. maize only. The silos will be designed for working life of 50 years.

2.4.3.2 Grain Temperature and Moisture Migration

Improper control of temperature causes moisture to move or migrate from one part of the grain mass to another, where the moisture can accumulate it will cause grain spoilage problems. Although moisture migration problems can occur any time the grain temperature will vary considerably in different parts of the silo bin, the most critical time occurs when warm grain is stored into cold winter temperatures. This causes the air to rise through the warm grain where it continues to increase in temperature. As the air increases in temperature, its moisture-holding capacity increases and it begins to absorb small amounts of moisture and this may cause moisture contents to increase.

2.4.3.3 Management of Grain silos

Care should be taken from silos designing and construction up to its uses, whereby qualified personnel will be responsible for management. Daily inspection should be done by qualified personnel, where silos and grain status will be recorded each day. All silos to be used for grain storage will be prepared by cleaning out silos and get rid of any grain left that might have insects in it and checking silos outside areas.

The condition of the grain harvested determines how well it can be stored. If grain is for long term storage it is better to start out with mature and good-quality maize corn. For long-term storage the proponent will dry grain to a lower moisture level. At 13% moisture, mold growth will be prevented thus keeping the grain in a better condition.

2.4.3.4 Insect Control in Stored Grain

Insects are generally not a problem in grain stored for less than 10 months or a year. However, if grain is to be stored for longer than this, or if a bin has had an insect problem in the past, special precautions should be taken which includes;

- Spraying the inside of the bin with protective insecticides for 2 to 3 weeks before new grain is added.
- Treat the grain with an approved insecticide as the bin is filled.
- Top-dress the grain with an approved insecticide after the bin has been filled and the grain surface has been leveled.

Where infestations are more often found with poor quality grain, or where there is an occasional slip in overall management, emphasize monitoring and control by looking for insect activity during every storage visit. The following should be considered as a pre-harvest checklist;

- Clean all debris from harvesting. Handling and drying equipment (trucks, augers, elevators).
- Sweep old grain, grain particles and dust from inside the bin. If possible, remove debris under perforated floors and dispose of the sweepings by burning, burying, etc. or saturate this debris with *malathion*, *Actellic* or *Reldan*.
- Repair the bin if there is any signs of leakage (spoiled grain on the floor holes in the roof, etc.).
- Apply *malathion*, *Actellic* or *Reldan* to all surfaces of clean and empty silos.

- Do not put new grain on top of old grain. Just a few insects in the old grain can contaminate the entire silo.

2.4.3.5 Monitoring Maize Conditions

Maize conditions need to be monitored in order to verify that the desired temperature control is being achieved. Further, a regular checking schedule is essential if mold and insect activity are to be detected and controlled in a timely fashion. The method and frequency of checking will vary with time of year, initial condition of the maize, and aeration procedure.

Maize temperatures need to be checked and recorded on a regular basis. Without temperature records, it is difficult to tell whether elevated maize temperatures are caused by normal occurring outside temperatures or by heating due to mold activity. The maize need to be probed to locate any moisture pockets where molds will develop rapidly as temperatures warm. The following will be considered for monitoring grain quality;

- Grain surface for condensation, crusting, wet areas, molds, and insects.
- Silo roof for condensation and leaks.
- Grain mass for non-uniform temperatures, high moisture pockets or layers, molds, and insects.

If problems are detected, they need to be evaluated and corrected as soon as possible. This may include cooling with aeration, further drying, or fumigation for insect control

2.4.4 Decommissioning Phase

Decommissioning is a general term for a formal process to remove something from active status. It brings to closure, or terminates the operations of business of a specific facility or building. The owner or licensee normally decides when the facility is to permanently cease operations. The following shall be done before and during decommissioning

i. The management shall come up with a decommissioning plan that addresses:

- Facility description and history
- Decommissioning scope and objectives
- Characterization data summary
- Specific decommissioning methods
- Health and safety plans
- Risk assessment (if applicable)
- Site release criteria
- Waste generation estimates and waste disposal procedures.

ii. When a decommissioning plan is developed, it will be based on

- The need to adequately protect the public and addressing occupational safety and health issues
- The prevention of potential environmental and social impacts
- The requirements for compliance with statutory and contractual obligations
- The effective project management, including selection among viable alternatives based on risk, cost and desired facility end state.
- The human capital management if it is consistent with future site utilization plans

iii. Show that a proposed decommissioning project plan can be conducted safely.

iv. Show that at completion of the facility will comply with regulatory requirements

v. Prepare formal documentation of the decommissioning of the facility
vi. Adhere to the occupational health and safety regulations while conducting the decommissioning
vii. Evaluate potential for re-use and recovery of material and equipment
viii. Consider waste minimization and appropriate disposal

The life span of this project is at least 50 years. By having this consideration in mind, the proponent will adequately invest into the construction and furnishing processes by ensuring the use of appropriate technology and materials which are of high quality and durable in order to increase the proposed project life span. The decommissioning may therefore take much longer.

CHAPTER THREE: POLICY, ADMINISTRATIVE AND LEGAL FRAMEWORK

3.1 INTRODUCTION

There are a number of policies and legislations setting out legal and regulatory requirements and which are relevant to the proposed construction of six modernsilos complex development project. There are also national standards governing environmental management and protection, health and safety. The proponent shall ensure compliance with the following identified policies, national plans/strategies legislations and standards.

3.2 NEED FOR ENVIRONMENTAL IMPACT ASSESSMENT

Environmental Impact Assessment is one of the planning tools which are used to facilitate and promote sustainable development by integrating environmental consideration in the decision making process and ensuring that unnecessary damage to the environment is avoided and optimises resources use and management opportunities. Due to the importance of EIA, most sector policies and legislation have incorporated the requirement for undertaking EIA prior to the implementation of development projects.

The following main laws, regulations and policies have dominated and guided this EIA process:

3.3 RELEVANT POLICIES

The following are relevant sectoral and cross–sectoral policies which provide directives on how projects should be implemented in relation to concerned environmental and socio-economic settings. The project proponent will consult these policies in the course of designing and implementing the proposed project activities.

3.3.1 The National Environmental Policy (1997)

Chapter 4, Paragraph 64 of the NEP states that "*It is in the context of an EIA regime that policy guidance on choices to maximise long-term benefits of development and environmental objectives can be revealed and decided upon. EIA as a planning toolshall be used to integrate environmental considerations in the decision making process in order to ensure unnecessary damage to the environment is avoided".* The policy also advocates public consultation in carrying out EIA. Specifically paragraph 66 states that "One of the cornerstones of the EIA process will be the institution of public consultations and public hearing in the EIA procedures".

The policy recognises the importance of promoting use of environmentally sound technologies that protect environment based on careful assessment of the carrying capacity of the environment. It stipulates that the chosen technologies should be environmentally sound, socially acceptable and economically viable. Relevant provisions of this policy to silos complex construction and operations are:

- Sections 28 and 29, which state that in all projects, environmentally sound technologies (i.e. those that generate no or low waste or protect environment) should be used.
- Section 48 (c), which advocates for technologies that use water efficiently and provides waste water treatment.

- Section 56 (f), which states that workers' health should be adequately protected from environmental health hazards

The project proponent should comply with all of above and other relevant provisions.

3.3.2The Land Policy (1997)

The National Land Policy advocates the protection of land resources from degradation for sustainable development. Among other things the policy requires that project development should take due consideration the land capability, ensures proper management of the land to prevent erosion, contamination and other forms of degradation. EIA for this project is intended to identify if there is potential for the adverse impact and to propose means for mitigating them.

3.3.3 The National Investment Promotion Policy (1996)

The National Investment Promotion Policy encourages protection of environment in line with the countries socio-economic policies. Under the policy, investors are required to undertake activities in a manner that best contributes to consumer and environmental protection. The investors are also encouraged to use local raw materials/components where possible. This EIA is undertaken to ensure that NFRAwill abide by the relevant provisions of the policy to ensure compliance with the development.

3.3.4 The National Employment Policy (1997)

The major aim of this policy is to promote employment, mainly for Tanzania citizens. Relevant sections of this policy are (i) 10, which lays down strategies for promoting employment and section 10.1 is particularly focusing on industry and trade sectors (ii) 10.6 which deals with employment of special groups i.e. women, youth, persons with disabilities and (iii) 10.8 which deals with the tendencies of private industries to employ expatriates even where there are equally competent nationals. NFRAshall abide by this policy.

3.3.5 National Policy on HIV/AIDS (2001)

This policy provides a framework for leadership and coordination of the National multisectoral response to the HIV/AIDS epidemic. One of the major objectives of the policy is to strengthen the role of all sectors, public, private, NGOs, faith groups, CBOs and other specific groups to ensure that all stakeholders are actively involved in HIV/AIDS work and to provide a framework for coordination and collaboration. The policy recognizes that HIV infection shall not be grounds for discrimination in relation to education, employment, health and any other social services. Pre-employment HIV screening shall not be required. For persons already employed, HIV/AIDS screening, whether direct or indirect, shall not be required. HIV infection alone does not limit fitness to work or provide grounds for termination. HIV/AIDS patients shall be entitled to the social welfare benefits like other patients among the employees. HIV/AIDS information and education targeting the behaviour and attitudes of employees and employers alike shall be part of HIV/AIDS intervention in the workplace. NFRA shall adhere to the policy.

3.3.6 The National Water Policy (2002)

The National Water Policy recognises that there is a growing scarcity, misuse and wastage of water resources in many places of Tanzania, which may become a serious threat to sustainable availability of the resource. The National water policy

advocates that industrial performance depends, among other factors, on reliable water supply. However, the growth in the industrial sector have significant impact on water supply, and also in terms of potential pollution and degradation of water resources due to industrial solid wastes and effluents if not properly disposed of, but are allowed into water bodies without adequate treatment.

Pollution of water sources from increasing discharge of untreated and partially treated industrial liquid waste contributes to the deterioration of the quality of the water resources. The National water policy requires all water users to avoid contaminating water sources. The policy also supports the application of the "polluter pays principle" and has a specific objective to "have in place water management system which protects the environment, ecological system and biodiversity". NFRA shall abide by the policy.

3.3.7 The Energy Policy of Tanzania (2003)

This policy outlines measures to adopt clean technology and minimize pollution in developing Tanzania's energy sector. It focuses on utilization of various energy resources among others include water, gas, coal, petroleum and wind in a sustainable and environmentally friendly manner. The policy states that energy is a prerequisite for the proper functioning of nearly all sub-sectors of the economy. It is an essential service whose availability and quality can determine the success or failure of development endeavours.
The policy objectives are to ensure availability of reliable and affordable energy supplies and their use in a rational and sustainable manner.

3.3.8 The National Health Policy (2003)

The overall objective of the National Health Policy is to improve the health and wellbeing of all Tanzanians with a focus on those most at risk. One of the main objective of this policy is to ensure that health services are available and accessible to all people wherever they are in the country, whether in urban and rural areas. The policy encourages safe basic hygienic practices in workplaces, promote sound use of water, promotes construction of latrines and their use, encourage maintenance of clean environment; working environment which are conducive to satisfactory work performance. The policy puts more emphasis on workers protection against all health hazards which occur in development projects. NFRA will take into consideration the health of workers by providing periodic medical checks.

3.3.9 The National Agricultural Policy (2013)

One of the objectives of National Agricultural Policy is to ensure that there is food security at the country all the time. In section 3.12.1 of the policy states that, food security and nutrition is one of the overriding agenda in the country with emphasis on meeting NSGRP, EAC Food Security Action Plan and SDGs targets. NFRA abides the policy by storing, purchasing and handling higher amount of food to be used during the time of food shortage in the country.

3.3.10 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 individual in various economic activities. The Policy puts in place the

general guidelines for the formulation of strategies to be used by respective sectors depending on prevailing circumstances. In this respect, each sector is enjoined to come up with concrete implementation strategies. As this Policy touches even the agricultural which this project has a bearing, NFRA endevours to adhere to this policy.

3.3.11 National Land Policy (1995)

The National Land Policy advocates for the protection of land resources from degradation for sustainable development. Among other things, the policy requires that project development should take due consideration of land capability, ensure proper management of the land to prevent erosion, contamination and other forms of degradation. Important sections of the policy relevant to the proponent are 2.4 (on use of land to promote social economic development) and section 2.8 (on protection of land resources). This policy is relevant to the proposed project as it emphasizes protection of land resources including soil. NFRA will ensure that soil is not contaminated in any way during its operations.

3.3.12 National Transportation Policy (2003)

The policy aims at guiding the development of an efficient, well integrated and coordinated transport infrastructure and operations, which are economically, financially, socially and environmentally sustainable.
Relevant section of the policy is:

- 4.1.1 (vi) on the intention of the policy to facilitate sustainable development by ensuring all aspects of environmental protection and management are given sufficient emphasis at the design and development stages of the transport infrastructure and when providing services

Given the fact that there will be transportation of maize from collection focal point/storage area to other area with high demand, NFRA is directly linked to the policy in its activities.

3.3.13 Agricultural sector development programme II

One of the challenges and constraints to the implementation of ASDP-II is huge post-harvest losses (25–35%, varying by crop and region) due to inadequate of agro processing expertise, facilities, storage and access to markets. The grain storage expansion project will to a great extent address the challenge of lack of storage of crops in the country thus reducing the loss of harvests.

3.3.14 Climate-Smart Agriculture in Tanzania

The climate-smart agriculture (CSA) concept reflects an ambition to further integrate agricultural development and climate responsiveness. CSA aims to achieve food security and broader development goals under a changing climate and increasing food demand. CSA initiatives sustainably increase productivity, enhance resilience, and minimize greenhouse gas (GHGs) emissions. For the Tanzanian context, CSA is agriculture that sustainably increases productivity and income, ability to adopt and build community resilience to climate change and enhances food and nutrition security. This concepts links with ASDP II in terms of objectives to ensure food security by enhancing resilience of small holder farmers against climate change impacts. Both programs aim at ensuring food security. The grain storage expansion project aims at ensuring food stock availability even during drought seasons.

3.4 LEGAL FRAMEWORK

3.4.1 The Environmental Management Act No. 20 of 2004

This is the most important Act that will guide activities and decisions proposed under the modern silos complex development project.The Environmental Management Act (2004) introduces a concept of right of Tanzanians to clean, safe and healthy environment and right of Tanzanians to access various segment of environment for recreational, educational, health, spiritual, cultural and economic purposes (Article 4 (1) and (2)). The Act imposes an obligation on proponent to conduct an EIA prior to the commencement of the project to determine whether the project may/or is likely to have, or will have a significant impact on the environment. Article 81 makes EIA mandatory to all projects that fall under the EIA mandatory list (Schedule 3) into which this project falls. Of particular importance is section 57 of Environmental Management Act which stipulates that human activities be undertaken 60 meters away from the water body. The Act also requires that project developers undertake regular environmental audits of their facility.

Other caps where proponent should be aware on them are: Environment Management Act Cap 72 which emphasize on land users and occupiers shall be responsible for the protection, improvement and nourishment of the land and for using it in an environmentally sustainable manner as may be prescribed by the minister.

Environment Management Act Cap 110 (1) say; No person shall discharge any hazardous substance, chemical, oil or mixture containing oil in any water or any other segment of the environment except in accordance with guidelines prescribed under this Act.

Environment Management Act Cap 141, provides on every person undertaking any activity shall be required to comply with environment quality standards and criteria and

Environment Management Act Cap 116(1) Local government authorities shall ensure that industries/Institutions located within their geographical respective areas of jurisdiction provide adequate space and facilities for managing all solid waste generated from such industries/Institutions before they are collected for disposal at designated place.

During project implementation all caps will be observed by project proponent

3.4.2The Environmental Impact Assessment and Audit Regulations G.N. No. 349 of 2005

First schedule of this regulation lists establishment of large scale infrastructure and building development project among types of projects requiring a mandatory EIA. Since such project is likely to have significant adverse environmental impacts, an in-depth study is required to determine the scale, extent and significance of the impacts and to identify appropriate mitigation measures. Furthermore, the regulation specifically provide for procedures and guidelines for carrying out EIA in Tanzania. This EIA review has been carried out in accordance with these regulations.

3.4.3 Environmental (Registration of Environmental Experts) Regulations (2005)

The objectives of the regulations are to establish a system for registration of environmental experts; provide for a system of nurturing competence, knowledge,

professional conduct, consistency, integrity and ethics in the carrying out of environmental impact studies and environmental audits; ensure that the conduct of environmental impact assessments or environmental audits is carried out in an independent, professional, objective and impartial manner; and provide for a code of conduct, discipline and control of environmental experts. The NEMC maintain a registry of EA and EIA experts. These regulations also set code of practice of the experts for which the Environmental Audit experts for this project subscribe.

3.4.4The National Land Act No 4 of 1999 and its Amendment of 2004

The Land Act of 1999 outline among other things, the administration of land, the role of local government in land administration, land allocation and occupancy. The Land Act contains provisions of critical environmental importance. This Act translates the "fundamental principles of land policy" into the body of the law. One of these fundamental principles is "to ensure that land is used productively and that any such use complies with the principles of sustainable development". This means the project proponent will have to return the land to its useful state on decommissioning of the project. As a first step, the project proponent agreed to conduct the EIA to guide project operations.

3.4.5 The Urban Planning Act No. 8 of 2007

The Act provides for control of urban and sub rural development while implementing a project for land development. Important aspects include the designation and allocation of adequate land for solid waste disposal in any urban and sub rural areas. The law empowers local authorities to enforce such building project and punishments as stipulated in the Act. The law further empowers neighbours and any individual to take to court anyone who injuriously affects others due to his/her unhygienic activities. NFRA will observe good solid and liquid waste management practice as required by the Act.

3.4.6 Occupational Health and Safety Authority Act, 2003

This Act deals with the protection of human health from occupational hazards. It specifically requires the employer to ensure the safety of workers by providing safety gears at the work place. Relevant sections of the ordinance to the project activities include Part IV which deals with general health provision, such as provision of regular medical examination of employees; Safe means of access and safe working place, prevention of fire etc.; and Part V on health and welfare provisions, which includes provision of supply of clean and safe water to workers, sanitary convenience, washing facilities and First Aid facility. Section 50 deals with fire prevention issues.

Section 15 gives powers to the Registrar of factories and workplace to enter any workplace to perform his/her duties as provided by the Act. Section 16 requires projects to be registered with the Registrar of factories and workplaces before commencing operations. NFRAshall observe the provision of this Act during all stages of the project development and operation.

3.4.7 Water Resource Management Act, 2009

This is a new legislation that has repealed the Water Utilization (Control and Regulation) Act (1974). The Act provides for institutional and legal framework for sustainable management and development of water resources; outlines principles for

water resources management; for prevention and control of water pollution; and provides for participation of stakeholders and general public in implementation of the National Water Policy. Its main objective is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways that among others meets the basic human needs of present and future generations, prevents and controls pollution of water resources and protects biological diversity especially the aquatic ecosystems.

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 or 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 fail to 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 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 the 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.

NFRAwill strive to comply with the provisions of the Water Resource Management Act of 2009.

3.4.8 National Land Use Planning Act of 2007

The Act re-established the National Land Use Planning Commission, which is the principal advisory organ of the Government on all matters, related to land use. The Commission has the function of formulating policy on land use planning, co-ordinating the activities of all bodies concerned with land use planning matters, and evaluating existing and proposed policies and activities of the Government directed to the safeguarding of land against its wrongful, wasteful or premature use or development and, on that basis, recommend policies and programmes which will achieve more effective protection and enhancement of the land quality and encourage better land use planning.

Other functions include recommending measures to ensure government policies are compiled including those for the development and conservation of land. This is also an important environmental provision, which introduces the requirements for environmental impact assessment at least in respect of land use matters.

3.4.9 Workers Compensation Act, 2008, (Act No. 20/08)

An Act to provide for compensation to employees for disablement of death caused by or resulting from injuries or diseases sustained or contracted in the course of employment; to establish the Fund for administration and regulation of workers compensation and to provide for related matter. It applies to both workers in the private and public sector. For one to be compensated, the injury must either cause permanent incapacity or make the worker unable to earn full wages for at least three consecutive days. The employer is obliged to pay compensation irrespective of the cause of accident. It does not matter whether the incapacity or death was due to recklessness of the worker. Where injury occurs, an employee is entitled to recover medical expenses and lost wages resulting from the disability, be it temporary or permanent. The law allows for compensation to dependants or personal representatives where the worker is dead. NFRAwill respect the provisions of the Workers' Compensation Act.

3.4.10 Employment and Labour Relations Act, 2004 - (Act No.6/04)

This Act guarantees fundamental labour rights and establishes basic employment standards. The Act provides broad protection against discrimination. Specifically, the Act mandates that employers "promote equal opportunity in employment and strive to eliminate discrimination in any employment policy or practice." It prohibits direct or indirect discrimination by employers, trade unions and employers' associations on a number of grounds, including gender, pregnancy, marital status or family responsibility, disability, HIV/AIDS and age. Harassment of an employee on any of these grounds is equally prohibited. The Act also requires employers to take "positive steps" to guarantee women and men the right to a safe and healthy environment. Since NFRAwill offer employment, therefore shall observe these and other relevant provisions in this Act.

3.4.11 HIV and AIDS (Prevention and Control) Act of 2008

The law provides for public education and programmes on HIV and AIDS. Section 8(1) of the law states that “The Ministry (Health), health practitioners, workers in the public and private sectors and NGOs shall for the purpose of providing HIV and AIDS education to the public, disseminate information regarding HIV and AIDS to the public”. Furthermore, Section 9 states that “Every employer in consultation with the Ministry (Health) shall establish and coordinate a workplace programme on HIV and AIDS for employees under his control and such programmes shall include provision of gender responsive HIV and AIDS education.” This project abides to HIV/AIDS Act in the fight against the disease by providing condoms and awareness trainings.

3.4.12 Public Health Act, 2009

This Act provide for the promotion, preservation and maintenance of public health with a view to ensuring the provisions of comprehensive, functional and sustainable public health services to the general public and to provide for other related matters. The Act sets out duties of the Minister responsible for health in facilitating the effective provisions of public health services in the country. The Act also spells out the duties and functions of the Local Government Authorities in the promotion, implementation and powers to enforce public health standards within their jurisdictions. It further empowers the Local Government Authorities to make by-laws for the smooth operation of public health services.

Part IV of the Act is more relevant to NFRA silos complex development project as it related to sanitation, housing and hygiene. The Part makes provisions for matters relating to nuisance, housing and human settlement, waste management, sewerage and drainage. The Act prohibits direct discharges of liquid waste to public drainages. It is an offence to emptied or to pass into any sewer or into any drain any matter likely to injure the sewer or drain, or to interfere with the free flow of its contents, or to effect prejudicially the treatment and disposal of its contents. Part VII of the Act contains provisions relating to powers of the minister to make regulations relating to notification of infectious diseases and communicable diseases, prevention and control of infectious diseases, control of mosquitoes and vaccinations. It also provides for general penalty where specific penalty has not been specified. NFRA will ensure complianceto the above provisions.

3.4.13 Local Government (District Authorities) Act Cap 287 of 1982

This act provides for a detailed responsibility for the District Councils on administration of day-to-day activities within its area of jurisdiction. Since the project area is within the jurisdiction of Sumbawanga municipal, the provisions under this act have to be followed or adhered and therefore NFRA shall liaise with the municipal leaders in implementing the proposed project.

3.4.14 Fire and Rescue Force Act, (R.E 2007)

The act empowers the commissioner general of the force or his agent to enter premises to ascertain any contravention of provisions of the Act and obtain information required for firefighting purposes. A court may issue an order for a closure or prohibit the use of any premises for human habitation or storage in case there is failure to comply with fire prevention regulations. NFRAshall abide by the relevant provisions of the Act to ensure safety and security of its work force and the general public.

3.4.15 Contractors Registration Act No. 17 0f 1997

The Act establishes the Contractors Registration Board (CRB). CRB has a mandate to register contractors, regulate the conduct of the contractors and for related matters. Among other things CRB is required to take legal action against unregistered contractors who undertake construction; installation, erection or alteration works; ensure that all construction sites are hoarded; and labour laws, occupational health and safety regulations in the construction industry are adhered to. On executing its construction activities NFRA shall therefore appoint a registered contractor and make sure that the provisions of the Act are adhered to.

3.4.16 Engineers Registration Act No. 15 of 1997

This Act establishes an Engineering Registration Board (ERB) which regulates the conduct of engineers, to provide for their registration and for related matters. The Act provides restriction that no person other than a registered engineer shall engage in professional engineering work or services which includes professional service consultation, planning, designing or responsible supervision of construction or operation in connection with any public or privately owned public utilities, buildings, machines, equipment, processes, works or projects where public interest and welfare, or the safeguarding of life, public health or property is concerned or involved, and that requires application of engineering principles and data. Furthermore, the Act stipulates that no person shall employ or continue to employ

any engineer who is not a registered as a professional engineer. NFRA shall engage registered engineers so as to observe the provisions of the Act when executing its activities.

3.4.17 Water Utilization and Sanitation Act (WUSA), 2009

The Water Utilization and Sanitation Act, (No 12), 2009, is the principal legislation aiming to promote and ensure the right of every person in Tanzania to have access to efficient, effective and sustainable water supply and sanitation services for all purposes by taking into account the following principles;

a) Creation and enabling environment and appropriate incentive delivery of reliable, sustainable and affordable water supply and sanitation services;
b) Delegation of management functions of water supply and sanitation to the lowest appropriate levels taking into account the local government administrative systems;
c) Ensuring that water sanitation authorities are financially and administrative autonomous and sustainable;
d) Transferring ownership of water supply schemes in rural areas the respectively communities and enabling all the beneficiaries and stakeholders to participate in respectively in the management of community water supply schemes;
e) Enabling mechanism to ensure that the communities meet the cost of operation and maintenance of their water supply systems and contribute to the cost thereof;
f) Promotion of public sector and private sectors partnership in provision of water supply and sanitation service;
g) Establishment and enforcement of standard of service in water supply and sanitation service;
h) Regulation of suppliers of water supply and sanitation services;
i) Protection and conservation of water resources and development and promotion of public health and sanitation, and
j) Protection of the interests of customers.

The relevancy of this legislation to this project is the obligation of the project proponent to ensure protection and conservation of water sources through avoiding discharge of wastes to water sources or water bodies.

3.4.18 Standard Act, 2009 (Act No. 2/09)

The Tanzania Bureau of Standards is the designated national authority for developing all kinds of national standards, including environmental standards. The TBS Act establishes the National Environmental Standard Committee (NESC), which is responsible for developing environmental standards. The National Environment Management Act 2004 recognises the existence of the NESC. Part X enumerates the types of environmental standards to be established, they include water quality, discharge of effluent into water, air quality, control of noise and vibration pollution, sub-sonic vibration, soil quality, control of noxious smells, light pollution and electromagnetic waves and microwaves. NFRA shall abide by the provisions of this Act.

3.4.19 Tanzania Foods, Drugs and Cosmetics Act, 2003

This is the Act that established the Tanzania Food and Drug Authority (TFDA). Among its key functions is to regulate all matters relating to quality, and safety of

food, drugs, herbal drugs, medical devices, poisons and cosmetics. In this regard, operation of NFRA's silos complex for grain storage will be regulated by TFDA. To comply with this Act NFRA should register the silos complex for grain storage facility at TFDA and get a certificate.

3.4.20 Environmental Management Act (Air Quality Standards) Regulations, 2007

These regulations have been made under sections 140, 145 and 230 (2) (s) of the Environmental Management Act, 2004. They are aimed at setting minimum standard of air quality as well as prohibit emission of hazardous substances, chemicals and materials or gas. They also provide for emission limits, highest permissible quantity (emission), and special tolerance limits of emissions from factories and exhaust emissions of motor vehicles. NFRA shall observe this regulation.

3.4.21 Environmental Management (Soil Quality Standards) Regulations, 2007

These regulations have been made under Section 143, 144 and 230 (2) (s) of the Environmental Management Act, 2004. They are aimed at, among other things, prescribe minimum standard of soil quality to maintain, restore and enhance the inherent productivity of soil in the long term.

Section 21(1) stipulates that no person is allowed to discharge effluent from industrial, commercial or any other trade into soil without a consent dully granted by the Council or any other person designated by the council for that purpose.

NFRA shall make every effort to adhere to these regulations in its project life.

3.4.22 Plant Protection Act, 1997

The Act has the task to issue rules for the protection of animals, plants or micro-organisms and natural environment against dangers arising from the use of plant protection substances or in view of plant protection substances usefulness in combatting harmful organisms. Furthermore the Act concern on the protection of human and animal health or for averting dangers, particularly where the natural environment is concerned by regulating, prohibit, limit or make subject to the obtaining of a prescribing permit or to notification requirements to import protection substances. This Act is relevant to the project since the project will use protection substances to the stored grains. The proponent should use approved protection substances and when there will be need of importing, there should be the importation permit from the authority.

3.4.23 Industrial and Consumer Chemicals (Management Control) Act, 2003

The Industrial and Consumer Chemicals Act provides for proper management and control of industrial and consumer chemicals in Mainland Tanzania. It requires that any person dealing in industrial chemicals has to register with the Industrial and Consumer Chemicals Management and Control Board. The Third Schedule of the Act provides a long list of chemicals that must be registered. In case the developer imports chemicals for its activities compliance with requirement of this law during the importation, storage, use and disposal of those chemicals is of paramount importance.

NFRA uses chemicals that are already registered in Tanzania. Further, the organization does not import any chemical but rather acquire them from large importers available in the country. Should there arise a need to import chemicals from outside the country, the

company shall register with the Government Chemist and Laboratory Agency as required by the law.

3.4.24 Environmental Management (Solid and Hazardous Waste Management) Regulations 2009

This Act was made to control a facility or premises, which generates waste to minimize the waste generated by adopting the following cleaner production principles:-

(a) Improvement of production process through conserving raw materials and energy by:

(i) Eliminating the use of toxic raw materials within such times as may be prescribed by the Minister; and

(ii) Reducing toxic emissions and wastes to a level prescribed in the applicable national environmental quality standards.

(b) Monitoring the product cycle from beginning to end by-

(i) Identifying and eliminating potential negative impacts of the product;

(ii) Enabling the recovery and re-use of the product where possible; and

(iii) Reclamation and recycling.

The Act also requires any person intending to operate a hazardous waste treatment plant or disposal site or facility to apply to the Director of Environment for a license.

NFRA shall comply with this regulation by ensuring proper environmental management especially proper solid waste collection from production area, sorting, recycling and transportation to dump site and special area for solid waste collection point shall be designed.

3.4.25 The Local Government (Urban Authorities) Act, Cap 288 R.E 2002

This Act establishes urban authorities for the purposes of local government, to provide for the functions of those authorities and for other matters connected with or incidental to those authorities. Section 55 of the Act enumerates basic functions of the urban authorities. The functions that are relevant to APL to provide for the prevention and abatement of public nuisances or of nuisances, which may be injurious to the public health or to the good order of the area of the authority; to regulate any trade or business, which may be noxious, injurious to the public health or a source of public danger, or which otherwise it is in the public interest expedient to regulate, and to provide for the issue of licenses or permits to facilitate the regulation of any such trade or business, and for the imposition of fees in respect of such licenses

Section 59 lists the powers of the Urban Authorities. The following powers are considered relevant to proposed activities: to undertake the abatement of fire and the prevention of the spread thereof and for such purposes to enter any premises; to provide for the imposition and fixing of charges to be paid in respect of services rendered by the authority.

Section 80 of the Act empowers the urban authorities to set by-laws.

NFRA Mpanda complies with these and other relevant provisions in this Act by ensuring that neither pollution nor nuisance happens within premises or near it. Also, NFRA will pay all levies as provided for in relevant by-laws.

3.4.26 The National Land Act No. 4 of 1999

The Land Act of 1999 outline among other things, the administration of land, the role of local government in land administration, land allocation and occupancy. The Land Act contains provisions of critical environmental importance. This Act translates the "fundamental principles of land policy" into the body of the law. One of these fundamental principles is "to ensure that land is used productively and that any such use complies with the principles of sustainable development". This means the project proponent will have to return the land to its useful state on decommissioning of the project. As a first step, the project proponent agreed to conduct the EIA to guide project operations. The land will be utilized without pollution if the proponent will follow EIA recommendations.

3.4.26 Grazing Land and Animal Feed Resources Act 2010

The Act was to provide for the management and control of grazing lands, animal feed resources and trade and other related matters.

Section 16 (1) of the Act, say the grazing land shall be demarcated accordance with the provisions of the Village Land Act and the Land Use Planning Act.

Section 18 (1) was talking about any development on the grazing land, shall be undertaken in a manner that is consistent with sustainable land use planning and management practices and section 18 (2) say that; the grazing land development shall include but not limited to; (a) vegetation management practices directly concerned with the use and growth of plants (b) livestock management and marketing infrastructure and (c) environmental conservation and development of water sources for livestock use.

NFRA will observe the provision of Act and will base on purchasing grain from local farmers not otherwise. In case proponent decides to invest directly for planting will consult authorities for proper land demarcated for agriculture purposes.

3.5 RELEVANT NATIONAL PLANS, PROGRAMS AND STRATEGY

The following national plans/strategies have a bearing on the proposed project;

3.5.1Tanzania Development Vision (2025)

The National Vision 2025 foresees the alleviation of widespread poverty through improved socio-economic opportunities, good governance, transparency and improved public sector performance. These objectives not only deal with economic issues, but also include social challenges such as education, health, the environment and increasing involvement of the people in working for their own development. The thrust ofthese objectives is to attain a sustainable development of the people.Developing the silos complexproject, NFRA will contribute towards realisation of the Vision's objectives.

3.6 ADMINISTRATIVE FRAMEWORK

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

a. Minister Responsible for Environment;
b. Director of Environment (DOE);
c. National Environment Management Council (NEMC);
d. Sector Ministries;
e. Local Government Authorities (Municipality and District, Ward and Village).

The Department of Environment and NEMC are the main regulatory bodies for environmental management in Tanzania. However, other sector ministries and agencies, play an important role in implementing environmental policy objectives. The environmental management functions of each institution are outlined in the Environmental Management Act as follows;

3.6.1 Project Proponent

The overall project environmental management will be on the hands of the project proponent (NFRA) and the contractor who in collaboration with other stakeholders such as NEMC, Regional secretariats, Local Government Authorities to ensure the implementation of Environmental and Social Management and Monitoring Plan.

3.6.2 Minister Responsible for Environment

This minister has the overall responsibility for environmental matters, including policy articulation for promotion, protection and sustainable management of the environment in the country. Other duties include issuing policy guidelines to sector ministries, government departments, NEMC, and any other public or private institution. The minister will issue an Environmental Impact Assessment Certificate following the recommendation from NEMC and upon satisfaction that the project will not be an environmental disaster and that the project proponent has prepared measures to address any adverse impacts to the environment and to the society.

3.6.3 Director of Environment

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. DoE gives early warning on impending environmental emergencies. The Director is responsible for advising the Government on policy and legislative matters and international agreements and conventions. Pertaining to this project DoE will receive and review recommendations from NEMC and advise the Minister to issue an Environmental Certificate.

3.6.4 National Environment Management Council

The council is responsible for enforcement, compliance, review and monitoring of Environmental Impact Assessment (EIA). It prepares and submits bi-annual reports on the implementation of the provisions set out in the Environment Management Act. The National Environment Management Council in collaboration with Technical Advisory Committee will review the Environmental Impact Statement and recommend to the Minister Responsible for Environment to issue an EIA Certificate to project proponent upon fulfilling all the requirements

3.6.5 Sector Ministries

The Environment Section in each the sector ministries is responsible for ensuring compliance with the requirements of the Environment Management Act. The sections are also responsible for liaising with the Director of Environment and the NEMC. The Sector Environment Coordinator, who is appointed from within the Sector Ministry, heads the Sector Environment Section. The Coordinator is responsible for:

- Coordination of all activities and performance of the functions relating to environment;

- Prevention and control of any activity likely to cause or bring out environmental degradation; and
- Reporting on the implementation and enforcement of environmental provisions of laws falling under the jurisdiction of the sector

For this project, the sector ministry is Ministry of Agriculture, Livestock and Irrigation

3.6.6 Local Government Authorities

Local Government Environmental Management Officers are appointed by each City, Municipal, District and Town Council. Their responsibilities, among others, include:

- Ensuring enforcement of the Environmental Management Act;
- Advising the Environment Management Committee;
- Promoting environmental awareness;
- Gathering and managing information on the environment and the utilisation of natural resources;
- Preparing periodic reports on the state of the environment;
- Reviewing 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 theimplementation of the EMA.

Important institutions to the proposed project are as summarized on table 3.1.

Table 3.1: Key Institutions that will be involved in implementation of ESMP

Level	Institution	Roles and Responsibility
National level	Vice President's Office Division of Environment	• Coordinate various environment management activities in Tanzania • Advise the Government on legislative and other measures for the management of the environment • Advise the Government on international environmental agreements • Monitor and assess activities, being carried out by relevant agencies in order to ensure that the environment is not degraded • Prepare and issue a report on the state of the environment in Tanzania; • Coordinate the implementation of the National Environmental Policy
	NEMC	• Carry on environmental audit and environmental monitoring • Carry out surveys which will assist in the proper management and conservation of the environment • Undertake and co-ordinate research, investigation and surveys in conservation and management • Review and recommend for approval of environment impact statements • Enforce and ensure compliance of the national environmental quality standards • Initiate and evolve procedures and safeguards for the prevention of accidents which may cause environmental degradation and evolve remedial measures where accidents occur; • Undertake in co-operation with relevant key stakeholders environmental education and public awareness; • Render advice and technical support, where possible to different stakeholders
	Ministry of Lands and Human Settlements Development	▪ Enforcement of laws and regulations on Land sector ▪ Land use planning ▪ Authority over the national land including the project area

Level	Institution	Roles and Responsibility
	Tanzania Food and Drugs Authority (TFDA)	▪ Enforcement of laws and regulations on grain storage quality ▪ Register silos complex as grain storage facilities ▪ Issue a compliance certificate for grain storage
	Occupational Safety and Health Authority (OSHA) under Prime minister Office.	▪ Issuing certificates of compliance ▪ Designated Authority for occupational safety issues
Project Proponent	National Food Reserve Agency (NFRA)	▪ Ownership of land and infrastructure of the proposed project ▪ EIA study ▪ Project implementation ▪ Project monitoring and internal auditing. ▪ Consultation with stakeholders.
Municipal council level.	Sumbawanga Municipal Executive Director's Office and Municipal Environmental management Officer	▪ Oversee and advise on implementation of national policies at municipal level ▪ Oversee enforcement of laws and regulations ▪ Advice on implementation of development projects and activities at municipal level. ▪ Day-to-day environmental management and monitoring
Ward and Mtaa level.	Mazwi Ward • Ward Executive Officer	• Oversee general project development at ward level, • Provide information on local conditions and extension services • Project monitoring in their area of jurisdiction
	NMC Mtaa Mtaa Executive Officer	▪ Oversee general project development at mtaa level ▪ Provide information on local conditions and extension services within mtaa communities, ▪ Project monitoring in their area of jurisdiction

CHAPTER FOUR: BASELINE CONDITIONS

4.1PHYSICAL CHARACTERISTIC

4.1.1 Topography

Sumbawanga Municipal Council lies between latitudes 07^0 48' to 08^0 31' South of Equator and Longitude 30^0 29' to 31^0 49' East (Regional Commisioners' office, 2008). The Municipality has an average altitude of 1769 meters above sea level(2017), however, the highest altitude of 2461 meters above sea level are attained at Malonga 25 km South – East of Sumbawanga Municipal Council. Also Sumbawanga Municipal Council has a land area of 1, 369 km^2, 2 divisions, 15 Wards and 24 Villages(RUKWA INVESTMENT PROFILE, 2014). Topography of the project area is uplands landforms and forms about 100% of the site, with dominant gradient of less than 0.056 (5.6%) sloping southern part of the site, with large storm water gullies. The project site however, is sloping terrain. It slops from north to south, with storm water gullies. The area is not covered by vegetation but with few trees planted along the boundaries.

4.1.2 Climate

The region enjoys tropical climate with mean temperatures between 13^0C in some places for the months of June and July, to 27^0C in the hottest months of October to December. Rainfall has been reliable for many years; it ranges between 800 – 1300 mm per annum. However, the region has in recent years, been receiving a bit low rainfalls due to environmental destruction in some parts of the Region (RUKWA INVESTMENT PROFILE, 2014)

4.1.3 Hydrology

The Municipal lies on the West part of the great East Africa Rift Valley, to the north the land rises to Ufipa plateau characterized by many hills and Villages, consequently the area is transversed by a number of rivers and streams some permanent and others seasonal. Sumbawanga is among the areas that are also endowed with good quality underground water that can be accessed through deep wells.

4.1.4 Soils

The predominant soil type in and around the Sumbawanga Project areas is mostly reddish brown in colour and have textures ranging from sandy loams to sandy clay loams or clays. They are generally moderately deep to very deep and imperfectly to poorly drained. The topsoil is hard when dry but friable to very friable when moist and slightly sticky or sticky and plastic when wet. (Feasibility Study, NFRA, 2015)

4.1.5Air quality

Table 4.1: Results of ambient gases and particulate matter at the site

Points	Ambient Gases							Particulate matter
	O_2	CO_2	CO	NO	NO_X	SO_2	H_2S	PM_{10}
	%	%	mg/m^3	mg/m^3	mg/m^3	mg/m^3	%	Mg/m^3
07deg. 16Min. 12.5. Sec, 31deg. 20Min. 14 Sec	22.5	0.22	5.04	0.00	0.00	0.00	0.00	0.23
07deg. 25Min. 22.5. Sec, 31deg. 15Min. 18 Sec	22.5	0.22	5.05	0.00	0.00	0.00	0.00	0.24
TBS LIMIT	**15**	**-**	**10**	**0.12**	**0.12**	**0.50**	**-**	**10**
WHO	**15**	**-**	**30**	**0.2**	**0.2**	**0.50**	**-**	**-**

Source: Field data, 20 January 2017

As detailed in table 4.1, the results obtained from measuring the ambient gases and particulate matter during field study show that all measured parameters are within acceptable limits according to Tanzania Bureau of Standard (TBS).

4.1.6 Noise level

Noise measurement taken at the site during the day show that average noise level was 55dB.

4.2 BIOLOGICAL CHARACTERISTICS

4.2.1 Flora and Fauna

4.2.1.1 Flora

NFRA Sumbawanga project site is characterized with short perennial grasses and dominance of tree species of *Sennasiamea* and *Grivellearobusta*. Other tree species found at project site include *Albizia*sp, *Rauvolfia*sp, *Psidiumguajava*, *Elaeisguineensis*, *Psidiumguineense*, *Eucalyptus*sp and *Cupressuslucitanica*. The type of plant species found and their respective locations are as shown in the table 4.1 below: -

Table 4.2: List of plant species and their respective location at NFRASumbawanga site

S/N	Species name	Locality	Habit	Category
1.	*Grivellearobusta*	Along the site boundary	Tree	Exotic
2.	*Cupressuslucitanica*	Near the office buildings	Tree	Exotic
3.	*Psidiumguineense*	Near the office buildings	Tree	Exotic
4.	*Senna spp.*	Along the site boundary	Tree	Exotic
5.	*Psidiumguajava*	Near the site buildings	Tree	Indigenous
6.	*Elaeisguineensis*	Near the site buildings	Small tree	Exotic
7.	*Eucalyptus sp.*	On the open grass area	Tree	Exotic
8.	*Albizia sp.*	Near the site buildings and boundaries	Tree	Exotic
9.	*Rauvolfiasp*	Near the buildings	Tree	Exotic

.Source; Field study, 2017

4.2.1.2 Fauna

Generally, no fauna with high conservation/ ecological concern were observed on the project site during the survey. It was similarly observed that there were no avian, amphibians and reptiles species recorded during the study that are included on the IUCN Red list of threatened species

4.2.2 Unique and Endangered species

There were neither unique nor endangered species of conservation/ ecological concern that were observed at NFRA Sumbawanga site during field study.

4.3 SOCIO-ECONOMIC ACTIVITIES

4.3.1 Demographic profile

According to 2012 population and Housing census, Sumbawanga Municipality has a total population of 209,793 people out of which 100,734 were males and 109,059 females and Mazwi ward has total population of 6,197 where by 2,907 are males and 3,290 are females. Table 4.2 below shows the summaries of population size, for Sumbawanga Municipally Council for 2012.

Table 4.3: Population by Sex for Mazwi ward and Sumbawanga Municipal Council

WARD/DISTRICT	POPULATION		
	MALES	FEMALES	TOTAL
Mazwi ward	2,907	3,290	6,197
Sumbawanga Municipal Council	**100,734**	**109,059**	**209,793**

Source: United Republic of Tanzania, Population and Housing Census data (2012)

Population increase varies from one locality to another in Sumbawanga Municipal Council. Urban to semi-urban centers tend to grow faster in total population and have higher population densities than other areas. Higher density is explained by its potential to attract business entrepreneurs and other groups.

4.3.2 Cultural Heritage, Aspirations and Traditions

Residents in the project area are of mixed ethnic groups which show a growing urban feature of the area. The main ethnic groups found in the project area specifically in Mazwi ward includes Fipa, Nyiha, Sukuma, Nyakyusa, Safwa, e.t.c. (Source: Field data, 2017)

4.3.3 Land Use

Land in the Municipal is used for subsistence agriculture and livestock. Out of available land, 33% is for agriculture while 67% is for grazing (URT, 2007, p. 10). The rest of the land is subdivided into open land and urban area. There is very little vacant arable land within reasonable walking distance from the villages in Sumbawanga

4.3.4 Land Tenure

Three land tenure systems are practiced; government allocation; buying; and inheritance. In the early 1970s, households obtained land through village allocation. Others bought land from individual landlords who had extra land to dispose of. At present many landowners inherit land from parents and some obtain land through

long term borrowing from landlords who have extra, unused land. In this case, land owners decide on the size of land to sell and fix the prices. In case of villages, village governments serve as witnesses to the transactions and keep records for future reference.

4.3.5 Economic Sector

4.3.5.1 Agriculture activities

About 90% of the population in Rukwa region earn their living from agricultural activities. Agriculture in Rukwa region is dominated by small-scale subsistence farming. Approximately 68 percent of the cultivated land is used by smallholder farmers who operate between 0.5 and 2.0 ha (URT, 2007). The staple foods are mainly maize, rice and beans. In some parts around Lake Tanganyika and Lake Rukwa, cassava, fish and rice are the main sources of food. Other food crops widely available include groundnuts, finger millet, and sweet potatoes, round potatoes, sorghum, wheat and sugarcane. Meat is easily available from the pastoral's community who traditionally keep varieties of domestic animals such as cattle, goats, chicken, pigs, rabbits and pigeons (URT, 2007).

The predominant soil type in and around the project site are mostly reddish brown in color and have textures ranging from loams to sandy clay loams or clays. They are generally moderately deep to very deep and imperfectly to poorly drain. The topsoil is hard when dry but very friable when moist and slightly sticky or sticky and plastic when wet. These soil types are conducive to high food production

4.3.5.2 Livestock

Livestock contributes about 20% to GDP in Rukwa region. Farmers keep an average of 12 head of cattle per family. However, during the past 10 years, there has been a huge influx of agro pastoralists from Tabora, Shinyanga, and Mwanza to the region in search of pasture for their livestock. The migrant pastoralists keep an average of 100 to 300 head of cattle per family (URT, 2007).

4.3.5.3 Fisheries

Rukwa region is located between two lakes such as; Lake Tanganyika and Lake Rukwaand has two big rivers such as; Ugalla and Sitalike. There are other small lakes and rivers all with reliable fish population. The variety of fish available in the region includes sardines, tilapia, nile perch, mud fish, english fish, Luciolatesstrapessil "migebuka" and various decorative fish species. The fishing industry is active and there is notable fish business currently going on within and outside Rukwa region to Zambia and DRCongo(URT, 2007)

4.3.6 Economic Infrastructure

4.3.6.1 Roads

The road network leading toMazwi ward from Tunduma-Sumbawanga highway iswell planned and generally passable and all service roads are passable through year. The roads linking the project area from Sumbawanga municipal council are well planned and paved with tarmac. However, others feeder roads in the neighborhood including the one leading to the project site from east direction was in gravel.

4.3.6.2 Railway transport

At Sumbawanga municipal council there is no railway transport which provide service. But the presence railway line of 210 km long provides passenger and

transport goods to the northern part of Kataviregion from Mpanda to Kaliua in Tabora region.

4.3.6.3 Air Transport

The communities at Mazwi ward depends on Sumbawanga airport which is only airport available, where by more than 10 private airstrips are expected per week. The public airports are located in Sumbawanga municipal about 10km fromSumbawanga bus stop. No commercial planes are serving Rukwa region.

4.3.6.4 Communication Networks

Given its economic significanceSumbawanga municipal council and its suburbs are improved in communication infrastructure. Many communication companies have opened offices and facilities in many areawithin Sumbawanga municipal. These includes; VODACOM, AIRTEL, tiGo and ZANTEL. Other services available at the project site are Television and radio broadcasting.

4.3.6.5 Energy

Fuel wood in the form of firewood and charcoal is available in almost all parts of the region and is the most important source of energy for domestic and other activities such as brick burning, pottery and curing of tobacco. Kerosene is used for provision of lighting mostly in the rural areas but also in the urban areas where the same is used for cooking as well (URT, 2007, p. 32).

Sumbawanga municipal depends on one thermal power plant of the 66kVA, where Zambia grid connected as the major currently available energy sources. It is expected that Sumbawanga will be connected to the Tanzanian national grid system in the near future. At the project site there is a small sized transformer that is not adequate to supply power once the modernsilos complex facilities will be in operation. There is no standby generator(s) that can supply enough power to the complex silos in-case of power black outs. Construction of modern silos complex will require an increased supply of electricity for operation.

4.3.7 Social Services

4.3.7.1 Education and training

Literacy is the ability to read and write with an understanding of a short simple statement on everyday life. According to population and housing census of 2002, there were 908,670 total number of population in five year and above age group in Rukwa Region, out of whom 479,440 or 53 % were literate. Among literates, 55 percent were males and 45 per cent females (URT, 2007, p. 22). Academic performance in both primary and secondary schools is somehow satisfactory.

4.3.7.2 Health facilities

The Health Sector in Rukwa region is still not very well developed as it is characterized by high rates of morbidity and mortality due to inadequate resources (URT, 2007, p. 23). In consideration of the population in the area, the number of health facilities serves the population in the ratio as shown in table 4.3 below.

Table 4-4: Facilities to population ratio indicator

S/N	Indicators	Ratios
1	Health Centre population ratio	1:47,432

2	2 Dispensary population ratio	1:6,979
3	Hospital bed per population ratio	151:2572

Source: Growth Prospects of Rukwa Region, 2007

The common diseases which caused higher morbidity and mortality rates included: Malaria, Diarrhea, ARI, HIV/AIDS/STI, Tuberculosis, Anemia, Meningitis etc. By then, the maternal mortality rate was 187/100,000, infant mortality rate was 87/1000, the under-five mortality rate was 175/1000 and severe malnutrition was 155 percent.

4.3.7.3 Water supply

Mazwi area is well connected to SUWASA water supply network. Most people in the area are connected to the piped water system. Few people also use boreholes which are pumped by submersibles pumps as an alternative source of water in case SUWASA water supply system is interrupted. The proposed project area is already connected with piped water service from Sumbawanga Water Supply Authority (SUWASA).

4.3.7.4 Waste management

Solid waste

The predominant type of waste generated is solid waste. Disposal system of these solid waste such as pesticides containers and utilities, maize husk, papers and other unwanted materials are usually burned locally. Due to new investment proposed by NFRA, it is expected that the amount of solid waste generated will increase especially during peak operation. To be environmental friendly operated, the proponent should look on solid waste sorting at source and proper time for disposal at approved dump site.

Liquid waste

As for the liquid waste management, there is no sewer system within the site or near it. Due to unavailability of oxidation ponds near the area, septic tanks and soak away pits are constructed to manage sewage in the project site.Storm water drains are constructed to channel all run off from the roof top. Improvement should be insisted in case of storm water management and paving all road within the project site to prevent rain water scattering.

4.3.7.5 Electricity

Sumbawanga depends on one thermal power plant and the 66kVA from Zambia grid connected as the major currently available energy sources. Addition of silos complex will require an increased supply of electricity so proponent should insist on availability of standby generator as alternative source of power during operation phase.

4.3.7.6 Labour market – skilled and un-skilled

Casual labourers and un-skilled workers are readily available from all parts of Rukwa region who will be employed during construction phase and operation phase.

Movement of labour from other parts of the country is not restricted thus allowing people with qualifications from anywhere to be employed.

CHAPTER FIVE: STAKEHOLDERS CONSULTATION AND PUBLIC PARTICIPATION

5.1 INTRODUCTION

Information and data for compilation of this report have been collected from mainly four sources namely a review of available documents on the project, site visits to the proposed project site, meetings with the proponent's technical staff and through consultation with other stakeholders including leaders of the surrounding communities.

Stakeholders' consultations were carried out as part of the environmental impact assessment process for the proposed construction of silos complex development project. The purpose of consultation was to identify and respond to project issues of concern to stakeholders and address the same accordingly.

5.2 STAKEHOLDERS CONSULTED

Stakeholders include all individuals, groups or organizations that might be affected or might affect the project (positively or negatively) in one way or the other. A Public Consultation process has been planned during the development of the Environmental Impact Assessment study for the construction of silos complex project. This process allowed the creation of a channel of communication for consultation from the local and national level. National and local authorities including leaders in the area of influence of the project have been involved in the process. The consultation process was done in January 2017. Details of the meetings and focus group discussions with individuals and groups of stakeholders are found in Appendix 4.

Stakeholders consulted are all individuals, groups or organizations that might be affected or might affect (positively or negatively) the proposed construction of silos complex project. They are found at national, municipal and local levels. At municipal levels consultant meet with Municipal Executive Director, Municipal Environment management Officer, Municipal land officer and municipal Agriculture Officer. At the ward level, Mazwi Ward Executive Officer (WEO) and NMC Mtaa Executive Officer (MEO) and communities were consulted. Also interviews were held with officers at Rukwa region commissioner where we consult with; Regional Commissioner, Region Administrative Secretariat and Region Agriculture Officer. Again we held consultation with officers at; Fire and Rescue Force-Rukwa region, Occupation Health Safety Authority (OSHA)Mbeya North-southern zone and TFDA Mbeya north-southern zone.

The list of interviewed stakeholders at all levels i.e. from the nation to street is summarized in the table 5.1 below.

Table 5.1: List of consulted stakeholders

Level of consultation	**Institution**	**Names of Individuals**

Level of consultation	Institution	Names of Individuals
National Level	Ministry of Agriculture, Livestock and Fisheries	Ag. Permanent Secretary, Mr. ElimpaaKiranga
	Tanzania Food and Drug Authority (TFDA)	Ms. Grace Kapande Ag Zonal manager
	Occupational Health and Safety Authority (OSHA)	MrRenatus A. Qalgal-Industrial Hygiene inspector Mr. George Chali-Zonal Manager
Regional Levels	Regional Commissioner Officer	Mr. Zelote .S. Zelote-RCRukwa
	Regional Administrative Secretariat	Mr. AbubakariM. Kunenge-Ag RAS
	Regional Agriculture Officer	Ms. ScholaMbalila
	Fire and Rescure Force	Mr.MboliLusaju-Assistant Inspector
Municipal Levels	Municipal Executive Director	Mr. H. Njovu
	Municipal Environment Management Officer	Mr. HamiduMasale
	Municipal Land and Urban Planning	Mr.BarakaMelakiti-Ag MUPO
	Municipal Agriculture Officer	Mr. WiliamNswila- Ag.MAICO
Local Level	Mazwi Ward Ward Executive Officer (WEO).	Mr. Justus Atmas
	NMC Mtaa Mtaa Executive Officer (MEO)	Mr. Upengo Joseph
	Other community members	Ms. Maria Bakuli
Project Proponent	National Food Reserve Agency(NFRA)	• Mr. Morgan A.M-NFRA Zonal Manager • Mr. S.Mtambalike-Supplies Officer • Eng. G.Sangoda-Civil Engineer • Mr. Marwa K.R Accountant

5.3 STAKEHOLDERS CONCERNS

Generally, all government leaders and local communities were positive and excited about the project and appeared to be contented with its objectives leading to its initiation. They all wanted to know when the implementation will start and they pointed out issues to be cared for in all project phases for better operation. All raised issues from consulted stakeholders are pointedand noted as explained on table 5.2 below.

Table 5.2: Details of stakeholders' comments as recorded during one to one sessions with each stakeholder:

Level	**Institution/ Group**	**Views and Concerns of stakeholders**
National Level	Tanzania Food and Drug Authority (TFDA)	The consultant met with **Ms Grace Kapande-** , who is an acting zonal manager at North-Southern zone and she pointed out that the proposed project is good if the following will be considered; • Grain storage procedures should be one which enable grain to be in a recommended quality for the whole time. • Proponent should register silos at TFDA and get a certificate for food storage facility • Grain quality monitoring should be done and result should be certified by TFDA • All chemicals to be used for supporting storage of grain should be known and certified by the authority responsible • In case when the tested grain is found that it does not meet standards for human consumption proponent should take care on how to destroy such grains without harming human health.
	TPRI	The consultant had discussion with Mr Samwel MMari of TPRI which is an government institution under the Ministry of Agriculture. Mt Mmari had the following comments regarding the proposed grain expansion project: i. It is advised that, the the one who will do fumigation to cereals in the godowns should be a well trained person with knowledge in pesticides. ii. Appropriate protective gears should be provided to the fumigator. iii. Before the cereals are stored in the godowns, the facility has to be sprayed in and outside to keep away pests and animals. The recommended fumigants for domestic compound control are; Nuvan 500EC, Carate 5EC, Dursban 4E Icon 10WP. If there is shrub or a bush nearby Rogol 40 can be sprayed but not highly recommended. However it controls and keep away snakes, lizards, scorpions, alligators etc.

Level	Institution/ Group	Views and Concerns of stakeholders
		iv. The recommended fumigants are; Baluphos 56% (Aluminum Phosphide), Degesch Plate (Magnessium Phosphide), Detia EX-B (Alluminium phoshide), Phostoxin tablets (Alluminium phoshide), Quickphos (Alluminium phoshide), Fumitoxin tablets (Alluminium phoshide). It should be noted that fumigation should be done at the recommended standards as per instructions, the cereal stakes have to be well covered. v. As regards handling of the empty containers and expired products, NFRA should consult TPRI who will collect the containers and chemicals at their site and send to the incinerator at Wazo Hill owned by Twiga Cement.
	Occupational Health and Safety Authority (OSHA)	The consultant met with **MrRenatus A. Qalgal**who is Industrial Hygiene inspector and **Mr. George Chali**who is Zonal Manager at North-Southern zone. Both said that there is no objection on establishment of the proposed project since it will improve the status of the area inSumbawanga municipality and it will increase employment opportunity to community around the project. However, they said that the proponent should submit all proposed drawings to OSHA for verification of the provided facilities before commencement of construction activities, They further explained that due to different kinds of construction materials which will be used, there will be a potential for health problems to workers They added that, the construction of proposed project is associated with hazardous working environment therefore if there is no care many construction workers may be affected and; Finally they concluded that, the proponent should be responsible for availability and operation of services like water, toilets and electricity during all phases.
Regional Level	Rukwa region	At regional level the consultant met with **Mr. Zelote.S. Zelote**who is Region Commissioner, **Mr. AbubakariM. Kunenge**who is acting Region Administrative Secretary and **Ms. ScholaMbalila** who is a region Agriculture Officer. All accept the project as it will enhance availability of food during draught season.Also people will be employed during peak season and presence of market for farmers to sell their grains. The following should be observed for best results • Height of silos should not affect aeroplanes • Structures should reflect the amount of money provided • NFRA should corporate with farmers by providing education on the kind of seeds planted and quality of

Level	Institution/ Group	Views and Concerns of stakeholders
		grain recommended • Buying of grain from farmers should be fair. • Proposed Silos complexshould be constructed in accessible areas i.e. near roads, water and electricity • Such a project could also be introduced in areas where production is very high in order to reduce transportation costs uncured by NFRA during purchases • Proposed silos complexshould be constructed as per specifications.
	Fire and Rescue Force at Rukwa region	The consultant met with theRukwa Fire and Rescue Assistance Inspectors**Mr. MboliLusajo, Mr. CheskoMbata, Mr. FadhiliKaizaSanga and Mr. Geofrey George Mwambugu,** they had the following comments; The proponent should submit the proposed structure layout plan to fire for inspection and approval of location of firefighting equipment, During construction phase, the contractor/proponent should inform and invite Rukwa fire and rescue force for verifying the implementation of firefighting equipment and its quality and; After construction and installation of fire equipment, the proponent should inform the fire officers for verifying the performance of fire protection equipment's and be awarded the fire certificate.
Municipa l Level	Sumbawanga Municipal Council.	At municipal level, the consultant met with**Mr. H. Njovu** who is Municipal Executive Director, **Mr. HamiduMasale** who is Municipal Environment Management Officer, **Mr.Baraka Melakiti-**who is acting Municipal Land and Urban Planner and **Mr. WiliamNswila**who is acting Municipal Agriculture Officer. They accepted the proposed project in the area due to many benefits which will be obtained after implementation, but had the following concerns regarding the project development: - • During the construction and operation phases noise pollution is expected so proponent should be responsible for that, • Air pollution is expected during loading of construction materials and demolition of existing structures so the proponent should look forways to mitigate this impact, • Management of waste materials associated with the construction activities should be done by proponent, • During operation phase the project will be a source of traffic jam due to heavy truck coming to the area • Contractor committed for construction should be the

Level	Institution/ Group	Views and Concerns of stakeholders
		one who is registered by the Contractor Registration Board and should have valid certificate from OSHA. • Proponent should insist contractor's to follow all safety rules and policies during working hours in order to avoid possibility of injuries to the workers and all environmental rules and regulations should be respected. • Proponent should consult with municipal construction Engineer for building permit. • Farmers should be trained on post-harvest processes to enable them to sell the right quality grains.
Local Authorities Level	Mazwi Ward	The consultant held consultation with Ward Executive Officerat Mazwiward**, Mr. Justus Atmas**, who firstly welcome the project to the area due to many positive impacts which will be resulted as project operation, also he recommend the following to be considered for best implementation:- • Proposed project will pull many people into a single area, effort should be taken by all government institution to ensure that hygienic procedures are followed. • Proponent should ensure that basic human needs such as safe drinking water and enough number of toilets are available according to the number of people expected during peak season, • All environmental rules should be considered.
	NMCStreet	The consultant held discussion with **Mr. Upengo Joseph**, who is Street chairperson and other community members as appended in appendix 3. Allmembers accepted the proposed project in the area, but they recommended the following to the proponent; • In case of an employment opportunities project proponent should give first priority to local people near the proposed project, • Improvement of feeder road should be considered for trucks to reach project site easily, • All roads within the project site should be improved.

5.4 RESPONSE TO STAKEHOLDER'S CONCERNS

During stakeholders' consultation many issues were raised by different stakeholders according to his or her position. The main issues and concerns raised will be mitigated as shown in table 5.3 below:

Table 5.3: Shows response of stakeholder concerns.

CONCERNS/ISSUES	RESPONSE TO CONCERNS
Noise pollution during the construction phase	• Contractor will provide a notice of intended noise to all people within the affected area so as to be aware for what will be done at the project site and take preparation for that kind of noise, • Workers will be provided with noise protective gears and insist on the use of it all the time. • Contractor will ensure that all working machines and trucks delivering construction materials are well inspected and serviced properly so as to reduce the noise • Site shall be fenced with a well approved material like iron sheet in order to reduce the speed of the noise. • All activities expected to generate high noise should be done on day time only (07:00am to 10:00pm)
Air pollution during the construction phase	• Layout of loading materials should be done inorder to locate construction materials at an exact area where dust emission will not affect the community. • Contactor or proponent will procure the ready to use concrete mix which will help to reduce dust emission from mixing materials. • Application of dust musk should be insisted to all workers within the project area, • For the case of present stockpiles, the proponent will cover all stockpiles during non-loading hours, and • Water spraying will be employed in the morning hours and evening hours daily by a contractor to all unpaved area within/near the project area where dust emission are expected.
Management of waste materials associated from the construction activities	• The debris from demolition will either be transported by a licensed waste transporter for disposal atMbalika dumping site or used as base material for a new construction work. • Other waste materials will be used for filling in any open pits and planting appropriate tree species to prevent soil erosion.
Presence of social services especially during construction and operation phases	• Safe drinking water will be available from SUWASA water supply and the proponent will provide extra water storage facilities which will be used in case of water shortage. • The site is at Sumbawanga municipality, so

	accommodation for all gestors will be available, • Toilets are already available at the site which will be used during construction phase and new toilets will be added to handle many people during peak seasons
Firefighting systems	• The Proponent will submit fire protection plan to fire offices for inspection and approval before commencing construction activities, • Regular inspection and testing of the firefighting equipment will be done by a qualified and recognized personnel, • All firefighting equipment used will be those proved and recognized by Fire and Rescue Force • Project proponent will request for Fire Certificate of Compliance, so all necessary issues will be solved.
Occupational health hazards and risks during operation phase	• Each staff shall use personal protective equipment as per assigned job • There shall be periodic health check-up of all employees • Providing training in relevant safety measures information to workers • Posting sign posters in relevant areas to warn workers on safely and danger issues • Training should be provided to employees for operating new machines • Premises should have first aid kit and trained first aider to respond in case of accident • All works shall be planned and conducted in accordance with relevant to OSHA guidelines.
Pollution of environment due to solid and liquid waste mismanagement	• Septic tank and soak away pit will be used to manage liquid waste at the site. If septic tank is full, cesspit emptier truck will be employed to transport liquid waste to the nearest waste stabilization pond at Mbalika • Construction of storm water drainage system for management of rain water around the project premises • Regular maintenance of the drainage system • Good solid waste management policies will be adhered to which will guide all workers to protect the environment • Induction training on solid waste separation and sorting at source will be conducted by NFRA which will help in recycling other waste material hence reducing the amount of waste generated. • Provision of solid waste storage facilities will be theresponsibility of NFRA, for better practice solid waste separation at source at each area where expected to generate solid waste

Safety of workers during operation phase	• Induction training to workers on health and safety and application of safety gears will be done, • Emergency preparedness plan will be prepared and adhered to • Proponent should have a health and safety policy and implement it in order to reduce injury/ or accidents at work. • All personnel will be provided with appropriate protective gear, • All works shall be planned and conducted in accordance with relevant OSHA guidelines. • Medical diagnosis for new employee will be done and first aid kit shall be provided at an area where it will be easily visible and accessible • Used truck atleast be non-smoke emitter
Food Security issues	• During operation phase proponent will ensure that all necessary food storage procedures are taken • Storage grain monitoring should be done by a recognized expert within specific time and results should be certified by TFDA • All chemicals used for grain storage should be known including its expired date and its concentrations and should also be approved by authority responsible (TFDA) • Proponent should register silos complex for food storage at TFDA and seek for certificate (This will enable TFDA expert team to make site visit for quality management and more food security issues).
Possibility of high Traffic Jam especially during operation phase	• Construction of truck parking area which will be a source of tax to Sumbawanga municipal (The area is already provided according to SumbawangaMunicipal Executive Director) • Improvement of parking area within project site where two or three trucks will be loaded together • Induction training should be insisted to all drivers who comes at NFRA for grain supplying to reduce poor parking tendency • All drivers should have valid driving license as identified by the traffic law • Application of traffic sign should be insisted.

5.5 ADDRESSING STAKEHOLDERS' CONCERNS

The EIA report identified main concerns and issues raised by different stakeholders so that they may be addressed. Table 5.5 shows a summary on how the issues have been addressed in the EIS.

Table 5.5: EIA Recommendations for addressing Issues raised by Stakeholders

CONCERN/ISSUES	EIA RECOMMENDATIONS	SECTION

CONCERN/ISSUES	EIA RECOMMENDATIONS	SECTION
Traffic congestion due to poor existing road	• Improving existing feeder roads	7.3.8
Air pollution associated from project activities in all phases	• Air pollution control	7.2.2 and 7.3.2
Pollution due to poor disposal of solid waste	• Solid waste management	7.4.6
Pollution due to poor management of liquid waste	• Wastewater management	7.4.7
Occupational health hazard and safety risks to project workers	• Management of workers working environment.	7.3.5
Noise pollution due to construction activities	• Control of noise pollution	7.2.3 and 7.3.1
Environmental pollution due to generation of excess spoil/soil wastes	• Management of construction material including generated soil materials	7.3.3
Presence of social services to workers during construction and operation phases	• Improving availability of social services	7.6.1 and 7.6.2
Loss of life and properties due to fire break out	• Fire emergency preparedness	7.4.4
Spoilage of stored grain	• Improve grain storage management	7.4.8

CHAPTER SIX: ANALYSIS OF IMPACTS AND IDENTIFICATION OF ALTERNATIVES

6.1 INTRODUCTION

This chapter seeks to identify and analyze environmental and social impacts that may result from the proposed project. Identification of the impacts is based on the following:-

- Issues of concerns raised at various stakeholder consultation or interview meetings
- Expert observations or experiences and judgement

The identified impacts are also based on project phases namely: - construction, operation as well as decommissioning phase.

6.2 IMPACT IDENTIFICATION DURING MOBILIZATION PHASE

6.2.1 Loss of vegetation due to clearance to accommodate silo complex development project

Presently the proposed site has few grass patches and few *Senna* trees (exotic). During mobilization and project construction phase only four trees will be removed to make the area clear for the construction of weighbridge room.

6.2.2 Air Pollution Resulting from Site preparation

At the project site, one office will be demolished to give space for the construction of 6 silos bins. Also to give space for new weighbridge the former weighbridge will be demolished. In this process dust will be emitted hence impairing air quality in the surrounding area.

6.2.3 Noise Pollution during Site Clearance

The site clearance will involve the use of earth moving equipment to remove trees therefore generation of noise at site is likely to happen. Also demolition of former structures will generate noise which will impact all communities around project premises.

6.2.4 Occupational health and safety impact to site clearance workers

During site preparation by demolishing existing structures to acquire space for implementing new proposed structures for grain storage, the possibility for demolishing workers to be subjected into situation which will detrimental their health and safety will be high if propoer demolishing protocol will not followed.

6.3 IMPACT IDENTIFICATION DURING CONSTRUCTION PHASE

6.3.1 Benefit to local producers and suppliers of construction materials

Construction of six modern silos complex, office building and other improvement of existing facilities at NFRA Sumbawanga site will consider the use of local contractors as well as local building materials which are available in the country. This will contribute to the boosting of income among local suppliers of materials, laborers and the economy of the country as a whole.

6.3.2 Noise and vibration impacts due to movement of construction equipment

Movement of trucks loaded with construction materials such as sand and aggregates, cement, steel and roofing sheets etc. will generate noise and vibration impacts. Furthermore, anthropogenic noise and vibration sources are associated with constant human activities in the area, particularly from motor vehicles. The noise levels measured at the site was on average 54dB during the site visit. Therefore, it is expected that according to the given size of the proposed project, the average noise and vibration level will be above normal during construction phase and this will affect all who are working near the project area including resident near project site.

6.3.3 Air pollution due to dust emission

Movement of heavy earth moving equipment through unpaved road may emit dust from the site that may affect ambient air quality in the area. Also loading of construction materials may contribute to the dust emission to all surrounding area.

6.3.4 Income, skills and knowledge increase to local labours

Labor force comprised of skilled and unskilled labors will be needed to construct the silos complex and office building. It is anticipated that all unskilled laborers will be recruited locally. Recruitment of skilled labor will vary of which some will be recruited from around the construction area but mostly are from the contractor's choice. Employment opportunities during construction work will increase the income, skills and knowledge to local labor force. Mostly men will benefit in this respect. Food vendors who are mostly women will benefit through supplying of food to the laborers.

6.3.5 Degradation from generation of excess soil/spoil materials

Construction waste will be generated from excavation works for construction of foundation, trenches and drainage as well as borrowing and quarrying for construction materials. Such spoil materials may degrade the environment at the point of disposal

6.3.6 Degradation at Points of Sourcing Construction Materials

It is envisaged that construction materials e.g. concretizing materials (cement, bricks etc.), stones, and sand for the permanent structures will be sourced locally at borrow pits and quarry sites. However, exploitation of local resources would be a matter of cumulative effect because they will only be contributing to a problem of over exploitation of materials at the existing points of sourcing such materials.

6.3.7 Occupational health and safety hazards to construction workers

During construction, workers will be subjected to situations that could be detrimental to their health and safety. A few examples include:

- Injuries caused by handling of construction equipment, spills and leakage of materials.
- Emissions of dust from clearing and excavation works and fumes from vehicles and other machinery
- Noise from construction equipment

6.3.8 Spreading of HIV/AIDS and other STIs

Construction activities of the silos, office building and improvement of existing facilities in the area will add to the already existing influx of people from various places in search for jobs and other opportunities that come from construction activities. The project may facilitate interaction of people of different sex which may lead to sexual relationships and eventually spreading of HIV and other Sexually Transmitted Infections.

6.3.9 Interruptions due to Traffic congestion

During construction phase, trucks loaded with construction materials may be moving from various parts of the municipal to the project site. Movement of trucks in and out of the site may lead to congestion on roads especially those leading to or out of the project area.

6.4 IMPACTS DURING OPERATION PHASE

During operation of the silos complex project it is anticipated that there will be both negative and positive environmental, social and economic impacts.

6.4.1 Soil Erosion due to Runoff Effects and Loosened Top Soil

Removal of soil cover will expose the remaining area to runoffs, which may in turn result in soil erosion. Inadequate backfilling and resurfacing may result into erosion which in turn may damage the built structures and may result in siltation of receiving water bodies.

6.4.2 Environmental pollution from mismanagement of used pesticides and empty containers

It is expected that pesticides usage will be part and parcel of processes in storage of grain in silos. This is likely to generate empty containers used to store pesticides. Mismanagement of such containers may degrade the environment if disposed haphazardly.

6.4.3 Bad odour associated from poor solid waste management

During project operation, generated solid waste will be transported to nearby designated disposal sites. During transportation, bad odour and waste falling from the back of trucks are likely to occur due to improper solid waste handling. This may result into nuisance to road users and people along the route.

6.4.4 Loss of lives and property due to fire break out

During the project operation there are possibilities of fire breakout and accidents. This may be caused by electric short or other misfortunes that may be caused by human activities. Fire accident may lead to lose of human lives and properties.

6.4.5 Enhanced income, employment opportunities and local business

It is anticipated that the proposed project will improve the availability of employment opportunities in Mazwi ward and the surrounding areas. This is the primary positive impact of the project, which is associated with a number of off shoot impacts that include the following:

i. Increased business activities in the area.
ii. Increased competition in grain quantity and quality production among farmers due to permanent market available from NFRA
iii. Income and employment opportunities for a number of stakeholder groups.

iv. Increase revenue to the nation through taxes.

6.4.6 Spreading of HIV/AIDS and other STIs

The establishment of the Silos Complex project in the area will add to the already existing influx of people from various places in search for jobs and other opportunities that come with the developmentof the area. The project may facilitate interaction of people of different sex which may lead to sexual relationships and eventually spreading of HIV and other Sexually Transmitted Infections.

6.4.7 Bad smell due to application of pesticides for grain preservation

Spraying of chemical pesticides and fumigation at silos might cause bad odors within the premises and beyond. This leads to nuisance to workers and communities around the project site.

6.4.8 Noise and Vibration Impact

During operation phase we expect number of trucks to meet at project site daily either for delivering grain from local farmers or loading maize to be distributed into area with high demand. Noise and vibration impact associated from project activities will be high and this will affect the communities around project premises.

6.5 IMPACTS DURING DECOMMISSIONING PHASE

The Silos Complex might remain in operation for 50 years provided maintenance of the facility is given a due attention. However, even if maintenance is done as it should, a time will come when the facility may be dilapidated and deemed unsuitable for the proposed operations. This is what is meant by decommissioning phase. Decommissioning of the proposed project may also set in anytime due to financial challenges, high operating costs, decision of the investor to change the line of business etc. If this happens environmental as well as socio-economic impacts may occur.

6.5.1 Loss of aesthetic value due to Abandonment of infrastructure or demolition waste

The proposed project is planned to run for a long time unless there happen unforeseeable events which may curtail the project life span of 50 years. The proponent may abandon buildings and other project facilities that may permanently render the project site unattractive.Or the proponent may demolish the structures thus leaving demolition waste which in turn may impair the aesthetics of the site

6.5.2 Occupational health hazards from demolition activities

In closure of the project the proponent may decide to demolish the structures. Solid waste, dust and noise are expected from demolition works of the structures. This may pose health hazards to demolition crew

6.5.3 Loss of employment and business to many people

If for whatever reason the project is closed down, the people employed by the project will lose their jobs. The farmers and business will also be affected if the project is closed. This will have significant impact to the people and their dependents.

6.6 SUMMARY OF IDENTIFIED ENVIRONMENTAL AND SOCIAL IMPACTS

The table 6.1 presents summary of identified environmental impacts based on expert opinions or observations. At this stage the identified impacts are categorized with project phases as well as proposed project activities. The table 6.1 also indicated the affected environmental media, namely the physical, biological, socio-economic-and cultural environment.

Table 6.1 Summary and Categorization of identified impacts

Phase	Key Activities	Identified Environmental. Impacts	Physical	Biological	Socio Economic / Cultural
Mobilization	**Site preparation to accommodate project structures**	Loss of vegetation due to clearance to structures	X	X	
	Air Pollution Resulting from movement of equipment	Impact to health of workers			X
	Noise pollution from movement of equipment	Impact to health of people			X
Construction	Increased Sexual interaction between workers and *Street* communities.	Potential for spread of HIV/AIDS, STDs			X
	Construction of silos complex and one office building	Degradation at Points of Source of Construction Materials	X	X	
	Generation of unwanted materials from construction activities	Degradation due to excess soil/spoil materials	X	X	
	Local people employed for construction	Income, skills and knowledge increase to local people			X
	Impacts due to movement of construction equipment	Potential to noise pollution	X		X
	Working during construction and Operation of the project	Potential to Occupational Health issues			X
	Local suppliers provide services and materials for construction	Benefit to Local Producers and Suppliers of Construction			X

Phase	Key Activities	Identified Environmental. Impacts	Physical	Biological	Socio Economic / Cultural
		Materials			
	Traffic flow	interruptions due to Traffic congestion	X		X
Operation	Employ people and paying tax	Enhanced income, employment opportunities and local business			X
	Storm water and runoff flow	Soil Erosion due to Runoff Effects and Loosened top Soil	X		
	Use of pesticides	Degradation due to mismanagement of pesticides containers	X		X
	Improper solid waste handling	Bad odour and Waste Falling from the Back of Trucks during transportation	X	X	X
	Fire accident	Potential to loss due to fire accidents	X		X
	Liquid waste overflow	Pollution of environment due to mishandling of liquid Waste	X		X
	Application of pesticides for grain storage	Bad smell due to application of pesticides for grain storage	X	X	X
	Haphazard spreading of solid wastes	Pollution due to mishandling of solid Wastes	X		X
Decommission Phase	Closure of project	Loss of employment, and business to many			X
	Abandonment of infrastructure and haphazard disposal	Loss of aesthetics	X		X

Phase	Key Activities	Identified Environmental. Impacts	Physical	Biological	Socio Economic / Cultural
	of demolished waste				
	Occupational health hazards from Demolition activities	Dust and noise	X		X

6.7ANALYSIS OF IMPACTS

Table 6.2 presents summary of analysis of identified environmental impacts, the analysis is based on the following criteria:

- Nature of impacts (positive/negative)
- Magnitude/significance i.e. depending on the severity
  - Major (if severe)
  - Minor (if not severe)
  - Wide scale (if it affects large areas)
  - Local scale (if it affects only a locality)

- Sequence (i.e. depending on reach)
  - Direct (if there is a direct impacts)
  - Indirect (if there are indirect impacts)

- Duration/time frame
  - Long duration/time (if the impacts will persist for more than 5 years)
  - Medium duration/time (if the impacts will persist for 1-5 years)
  - Short duration (if the impacts will persist for a couple of months/weeks/days
- Reversibility
  - Reversible (if impacts can be mitigated)
  - Irreversible (if impact cannot be mitigated)

Table 6.2 Methodology/criteria for impact analysis magnitude/significance

Criterion	Description	Possible Results		
		Term	Description	Score
Magnitude of the Impact	An indication of the severity of the impact, either positive or negative.	Very High	Extreme effect – where natural, cultural or social functions or processes permanently cease.	5
		High	Severe effect – where natural, cultural or social functions are altered to the extent that they temporarily cease.	4
		Moderate	Moderate effect – the affected environment is altered but natural, cultural or social functions continue, albeit in a modified way.	3
		Low	Minimal effect – affects the environment in such way that natural, cultural or social functions and processes are not affected.	2

Criterion	Description	Possible Results		
		Term	Description	Score
		Very Low	Minimal or negligible effect	1
		Unknown	Magnitude of the impact unknown.	5
Scale of the Impact	An indication of geographical extent of the impact	National	Affects the resources of the country	5
		Regional	Affects the resources of the region	4
		District	Affects the resources of the district	3
		Local	Affects the project area and surrounding villages	2
		Site – specific	Localized, confined within the license area.	1
		Unknown	Extent of the impact unknown	5
Duration of the Impact	An indication of the duration or time over which the impact will be experienced.	Permanent	Will remain permanently	5
		Long term	Extends into the post- closure phase, but not permanently	4
		Medium term	During the operational life of the project	3
		Short term	Shorter than the operational life of the project	2
		Transient	Very short duration	1
		Unknown	Duration of the impact is unknown	5

Table 6.3 Methodology/criteria for analysis of probabilities

Criterion	Description	Possible Results			
		Term	Description		Score
			Discrete Event	Prolonged Exposure from a single activity or event	
Exposure to Impact	An indication of the frequency of the activity that may cause the impact, or the continuity of the exposure.	Very High	Daily or continuous	Exposure in perpetuity	5
		High	Weekly/once per week	Continuous exposure into closure or post-closure phases	4
		Moderate	Monthly/once per month	Continuous exposure during construction and operations phases	3
		Low	Bi-annually	Continuous exposure throughout one phase	2
		Very low	Annually or less frequently	Prolonged exposure yet finishes before the end of a phase	1
		Unknown	Frequently of activity unknown	Continuity of exposure unknown	5
Probability of the Occurrence	An assessment of the degree of certainty associated with a potential impact	Highly likely	Very likely or certain to occur		5
		Likely	Likely to occur		4
		Possible	May possibly occur		3
		Unlikely	Unlikely to occur		2
		Highly Unlikely	Very unlikely to occur, or almost impossible		1
		Unknown	Probability of the occurrence unknown		5

Table 6.4 Methodology for analysis of impacts duration

Consequence	Magnitude + Scale + Duration	3-4	5-7	8-11	12-14	15
		Very Low	Low	Moderate	High	Very High
Likelihood	Exposure + Probability	2-3	4-5	6-7	8-9	10
		Very Low	Low	Moderate	High	Very High

Table 6.5 Summary of analysis of identified environmental impacts,

Phase	Key activities	Identified environmental. impacts	Analysis of environmental Impacts												
			Nature of impacts		Magnitude/significance				Sequence		Duration/term			reversibility	
			+ve	-ve	high	low	wide	local	direct	indirect	long	mid	short	reversible	irreversible
Mobilization	Movement of equipment during site preparation	Noise pollution and disturbance to neighbors		X		X		X	X		X			X	
	movement of equipment	Air pollution due to dust emission		X		X		X	X		X			X	
	Site preparation and clearance	Loss of vegetation		X		X		X		X		X		X	
Construction															
	Increased Sexual interaction between workers and *street* communities.	Potential for spreading of HIV/AIDS, STDs		X	X		X		X		X			X	
	Construction of silos complex and office building	Degradation at Points of Sourcing of Construction Materials		X		X		X	X		X			X	
	Generation of unwanted materials from the construction activities	Degradation due to Generation of excess soil/spoil materials		X		X		X	X				X	X	

Phase	Key activities	Identified environmental. impacts	Analysis of environmental Impacts												
			Nature of impacts		Magnitude/significance				Sequence		Duration/term			reversibility	
			+ve	-ve	high	low	wide	local	direct	indirect	long	mid	short	reversible	irreversible
	Construction of the project	Income, skills and knowledge increase to local labors	X		X		X		X		X			X	
	Construction works and Operation of the project	Potential to Occupational Health issues		X	X			X	X				X	X	
	Movement of Construction Machines and vehicles	Potential to air pollution due to dust emission		X	X			X	X				X	X	
	Local community selling construction materials	Benefit to Local Producers and Suppliers of Construction Materials	X		X		X		X				X	X	
	Traffic flow	interruptions due to Traffic congestion		X		X		X	X				X	X	

Phase	Key activities	Identified environmental. impacts	Analysis of environmental Impacts												
			Nature of impacts		Magnitude/significance				Sequence		Duration/term			reversibility	
			+ve	-ve	high	low	wide	local	direct	indirect	long	mid	short	reversible	irreversible
Operation	Employ people and paying tax	Enhanced income, employment opportunities and local business	X		X		X		X		X			X	
	Storm water runoff	Soil Erosion due to Runoff Effects and loosened top Soil		X	X			X	X		X			X	
	Improper solid waste handling	Bad Odour and Waste Falling from the Back of Trucks during Transportation		X		X	X		X		X			X	
	Use of pesticides	Degradation due to mismanagement of empty pesticides containers		X		X		X	X		X			X	
	Fire accident	Potential to loss due to fire accidents		X	X			X	X				X		X
	Increased Sexual interaction between workers	Potential for spread of HIV/AIDS and		X	X		X		X		X			X	

Phase	Key activities	Identified environmental. impacts	Analysis of environmental Impacts												
			Nature of impacts		Magnitude/significance				Sequence		Duration/term			reversibility	
			+ve	-ve	high	low	wide	local	direct	indirect	long	mid	short	reversible	irreversible
	and *street*communities.	other STDs													
Decommission	Closure of project	Loss of employment,		X	X			X	X		X			X	
	Abandonment of infrastructure and haphazard disposal of demolished waste	Loss of aesthetics value		X		X		X	X		X			X	
	Demolition of structures	Loss of Aesthetics due to Haphazard Disposal of Demolition Waste		X	X			X	X		X			X	
	Impacts resulting from unsafe demolition activities	Dust and noise		X	X			X	X				X	X	

6.8 CONSIDERATION OF PROJECT ALTERNATIVES

The ADB EIA Guidelines, Annex 2 (1992) states that EIA should provide project "options" within the constraints of the aim and broad economic, technical and environmental factors.

6.8.1 Alternatives site

The project proponent had only one site for the proposed construction of silos complex project hence there was no assessment of alternative site.

6.8.2 Alternative Power Supply

NFRA Sumbawanga site is connected with electricity from TANESCO incorporated with ZESCO. However, diesel generator shall be used as an alternative source of power. However, high running cost is considered to be a hindrance to this alternative.

6.8.3 Alternative Water Supply source

The proposed project will use water fromSUWASA water supply network. Also the proponent plan to drill onsite bore hole to be used as an alternative water source.

Harvesting rain water from roof tops of all building has been considered as an alternative source of water supply but it is found to be insufficient to serve as a sole source. Therefore, it has been proposed just to supplement piped water managed by SUWASA.

6.8.4 Choice of Sewage Management System.

For waste water management at NFRA Sumbawanga site four methods were considered namely waste stabilization ponds, oxidation ponds, constructed wetlands and septic tanks and soak away pits.
All methods were considered important for waste water management at site before being discharged into the environment. For adopting methods to be applicable we consider the available space, the kind of technology used by each method, capital needed to construct a method, efficiency of method for waste water management, maintenance requirement, side effect to community around like smell and flies and amount of waste water to be managed.

For NFRA Sumbawanga site, septic tank and soak away pit method was adopted for waste water management, since the method was simple to construct with high efficiency for control problem of flies and smell to nearby community. Also space available and amount of wastewater to be generated give chance tank as a best method.

6.8.5 No-Project Alternative

This alternative is considered not feasible from the following facts:

d) The benefits envisaged from the project and other incomes for local people will not be realized;
e) Availability of permanent grain market for the people in need will not be realized hence economic development of Rukwa will be thwarted.

f) It is against the Tanzania Development Vision 2025 to discourage developments of projects especially if there are no negative irreversible impacts associated to such project.

Based on the above, it is considered that No-Project alternative is not a plausible alternative.

CHAPTER SEVEN: MITIGATION MEASURES

In this chapter potential impacts and their significance have been identified. This chapter provides a summary of mitigation measures of those impacts which are considered to be of a moderate to high significance.

7.1DESIGN PHASE

During design phase no impacts were identified for the proposed project

7.2 IMPACT IDENTIFICATION DURING MOBILIZATION PHASE

7.2.1 Loss of Vegetation from site clearance

- To mitigate this impact, there should be planting of other trees around the project site.
- Clearance of trees will onlybe for those which will hinder the project space for construction activities

7.2.2 Air Pollution resulting from movement of equipment during Site Clearance

To mitigate this impact, the following will be considered

- water shall be sprayed before site clearance during dry season
- dust mask will be provided to all workers
- all demolished structures will be fenced to prevent easy spread of dust during demolition

7.2.3 Noise Pollution from equipment during Site Clearance

To mitigate this impact, the following will be considered;

- The area will be fenced with iron sheet
- Proponent shall ensure that all demolishing activities must conducted on day time from 7:30am to 16:00pm
- regular maintenance of all used machine for site clearance
- site mobilization works will be on day time only not otherwise
- noise protective gear will be provided to workers

7.2.4 Occupational impact to site clearance workers

To mitigate the impact during demolition, the contractor and proponent shall ensure that proper demolition procedures are followed including provision of PPEs to demolition crew, provision of notice to all stakeholders for what will be going on at project area.

7.3 CONSTRUCTION PHASE

7.3.1 Noise pollution due to movement of construction equipment

To mitigate the impact, during construction the contractor and project owner shall ensure that proper maintenance of machines and vehicles is done to minimize the presence of noise and emissions from engines. Equipment and engines that are not serviced regularly are more likely to cause much noise than regularly serviced ones. Furthermore, the construction during the night will be avoided to ensure quietness in the neighborhoods at night.

7.3.2 Air pollution due to dust generation

In order to mitigate air pollution due to dust emission from earth moving equipment and loading construction materials on site, water shall be sprayed on unpaved surfaces followed by paving of the rest of surfaces at the project site. Also material layout plan should be insisted and covering all stock piled material for the time when not in use.

7.3.3 Degradation due to disposal of excess soil or spoil materials

To mitigate this impact, the contractor and the proponent shall:

- Resurface and level debris in the course of compaction and construction of the foundation for the structures,
- Ensure proper backfilling and resurfacing of the construction site. Light compaction will be necessary to stabilize the soil. Planting of grass on bare land to minimize soil erosion tendencies should be given a high priority.

7.3.4 Degradation at Points of Source of Construction Materials

The project proponent shall procure construction material from licensed suppliers to discourage those who may be extracting materials from improper areas such as a closed down borrow pits.

7.3.5 Occupational health and safety hazards to construction workers

The following are the mitigation measures:

- Use water sprinklers to suppress excessive dust during construction;
- Provide and enforce use of appropriate protective gears such as boots, helmets, masks and gloves to workers
- Adhere to OSHA guidelines to avoid accidents at the work place
- Provide First Aid facilities and train some workforce on emergency response measures.
- Establish health and safety regulations, and formulating preventive measures for accidents and other human health and safety hazards.

7.3.6 Spreading of HIV/AIDS and other STIs

In order to address and alleviate spreading of HIV/AIDS among the construction crew, sensitization campaigns against the dangers of HIV/AIDS shall be organized including voluntary Counselling and Testing programs in collaboration with agencies dealing with control of HIV/AIDS. Creation of awareness to workers about HIV/AIDS, its effects and mode of transmission.

7.3.7 interruptions due to Traffic congestion

In order to mitigate congestion that may result from trucks carrying construction materials to the site, all materials shall be delivered during the night or during off peak hours of the day.

7.3.8 Soil Erosion Due to Run off Effects and Loosened Top Soil

In order to mitigate soil erosion tendencies, the following shall be done:

- After construction the site shall be backfilled and resurfaced properly.
- Light compaction to stabilize the soil shall be done.
- Planting of trees and grass on bare land to minimize soil erosion tendencies.

7.4 OPERATION PHASE

7.4.1 Bad odour and waste falling from the back of trucks

To mitigate this impact, transportation of solid waste will be done by a qualified waste collection companies which will be awarded the job in a competitive manner. Impacts of bad odour and waste falling from the back will be made less severe by ensuring that all waste trucks that are used to transport waste are covered trucks not open tippers.

7.4.2. Loss of lives and property due to fire break out

To mitigate this impact, the following are suggested mitigation measures

- Portable fire extinguishers shall be put in place in all strategic areas.
- Firefighting system incorporating water hydrants shall be installed in the project siteincluding fire detection alarm system in order to avoid the risk of fire break out and easy firefighting.
- Fire assembly area shall be designated in the project area
- Smoke detectors will be installed
- Fire escape routes shall be designed

7.4.3 Spreading of HIV/AIDS and other STIs

Measures for mitigation of this impact include:

- Raising awareness of the dangers of the HIV/AIDS to workersand visitors,
- Support voluntary HIVcounseling and testing.

7.4.4 Pollution due to mishandling of solid Wastes

In order to mitigate this impact, the following are suggested mitigation measures:

- Ensuring proper design of systems for collection, transportation and disposal of solid wastes
- Ensuring availability of sufficient waste bins at appropriate locations
- Design waste collection chambers for collecting waste before transported and disposed.

7.4.5 Pollution of surface water source due to mishandling of liquid Waste

In order to mitigate this impact, the following are suggested mitigation measures:

- Ensuring proper design of septic tank and soak away system
- Ensuring routine maintenance of storm water drainage system
- Ensure septic tank is emptied frequency to reduce overflow of liquid waste

7.4.6 Pollution due to mismanagement of empty pesticides containers

To ensure mitigation of impact that may result from mismanagement of empty pesticides containers, all pesticides used shall be registered prior to usage and empty containers well stored and handed over to registered company for disposal as hazardous materials Also all container after use all chemical inside shall be panched to avoid illegal use.

7.5. DECOMMISSIONING PHASE

7.5.1 Loss of aesthetic value due to abandonment of structures and demolition waste

At decommissioning, NFRAwill avoidabandonment of the infrastructure for a long time or demolish the structures in an environmentally sound manner in order to restore the environment to near its original appearance.

7.5.2 Occupational health hazards from Demolition activities

To mitigate the impact during demolition, the contractor and proponent shall ensure that proper decommissioning procedures are followed including provision of PPEs to demolition crew.

7.5.3 Loss of Employment

The major impact that will result from the project decommissioning will be loss of jobs. In order to minimize the impacts that may result from this eventuality, the following measures will be taken:

- Prepare workers for forced retirement by providing skills for self-employment, and wise investment of the retirement benefits,
- Ensure that all employees are members of the Social Security schemes,
- Consider redeploying employees in other projects of the proponent.

7.6ENHANCEMENT MEASURES OF POSITIVE IMPACTS

7.6.1 Income, skills and knowledge to local labourers

In order to enhance this positive impact, the proponent shall take deliberate measures to ensure that human labour is employed as much as possible in carrying out normal activities during mobilization, construction and operation phases. This is meant to increase the number of people that would benefit through wages, skills and knowledge transfer during all phases of the project life cycle.

7.6.2 Enhanced income, employment opportunities and local business

To enhance this positive impact, the proponent shall make deliberate effort to employ local people to work at the site. Also, efforts shall be made to pay workers handsomely so as to improve their livelihood. Outsourcing of services which will be needed at the site shall be procured locally to benefit the local community around the project area.

CHAPTER EIGHT: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This chapter describes the environmental and social management plan for NFRA silos complex project. The ESMP applies to, and will be implemented throughout all phases of the project i.e. construction, operation, closure (temporary or final), and post-closure.

NFRAshall be responsible for an overall implementation of the ESMP and will establish an organizational structure with clearly defined lines of authority, areas of responsibility and accountability. Assigned staff shall be responsible for a day to day follow ups (supervision and liaising with key stakeholders). The designated staff's primary responsibilities will be to ensure that all project activities comply with an applicable environmental regulations and that ESMP commitments are honoured. Also the proponent shall ensure that qualified expertise is provided in a coordinated manner.

The estimated costs for implementing the mitigation measures are just indicative. Appropriate bills of quantities shall clearly give the actual figures. The consultant used informed judgement to come up with these figures. The summary of the key issues of the building development project and its management are shown in Table 8.1 below (ESMP).

Table 8.1: Environmental and Social Management Plan

Phase	Potential Direct Impacts	Management/Mitigation Measures	Target Level/Standard	Responsible party	Annual Estimated Costs [Tsh]
MOBILIZATION PHASE	Loss of Vegetation due to clearance to accommodate warehousing development project	• Planting exotic trees to replace cleared one • Vegetation clearance will be done to those areas which are proposed for new establishment	Zero vegetation clearance	NFRA	1,000,0000
	Air Pollution from Site Clearance	• Spray water to all area where dust emission is high • All site clearance work will be done on a cool time and the site will be fenced to prevent wind effect • Provision of dust protective gear to all workers	As per TZS 837 Parts 1, 2 and 3	Contractor	2,000,000
	Noise Pollution during Site Clearance	• All equipment should be serviced properly	As per TZS 837 Parts 1, 2 and 3	Contractor	1,000,000
CONSTRUCTION PHASE	Depletion /degradation at points of source of construction materials	• Procure all building resources (sand, aggregates and stones for construction) from licensed suppliers and from authorized areas • Restoration of environment	Restoration of borrow pits and quarry sites	Contractor	5,000,000
	Occupational health and safety of construction workers	• Use water sprinklers to suppress excessive dust during construction; • Provide and enforce use of appropriate protective gears such as boots, helmets, masks and gloves to workers • Adhere to OSHA guidelines to avoid accidents at the work place • Provide First Aid facilities and train some workforce on emergency response measures.	OSHA regulations and OSHA Act of 2003	Contractor	3,000,000

Phase	Potential Direct Impacts	Management/Mitigation Measures	Target Level/Standard	Responsible party	Annual Estimated Costs [Tsh]
		• Establish health and safety regulations, and formulating preventive measures for accidents and other human health and safety hazards.			
	Dust from the movement of Construction Equipment	• Use of water sprinklers to suppress dust on unpaved roads	As per TZS 837 Parts 1, 2 and 3	Contractor	1,000,000
	Noise from Movement of Construction Equipment	• Routine maintenance of equipment for optimal performance • Sensitization of the adjacent communities on likely increased noise resulting from construction activities	As per TZS 837 Parts 1, 2 and 3	Contractor	1,000,000
	Degradation of environment due to Debris/Spoils Materials	• Safe Removal of all debris • Compaction and surfacing	No debris left on construction site or dumped near water sources	Contractor	2,000,000
	Potential of spread of HIV/AIDS to the construction crew	• Sensitize workers on dangers of HIV/AIDS • Collaborate with NGOs to ensure Voluntary Counselling and Testing programs are established	All workers sensitized on HIV/AIDS Controlled prevalence of HIV	Contractor	3,000,000
	Soil erosion due to run off effects and loosened top soil	• Proper backfilling and resurfacing • Stabilize the soil by applying light compaction • Planting of trees and grass on bare land	All affected areas are resurfaced	Contractor	3,000,000
	Interruptions due to Traffic congestion during transportation of	Transportation of materials to be done during night hours or during off peak hours	Zero congestion due to trucks for materials	Contractor	No cost

Phase	Potential Direct Impacts	Management/Mitigation Measures	Target Level/Standard	Responsible party	Annual Estimated Costs [Tsh]
	construction materials		transportation		
OPERATION PHASE	Pollution due to mishandling of solid Wastes	• Ensuring proper design of systems for collection, transportation and disposal of solid wastes • Ensuring availability of sufficient waste bin at appropriate locations • Design waste collection chamber for collecting waste before transported and disposed.	Zero pollution of environment Zero nuisance due to solid wastes	• NFRA • Municipal Environmental Officer	3,000,000
	Pollution of surface water source due to mishandling of liquid Waste	• Ensuring proper design of septic tank and soak away system • Ensuring routine maintenance of storm water drainage system • Ensure septic tank is emptied frequency to reduce sewage overflow	No liquid waste overflowing	• NFRA	1,000,000
	Bad odour and waste falling from the back of trucks during transportation	• Hiring of qualified waste collection company through competitive tendering • Using covered trucks as opposed to open tippers	No bad odour and wastes falling from the back during transportation	• NFRA	5,000,000
	Loss of lives and property due to Fire break out	• Portable fire extinguishers shall be put in place in all strategic areas • Firefighting system incorporating water hydrants shall be installed including fire detection alarm system to avoid the risk of fire break out. • Fire assembly area shall be designated in the project area	zero fire break outs	• NFRA • FIRE AND RESCUE	8,000,000
	Spreading of HIV/AIDS and other STIs	• Raising awareness of the dangers of the HIV/AIDS to workers, and visitors, • Support voluntary HIV counseling and	Reduce spreading of STI	• NFRA • NGOs	5,000,000

Phase	Potential Direct Impacts	Management/Mitigation Measures	Target Level/Standard	Responsible party	Annual Estimated Costs [Tsh]
		testing.			
	Degradation due to mismanagement of empty pesticides containers	• all pesticides used shall be registered prior to usage and empty containers well stored and handed over to registered company for disposal of hazardous materials	Zero pollution	• NFRA	3,000,000
DECOMMISSIONING PHASE	Loss of aesthetic value due to abandonment of structures or demolition waste	• Either demolish the structures or undertake major rehabilitation in an environmentally sound manner • To restore the environment into its original appearance.	Minimum to zero pollution of environment	• NFRA • Contractor	30,000,000
	Occupational health hazards from Demolition activities	Proper decommissioning procedures are followed Provision of PPEs to demolition crew	Minimum to zero pollution of environment and health of workers	• NFRA • Contractor	20,000,000
	Loss of Employment	• Prepare workers for forced retirement by providing skills for self-employment, and wise investment of the retirement benefits, • Ensure that all employees are members of the Social Security schemes,	The retrenchment to go as smoothly as possible	• NFRA	10,000,000

CHAPTER NINE: ENVIRONMENTAL AND SOCIAL MONITORING PLAN

Environmental and social monitoring plan (Table 9.1) provides the application of EMP as well as dealing with ad hoc or unforeseen issues which need to be mitigated. Details of parameters to be monitored have been considered along with costs estimates and responsible institution (s).

Table 9.1: Environmental and Social Monitoring Plan

Phase	POTENTIAL DIRECT IMPACT	Parameter to be Monitored	Monitoring frequency	Monitoring Area	Measurement unit	Target Level/Standard	Responsibility	Estimated costs (Tsh)
MOBILIZATION PHASE	Loss of Vegetation cleared to accommodate project structures	Number of trees	Before and afterclearance	Project area	Number	Zero destruction of the environment	Contractor	1,500,000
	Air Pollution resulting from Site Clearance activities	Particulate matter	Once per month	Project area	µg/Nm^3	Dust level less than 10µg/Nm^3 as per TZS 836 : 1: 2004	Contractor	1,500,000
	Noise Pollution during Site Clearance activities	Noise level	Once per month	Project area	dB	Noise level less than 70dB as per TZS 932:2006	NFRA and Contractor	1,500,000
CONSTRUCTION PHASE	Depletion or degradation at points of source of construction materials	Quality of area	Before construction and after completion of works	Borrow pits and quarry sites	NA	Restoration of environment to near original state	Contractor	2,000,000

Phase	POTENTIAL DIRECT IMPACT	Parameter to be Monitored	Monitoring frequency	Monitoring Area	Measurement unit	Target Level/Standard	Responsibility	Estimated costs (Tsh)
	Noise due to Construction and movement or equipment and Materials	noise level	Quarterly	Project area	dB	As per TZS 932:2006	NFRA, Contractor	1,000,000
	Impacts of dust from movement of equipment and construction equipment	Particulate matter in the air	Quarterly	Project area	$\mu g/Nm^3$ per hr	As per TZS 837 Parts 1, 2 and 3.	Contractor NFRA	2,000,000
	Occupational Health and Safety of Construction Workers	Availability of personal protective gears	Monthly	Construction site	NA	All workers to use personal protective gears	NFRA Contractor	1,000,000
	Potential for spreading of HIV/AIDS, STDs	Number of people enrolled for Voluntary Counselling and Testing	Quarterly	Project workers	Number	prevalence rate to be reduced	NFRA, NGOs	2,000,000
	Soil erosion due to run off effects and loosened top soil	Soil erosion tendencies	Once at the end of construction	Construction site	None	Zero erosion tendencies at site	NFRA Contractor	2,000,000
	Impacts due to Traffic congestion	Trucks operating during peak hours	Monthly	Roads to the project site	Number	zero congestion	NFRA contractor	1,000,000

Phase	POTENTIAL DIRECT IMPACT	Parameter to be Monitored	Monitoring frequency	Monitoring Area	Measurement unit	Target Level/Standard	Responsibility	Estimated costs (Tsh)
OPERATION PHASE	Pollution of environment due to mismanagement of liquid Waste	Efficiency of waste water management system	Quarterly	Project area	Mg/l	As per TZS 344:1989	NFRA	3,000,000
	Bad odour and waste falling from the back of trucks during transportation	Number of covered trucks operating	Quarterly	Project area	NA	No bad odour and waste falling from the back	NFRA	2,000,000
	Loss of lives and property due to Fire break out	Number and condition of firefighting and detection systems in the building	Semi annually	Project buildings	Number	Enough fire extinguishers and proper working system	NFRA	2,000,000
	Spreading of HIV and other STIs in the District	New cases of HIV infected staff	Thrice per year	Staff	Number of cases	Minimized to zero	NFRA NGOs dealing with HIV/AIDS	1,000,000
	Degradation from mismanagement of pesticides and empty containers	Empty containers	Monthly	Empty containers storage area	Number	All empty containers handed to registered company for disposal	NFRA	2,000,000
DECOMMISSIONING	Safety hazard during demolition	availability and proper use of Personal Protective Equipment	Once every week	Project facilities and structures	Number of users of PPE	All workers	NFRA Contractor	2,000,000

Phase	POTENTIAL DIRECT IMPACT	Parameter to be Monitored	Monitoring frequency	Monitoring Area	Measurement unit	Target Level/Standard	Responsibility	Estimated costs (Tsh)
	Loss of Employment,	Payment of social security remittance for workers	Semiannually for workers	Social Security schemes for workers	Number of workers registered with social security fund	Workers' remittances paid in time	Workers and employers	2,000,000
	Loss of Aesthetics	Project site	Once every month	Project Area	NA	restored environment into its near original appearance	NFRA	2,000,000
	Noise and dust from demolition activities	Air quality, noise level	Once every month	Project area	ppm, mg/m^3, dB	As per As per TZS 932:2006 and TZS 837 Parts 1, 2 and 3.	NFRA Contractor	2,000,000

CHAPTER TEN: COST BENEFIT ANALYSIS

10.1 FINANCIAL COST BENEFIT ANALYSIS

Cost benefit analysis is normally done in the framework of feasibility study. The aim of cost-benefit analysis is to inform decisions makers on:

- The costs of alternative ways of delivering a service;
- Estimates of the size of a project;
- Whether a project should be undertaken; and/or
- Whether a current project should be continued, changed or ceased

The costs may include:

- Capital expenditures;
- Operating and maintenance costs;
- Maintenance costs;
- Materials;
- Opportunity costs; and
- Environmental health and other social costs.

Benefits may include:

- Better, more cost-effective service delivery;
- The avoided costs-being the costs of the existing or conventional service delivery option;
- Additional taxes generated;
- Productivity savings; and
- Environmental, health and other social benefits.

10.1.1Quantifiable and non-Quantifiable Benefits

The benefit to the communities may be direct or indirect. Availability of employment opportunities (within the project and outside)are considered direct quantifiable benefits due to the project. Also, contribution to the municipal levies from truck parkingwill be a quantifiable direct benefit.However, the benefits accrued from such paid levies e.g. in building of roads, schools, hospitals etc, may not be apparent to the communities. Such benefits may be considered non-quantifiable.

10.1.2 Quantifiable and non-Quantifiable Benefits to communities

The benefit to the communities may be looked into different perspectives. The successful investment will provide a permanent market to thefarmers who wish to sell their grain at the price set by NFRA, Other operators of different businesses and services whichserve thesilos complex will pay taxes which will be used by the government to provide social services to the community. The project activities will also generate employment duringconstruction and operation of the project and facilities. As indicated in chapter 2 the activities that will be undertakenduring development of the project will provide direct employment to Tanzanians. The investment will also provide variety of services to Sumbawangacommunity by providing an opportunityof farmers to invest more in agriculture and other businessactivities.

10.1.3 Quantifiable and non-Quantifiable Benefits to Government

As already mentioned the government will directly and indirectly benefit from all farmers and other operators such as truck owners who will pay taxes and leviesdepending on theiroperations. Apart from income generation, the investment will also enhance the economic growth spurred by the operations and activities associated with the silos complex project. The availability of food stock will ensure food security and socio-economic development of the population which is the main goal of the government.

10.2 ENVIRONMENTAL COST BENEFIT ANALYSIS

Environmental cost benefit analysis is assessed in terms of the negative versus positive analysis. Furthermore, the analysis is made to consider whether the impacts can be ameliorated and the costs of mitigating the impacts are reasonable. As it has been mentioned, the benefits of the project, in terms of financial and social benefit are substantial, the environmental impacts may be mitigated and the financial resources needed to mitigate the impacts are relatively small compared to the actual capital investment versus thatto be invested in the implementation of Environmental and Social Management and Monitoring Plan.

10.3 SOCIAL ECONOMIC COST BENEFIT ANALYSIS

The project maycontribute to enhancing investment in various business and services whichmay indirectlyencourage local investors to invest more in the agricultural sector for food stock production. All these will enhance employment opportunities to the citizens and contribute towards poverty eradication. As it can be seen in the impact analysis, there are no serious negative social economic impacts. It can therefore be deduced that the social benefit outweighs the social costs that are anticipated.

CHAPTER ELEVEN: DECOMMISSIONING PLAN

11.1 INTRODUCTION

It is important to note that project decommissioning phaseimplies the time when the building structures are too old thus there is a necessity foreither demolition or major refurbishment

It is anticipated that the life span of the siloscomplex is 50 years based on the design of structures and materials to be used for construction. Activities undertaken in the siloscomplex may stop when it becomes unsuitable for habitation. At that time when the proponent decides to demolish the building or change their use after major renovations, there will be a loss of selling points for farmers as well as jobs to workers. Businessmen and transporters who bring grain tothe silos complex.Some may actually go out of business. This will also involve the loss of income to the families supported by the employment at the project area.

Regarding the aspect of environmental impact, demolition waste and other equipment will have to be disposed or removed from the site. In the course of demolition and removal some environmental impacts may occur. Therefore, preparation of the decommissioning plan is aimed at ensuring that demolition, transportation, disposal and overall closure are done in a way that does not adversely affect the people surroundings.

11.2 DECOMMISSIONING PLAN

Decommissioning plan is prepared to comply with environmental legislations and regulatory requirements. For the case of projects that may cause massive changes of land scape and biodiversity, the law requires that the land to be used for project facilities is rehabilitated and returned to near original state so that it is usable by others after the project is decommissioned. However, the siloscomplex to be used for grain storageis not in such category but the decommissioning plan may involve the removal of following project components but not limited to:

- Structure and concrete works
- Roofing materials,
- Firefighting equipment
- Metals
- Electrical and water fittings

11.3 DECOMMISSIONING COSTS

The proponentwill fund and implement all aspects of project decommissioning, including but not limited to, all engineering, environmental monitoring, permitting, construction and mitigation activities associated with decommissioning.

11.4 DECOMMISSIONING PERMITS AND OTHER REQUIREMENTS

The proponent will ensure that all permits which are required for decommissioning process are sought. The permits may include permit to dispose hazardous materials (if any), and permit from relevant bodies to dispose waste around the site or on unpaved feeder roads close to the demolition site.

Standard procedures of demolishing techniques shall be used, and all identified hazardous materials will be collected and disposed in accordance with the respective laws, practice and regulations. Equipment and steel will be re-used or sold to steel rolling mills to be recycled. Concrete works will be broken down into small pieces and used for road surfacing or other uses.

11.5 DECOMMISSIONING TASK FORCE

When the time for decommissioning is due, the proponentwill form a team of experts (engineers, labor laws and human resources and environmental experts) with a representative from NEMC, Sumbawanga Municipal Council and any other relevant authority to monitor the implementation of the decommissioning plan so as to ensure that decommissioning is done according to the plan.

The table below entails activities and responsible party to be involved during decommissioning phase of the project

Table 11.1: Decommissioning Plan

S/N	Activity	Responsible	Budget
1	Provide information about the decommissioning to transporters, employees and neighboring community	Proponent	To be determined during decommissioning time
2	Seeking decommissioning permits from NEMC	Proponent	Pay requisite fees as prescribed
3	Prepare workers psychologically about the fears of losing livelihoods, jobs and business	Proponent	To be determined during decommissioning time
4	Serving all service providers with letters of termination of contracts if any	Proponent,	To be determined during decommissioning time
5	Demolition of the siloscomplex for grain storage and/or rebuilding of new structures	Proponent	To be determined during decommissioning time

CHAPTER TWELVE: SUMMARY AND CONCLUSION

12.1 SUMMARY

The scoping study as well as the EIA identified a number of issues pertaining to the proposed silos complex development project. The issues/impacts have been described and assessed in detail to gain adequate understanding of the possible environmental effects of the proposed project at all stages from construction/installation to decommissioning. The Environmental Management plan provides a way forward for implementation of the proposed mitigation measures. The Environmental and Social Monitoring Plan shows what has to be monitored during the construction and implementation phases. The estimated costs for implementing the mitigation measures as well as monitoring have been shown though they are just indicative figures based on the consultant's informed judgment. Based on the findings of the EIA exercise and supplementary information, it is recommended that the project proponent has toimplement the Environmental Management Plan (EMP). The EMP provides guidelines on managing and mitigating impacts and monitoring performance. In addition to the EMP, it is recommended that the proponentappoint an Environmental Officer who will monitor the application of the EMP, as well as dealing with unforeseen issues which needs to be mitigated during the implementation of the project.

12.2 CONCLUSION

The EIA study has identified a number of impacts both positive and negative and other residual or cumulative issues pertaining to the proposedconstruction of silos complex project atMazwiarea in Sumbawanga municipal, Rukwa region. The issues or impacts have been described and assessed in detail to gain adequate understanding of possible environmental effects of the proposed project – from site selection to decommissioning, in order to formulate mitigation measures in response to negative aspects which may emerge. The Environmental Management Plan (EMP) provides a way forward for implementation of the identified mitigation measures.

The study concludes that although the project can have a wide range of impacts on the environment, the project is environmentally suitable and socially acceptable when subjected to the implementation of the Environmental Management Plan and Environmental Monitoring Plan as proposed in chapter 8 and 9.

Assess Consulting Company Ltd. of Dar EsSalaam is of the opinion that all environmental impacts identified can be mitigated. If implemented properly, the proposed environmental management plan and environmental monitoring plan can safeguard the integrity of the environment.

REFERENCES

1. NFRA, 2015, Feasibility Study Report
2. NFRA, 2016, Business Plan
3. The National Environmental Policy;1997, Dar es Salaam
4. The Land Policy; 1996, Dar es Salaam
5. The National Investment Promotion Policy; 1996, Dar es Salaam
6. Tanzania Development Vision; 2025, Dar es Salaam
7. The National Poverty Eradication Strategy; 2000, Dar es Salaam
8. The Environmental Management Act, Cap 191 No. 20 of 2004, Dar es Salaam
9. The Environmental Impact Assessment and Audit Regulations; 2005, Dar es Salaam
10. The National Land Act No. 4 of 1999 and its amendment of 2004; Dar es Salaam
11. The Occupational Health and Safety Act No. 5; 2003, Dar es Salaam
12. The National Employment Policy ; 1997, Dar es Salaam
13. National Policy on HIV/AIDS; 2001, Dar es Salaam
14. The National Water Policy; 2002, Dar es Salaam
15. The Energy Policy of Tanzania; 2003, Dar es Salaam
16. The National Health Policy; 2003, Dar es Salaam
17. Water Resource Management Act; 2009, Dar es Salaam
18. National Land Use Planning Act;2007, Dar es Salaam
19. Employment and Labour Relations Act; 2004, Dar es Salaam
20. HIV and AIDS (Prevention and Control) Act; 2008
21. Local Government (District Authorities) Act Cap 287, 1982
22. The Fire and Rescue Force Act; 2007, Dar es Salaam
23. The Contractors Registration Act No. 17 ; 1997, Dar es Salaam
24. The Engineers Registration Act No. 15; 1997, Dar es Salaam

APPENDICES

Appendix 1: TERMS OF REFERENCE

Terms of Reference for Environment Impact Assessment of the Proposed Silo Complex Construction project for the National Food Reserve Agency at Mazwi Ward, Sumbawanga Municipality, Rukwa Region.

1.Introduction

The purpose of these Terms of Reference (TOR) is to provide formal guidance to the ESIA consultant regarding the proposed construction of Silo Complexproject in Sumbawanga on the range of issues that must be addressed in the EIA process. They form the basis for subsequent review process.

2. Project Description

The National Food Reserve Agency (NFRA) intends to construct a Silo Complex at Sumbawanga, Rukwa region. The project will improve NFRA storage capacity for grains thus enhancing food security in the region.

3. Environmental Assessment Requirements

Environmental Management Act, 20 of 2004 requires that EIA should be undertaken for all new projects that may cause adverse environmental and social impacts. Under the Environment Impact Assessment & Audit Regulations, 2005 GN No.349 of 2005, a silo complex project is categorized as an EIA obligatory project for which a full EIA is required.

4. Objectives of the EIA Study

Construction of a Silo Complex in Sumbawanga is the type of project included in the mandatory list of projects that are required to develop EIA by the Environmental Management Act (2004). Part IV of the EIA and Audit Regulations (2005) provides the general objectives for carrying out EIA, among others a list includes the following:

a) To ensure that environmental considerations are explicitly addressed and incorporated into the development decision making process
b) To anticipate and avoid, minimize or offset the adverse significant biophysical, social and relevant effects of developmental proposal
c) To protect the productivity and capacity of natural systems and ecological processes which maintain their functions
d) To promote development that is sustainable and optimizes resources use and management opportunities.

Consequently, the National Food Reserve Agency would like to undertake Environmental Assessment so as to translate the principles of sustainable development and environmental protection into strategies and actions that can be practically applied to her proposed project.

The specific objectives of the EIA are to:

- Establish baseline information on both natural and built environment including socio-economic conditions of the proposed project area;
- Identify, predict and evaluate foreseeable impacts, both beneficial and adverse, of the proposed investment;

- Develop mitigation measures that aim at eliminating or minimizing the potential negative impacts and promote positive ones; and
- Develop management plan and monitoring plan for ease of reference during project implementation.

5. Scope of Work

The EIA shall be conducted in accordance with the guidelines laid down by the Environment Management Act (EMA, 2004). The main steps to be followed by the Consultant in the environmental impact assessment will involve:

- Identifying, collecting and analyzing information which include:
    - Project characteristics and activities;
    - Baseline data of the environmental and socio-economic setup;
    - Predicting impacts;
    - Evaluating impacts' significance;
    - Identifying and proposing mitigation measures;
    - Preparing the management and monitoring plan and follow up; and
    - Presenting the information which involves writing an environmental Impact Statement (EIS).

The approval process shall also be according to the procedure laid down by the National Environment Management Council (NEMC) whereby these Terms of Reference will be approved by NEMC before further field work is done. Following the EIA study the Environmental Impact Assessment Report will be submitted to NEMC for review and approval.

6. Task to be carried during the EIA

The Consultant shall carry out the following tasks:

Task 1. Stakeholders Consultations

Consultations with stakeholders have been undertaken in this scoping stage of the EIA. Main stakeholders and their concerns are elaborated under chapter 5 of the report.

The Consultants shall carry this further during the impact study.

Among other things in task 1, the EIA report shall also feature how the views and concerns of the stakeholders have been addressed.

Consulted stakeholders shall sign against their names and the signature sheet shall be appended in the EIS.

Task 2: Description of project area

In order to cover assessment of all key issues related to the project, the study area shall be much wider than that covered by the project site where most of the project operations and facilities and services will be located. This is because some of the impacts might have local, regional or national implication. The core area has been determined to be the whole area that is covered by the project site.

The Consultant shall: further determine and set the project boundaries particularly spatial and temporal boundaries (i.e. impact area coverage and area of influence).

The Consultant shall give details of:

- Location of all project-related development and operation sites;
- General layout of facilities at the site - diagrams of facilities, design basis, size, capacity;

- Pre-construction activities and construction activities;
- Organizational relationships, mandates and interactions among the different parties to be involved in the project.

In addition to the above tasks the consultant shall give details of the following:

- Activities to be carried out in each phase of the project i.e. pre-construction, construction, operation and decommissioning phase
- The purpose and objectives of the proposed development shall be clearly stipulated.
- Types and quantities of material and inputs needed during pre-construction, construction and operational phases
- Types and quantities of wastes, energy and residual materials and the rate at which these will be produced
- The description of methods used to make estimations of waste generated, and the proposed methods of waste treatment and disposal.
- The project capital cost and source of funds

Task 3: Description of the Environment

The Consultant shall provide description of:

- The location and area of land affected by the development. This shall also be shown on maps and the current land uses of the area shall be clearly demarcated.
- Definition of affected site shall be broad enough to include any potential effects occurring away from the construction site (e.g. dispersal of pollutants, traffic, changes in channel capacity of water sources as a result of increased surface run off etc.)
- Baseline condition of the current biophysical, ecological, socio-economic and cultural environment and, prediction of the future condition if the project did not take place
- The method used to gather the baseline information.

Baseline data shall be gathered in such a way that the importance of the particular area to be affected can be planned into the context of the Municipality or surrounding area and that the effect of the proposed change will be predicted and monitored

Task 4: Legislative and Regulatory Considerations

The Consultant shall:

Describe pertinent local, national and international regulations and standards governing environmental quality, health and safety, protection of sensitive areas and underground water resources, land use control etc. The EIS shall show how the proponent will comply with the cited policies and Legislation

Task 5: Prediction, Identification and Analysis of Impacts

Under this activity the consultant shall:

i. Identify issues and concerns in order to find suitable remedies;
ii. Identify linkages among project components and the issues;
iii. Identify where project activities or elements interact with social and biophysical environment (direct impacts):
iv. Identify indirect impacts of the project on the environment;
v. Identify cumulative impacts that may be anticipated;

vi. Identify residual impacts if any;
vii. Predict probability, magnitude, distribution and timing of expected impacts:
viii. Carry out assessment of alternative sites and alternative technologies in order to come out with the best option; and
ix. Forecast what will happen to the affected environmental components if the project is implemented as is or if the alternatives (e.g. sites and technologies) are chosen (a no-project option will also be considered)

The consultant shall also outline:

- The methodology used to identify and analyze likely impacts
- The logic used to identify key impacts on human beings, flora and fauna, soil, water, air, climate, landscape, cultural heritage, or their interaction, should be explained
- The data used to estimate the magnitude

Furthermore, the consultant shall: assess:

- The significance of impacts using the appropriate national and international quality standards where available.
- Remaining impacts after mitigation using the appropriate national and international quality standards where available. Where no such standards exist, the assumptions and value systems used to assess significance should be justified.

Task 6: Estimation of the Significance of the Impacts

The consultant shall:

i. determine which environmental components are mostly affected by the project or its alternatives;
ii. list issues raised by the public and classify them according to the level and frequency of concern whenever possible;
iii. list regulatory standards, guidelines etc. that need to be met; and
iv. Rank predicted impacts in order of priority for avoidance, mitigation, compensation and monitoring.

Task 7: Analysis of alternatives to the project

The consultant shall:

- Discuss alternative sites, undertakings, processes, technologies and design
- Discuss the main environmental advantages and disadvantages and the reasons for the final choice given.
- Make a comparison of the alternatives in terms of potential environmental impacts as well as capital and operating costs i.e. cost benefit analysis of each alternative/option

Task 8: Development of Environmental and Social Management Plan (ESMP)

In preparation of the ESMP the following activities shall be performed:

- Specific mitigation measures and enhancement measures shall be identified on all significant impacts.
- Effectiveness of mitigation methods shall be ascertained. Where the effectiveness is uncertain justification of the acceptance of the suggested interventions/assumptions shall be provided.
- Effective environmental and social management plan shall be prepared. The Environmental and Social Management Plan shall identify among other thing:

Phase of the project, identified impacts, mitigation measures, responsibility and budget estimates

Task 9: Development of Environmental Monitoring Plan

In preparation of the Monitoring plan the consultant shall ensure that the plan is consisted of the following:

i. Phases of the project,
ii. Identified impacts.
iii. Mitigation measures
iv. Parameter to be monitored
v. Sampling area/points
vi. Frequency of monitoring
vii. Standard/target level
viii. Responsible institutions
ix. Budget estimates

The consultant shall also:

- Determine and assess methods to monitor impacts for predicting accuracy remedial measures for effectiveness
- Describe follow up scheme and post project action plan
- Assess the level of financial commitment by the proponent for management and monitoring plan and follow on activities

The consultant shall be guided by the cost-effectiveness principles in proposing mitigation measures. Estimation of costs of those measures shall be made. The assessment will provide a detailed plan to monitor the implementation of the mitigation measures and impacts of the project during construction and operation.

Task 10 Reporting requirement and Report Presentation

The final draft of the EIS document shall be concise and in line with EIS format stipulated in the Environmental Impact Assessment and Audit Regulations (2005) G.N. No. 349 0f 2005. The *contents* and the *structure* of the main text (EIS) shall be presented according to *Regulations 18(1) and (2) of the Environmental Impact Assessment and Audit Regulation, 2005.*

The Executive summary shall not be in separate document rather it shall be part of the EIS. The *contents* and *structure* of the Executive Summary shall be as per *Regulation 18 (3).* There shall be a *standalone/separate document* of Non-Technical Executive Summary and both will be in *Kiswahili* and *English* languages stating the *key findings*, *conclusions* and *recommendations* as per the requirement *of Regulation 19(2) of the EIA and Audit Regulations of 2005.*

Submission of the EIS, Non-Technical summary and prescribed fees shall observe the requirements of Regulations 19 to 21 of the *EIA and Audit Regulations of 2005.*

7. Study Team

The consultants shall deploy consultants/experts with the demonstrable practical experience in conducting EIA studies also with specific experience in environmental engineering, environmental management and sociology.

8. TIME FRAME FOR EIA

The time frame estimated for undertaking of Impact assessment is one month after approval of Terms of Reference. The EIS shall be submitted to NEMC not more than 28 days after the proponent receives the letter of approval of these Terms of Reference.

9. OUTPUTS

Immediately after Impact Assessment, the consultant shall submit to NEMC, 15 printed and bound copies of the Environmental Impact Statement and Fifteen printed and bound copies of Non Technical Summary for review.

Appendix 2: Letter from NEMC on approval of TOR

NATIONAL ENVIRONMENT MANAGEMENT COUNCIL(NEMC)
BARAZA LA TAIFA LA HIFADHI NA USIMAMIZI WA MAZINGIRA

Telephone: +255 22 2774889,
Direct line: +255 22 2774852
Mobile: 0713 608930
Fax: +255 22 2774901
Email: dg@nemc.or.tz
Website: www.nemc.or.tz

35 Regent Street,
P. O. Box 63154
11404 Dar es Salaam
TANZANIA

In reply please quote:

Ref: **NEMC/HQ/EIA/01/0680/Vol.1/2** Date: **23/01/2017**

Chief Executive Officer,
National Food Reserve Agency (NFRA),
P.O. Box 5384,
Dar es Salaam

Attn: Joseph P. Ogonga

RE: SCREENING DECISION FOR THE PROPOSED DEVELOPMENT OF SILOS COMPLEX FOR GRAIN STORAGE ON PLOT NO. 20&21 BLOCK "EE" IN MAZWI WARD, SUMBAWNGA MUNICIPALITY, RUKWA REGION

Kindly refer the heading above.

We acknowledge receipt your letter with **Ref. No. BA.52/112/01/28** dated **3rd January, 2017**, attached with three copies of dully filled Environmental Impact Assessment certificate application forms and copies of the Project briefs in respect of the above mentioned project for review.

Kindly be informed that the project has been registered by the Council and allotted Application Reference number **6534** which must be referred in all future correspondence for this project.

Following the review of the submitted documents, the Council has reached a decision that your project requires a full Environmental Impact Assessment (EIA) study.

Following this decision, you are therefore required to carry out a scoping exercise and submit a Scoping report and Terms of References (ToR) to the Council for review and approval before the beginning of the EIA study. Also, be reminded that, the scoping report should conform to the EIA and Audit Regulations 2005 particularly Regulation 13 (3) and the

Fourth Schedule made under Regulation 15 for the contents of the scoping report and the essence of the scoping exercise respectively. However, the scoping report should also contain the following information:-

i. Evidence of land ownership for the proposed project site and all other documents relevant to the proposed development;

ii. Detailed description of all project components/activities of the proposed development and

iii. Detailed stakeholders consultations.

In case you need further clarification on this matter, please do not hesitate to contact us through **Tel No. +255 787 539 468.**

We look forward to your cooperation on this matter.

Yours Sincerely;

R. Said

For: Director General

Cc: ASSESS Consulting Company Ltd, P.O. Box 36086, **Dar es Salaam.**

All correspondence should be addressed to the Director General

Appendix 3: Signatures of consulted stakeholders

ASSESS CONSULTING CO. LTD, P O BOX 14466, DAR ES ES SALAAM

LIST OF CONSULTED STAKEHOLDERS FOR ENVIRONMENTAL IMPACT ASSESSMENT STUDY

PROJECT NAME:...PROPOSED CONSTRUCTION OF SILOS COMPLEX FOR GRAIN STORAGE AT SUMBAWANGA.....DATE OF CONSULTATION...5 JUN 2017

S/N	Name/Jina	Title/Position/Cheo	Location/Institution/Taasisi	Tel/Email/Simu	Signature/Sahihi
1	Zelote Stephen Zelote	Re	Rukwa Administration	0754022999,	
2.	ABUBAKAR M. KUMBENGA	DG RAS	RUKWA SECRETARIAT	0784 999856	
3	SCHOLA MBALILA	AFISA Kilimo	Rukwa SEKRETARIAT	0752-882551	
4	Morgan. A. M	NFRA-Zonal Manager	RUKWA	0754857557	
5.	Fulgence Matemo	Pg. PIA-Ae	RUKWA	0764244313	
6	Samwel Mtambalike	Supplies officer II	NFRA - Sumbawanga	0756 750 760	
7	George Sangoda	Civil engineer	NFRA- SUMBAWANGA	0786014566	
8.	MARIA K. RAMLE	Z/ACCOUNTANT	NFRA -SUMBAWANGA	0752-595657	

ASSESS CONSULTING CO. LTD, P O BOX 14466, DAR ES ES SALAAM

LIST OF CONSULTED STAKEHOLDERS FOR ENVIRONMENTAL IMPACT ASSESSMENT STUDY

PROJECT NAME:.....**DATE OF CONSULTATION**...5 JAN 2017.....

S/N	Name/Jina	Title/Position/Cheo	Location/Institution/Taasisi	Tel/Email/Simu	Signature/Sahihi
9.	WILLIAM NSWILA	Ag. MATCO	SUMBAWANGA MUNICIPAL	nswillow@yahoo.com	
10	[illegible]	VEO	Sumbawanga MC	[illegible]	
11	BARAKA J. NKOKITI	Ag MWPO	Sumbawanga MC	barakajohn02@gmail.com	
12	HAMIDU S. MASARE	MESWMO	Sumbawanga MC	masarehamidi@gmail.com	AFISA MTENDAJI KATA YA MAZWI
13.	JUSTICE ATHANAS	WEO.	MUNICIPAL	0755170288	
14.	Upendo Lifagh	Afm/Kiti mtaa	— " —	0752987171 NMC	
15	MARIA E. BAKULI	M/KITI – LWICHE	"	0752916621	M. E. Bakuli
16	BURHANI ATHUMANI	MGUMBE	"	0757179866	

ASSESS CONSULTING CO. LTD, P O BOX 14466, DAR ES ES SALAAM

LIST OF CONSULTED STAKEHOLDERS FOR ENVIRONMENTAL IMPACT ASSESSMENT STUDY

PROJECT NAME:.....DATE OF CONSULTATION.

S/N	Name/Jina	Title/Position/Cheo	Location/Institution/Taasisi	Tel/Email/Simu	Signature/Sahihi
17.	EMMANUEL HUSSEIN	Mwanamizi	Hamis Hussein - Kiwanda cha kukoboa mpunga	0755 730699	
18.	LABAN JOHN	MFANYAKAZI	— " —	0762-766424	
19	OMARI ALLY	Mfanyakazi - Operator	Deo Msagoye - Kiwanda cha kukoboa mpunga	—	
20	SAMWEL MAARI	ECO.	TPRI - DSM	BOX 1585 DSM	

ASSESS CONSULTING CO. LTD, P O BOX 14466, DAR ES ES SALAAM

LIST OF CONSULTED STAKEHOLDERS FOR ENVIRONMENTAL IMPACT ASSESSMENT STUDY

PROJECT NAME: SUMBAWANGA SITE SILOS COMPLEX CONSTRUCTION DATE OF CONSULTATION: 25/5/2017

S/N	Name/Jina	Title/Position/Cheo	Location/Institution/Taasisi	Tel/Email/Simu	Signature/Sahihi
1.	ELIMPAA KIRANGA	KAIMU KATIBU MKUU	MALF – DODOMA	0754446233	
2.	Vumilia Zilankaka	Ag. CEO	NFRA	0744462044	
3.	JOSEPH P. OLOUNCH	~~Dg DED~~	NFRA HQ	0782572492	
4.	Oswald Ruboha	AD- M&E	MALF - Dodoma	0754882005	
5	Paulo Tarimo	DNP	MALF	2860450	
6	Inspector W/Mtei	AD - LM	MALF	0762-879011	
7	Richard Y. Kaaya	HECU	MALF	0769-239946	
8	Beatus Malema	BDCLS	MALF	0754608806	
9.	B. A. Shabani	DPMU	MALF	0713227288	
10.	Semshi S. Mbuni	DAHRM	—U—	0754745305	
11.	George Mandepo		—U—	0754375056	

Appendix 4: Letter on status of Title deed process of acquisition

JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA KILIMO MIFUGO NA UVUVI
WAKALA WA TAIFA WA HIFADHI YA CHAKULA
Kizota Viwandani Area | S.L.P 1050 Dodoma | Simu: +255(0)26 2340012 | Fax:+255(0)26 2340014
Barua pepe: info@nfra.go.tz | Tovuti: www.nfra.go.tz

NFRA

Kumb. Na. CAB. 26/165/112/01/52 **27 Oktoba 2017**

Mkurugenzi Mkuu
National Environmental Management Council (NEMC)
35 Regent Street
S.L.P. 63154,
11404 DAR ES SALAAM

YAH: HATI MILIKI ZA MAENEO UTAKAPOTEKELEZWA MRADI

Tafadhali husika na kichwa cha habari hapo juu.

Ifuatayo ni hali halisi ya upatikanaji wa Hati Miliki za eneo utakapotekelezwa Mradi wa Kuongeza uwezo wa Hifadhi ya Akiba ya Chakula (Storage Capacity Expansion Project):

NA.	KANDA/ENEO	NAMBA YA KIWANJA	MAELEZO
1.	Sumbawanga	Plot No. 20 & 21, Block "EE", Mtaa wa NMC, Kata ya Mazwi, Manispaa ya Sumbawanga, Mkoa wa Rukwa	Manispaa wamekamilisha kuandaa *Deed Plan* pamoja na Hati Miliki. Tarehe 01 Novemba 2017 itawasilishwa kwa Kamishina Msaidizi wa Ardhi kanda ya Mbeya kwa ajili ya kusainiwa.
2.	Mpanda	Plot No. 16 & 17, Block "C" Mtaa wa Mpanda Hotel, Manispaa ya Mpanda, Mkoa wa	Manispaa wamekamilisha kuandaa *Deed Plan* pamoja na Hati Miliki. Tarehe 01 Novemba 2017 itawasilishwa kwa Kamishina Msaidizi wa

1

		Katavi	Ardhi kanda ya Mbeya kwa ajili ya kusainiwa.
3.	Mbozi	Plot No. 92, Block "J" Mtaa wa Ipanga, Kata ya Ichenjezya, Wilaya ya Mbozi, Mkoa wa Songwe	Hati Miliki Na. 41660-MBYLR; LO No. 537669 ipo kwa jina la NFRA.
4.	Songea	Plot No. 101, 102 & 106; Block "B" Mtaa wa Ruhuiko Shuleni, Kata ya Ruhuiko, Manispaa ya Songea, Mkoa wa Ruvuma.	Hati Miliki Na. 27169-MBYLR; LO No. 176125 na Hati Na. 23840-MBYLR; LO No. 176126 zipo kwa jina la NFRA. Plot Na. 106 mchakato wake bado upo ngazi ya Ardhi Manispaa ya Songea kwa ajili ya kuandaliwa Deed Plan.
5.	Shinyanga	Plot No. 176 & Plot No. 178 Mtaa wa Ibadakuli, Manispaa ya Shinyanga.	Manispaa wamekamilisha kuandaa *Valuation for Transfer,* Wakala umelipa gharama za kuhamisha umiliki na mchakato wa kuandaa Hati Miliki ili ipatikane kabla ya mwisho wa mwezi Novemba 2017.
6.	Babati	Plot No. 794 – 803 Block "YY" Maisara area, Wilaya ya Babati, Mkoa wa Manyara.	Hati Miliki Na. 52892; LO No. 618201 ipo kwa jina la NFRA.

F.M. Masele

KNY: KAIMU AFISA MTENDAJI MKUU

2

COMMMENTS-RESPONSE TABLE ON THE TECHNICAL ADVISORY COMMITEE (TAC) COMMENTS ON THE PROPOSED EXPANSION OF GRAIN STORAGE FACILITIES ON PLOT NO. 20&21 BLOCK "EE" NMC MTAA IN MAZWI WARD, SUMBAWANGA MUNICIPALITY, RUKW A REGION

S/N	**COMMENTS**	**RESPONSE**
1.0	**GENERAL COMMENTS**	
i.	The project title should read as "proposed expansion of grain storage facilities on Plot No. 20&21 Block "EE" NMC Mtaa in Mazwi Ward, Sumbawanga Municipality, Rukwa region	The comment has been addressed
ii.	Improve the page number within the documents, avoiding mixing of pages.	The comment has been addressed
iii.	Indicate the Mtaa where the proposed project is located.	The comment has been addressed, see cover page title
iv.	Cover page must be style as per Regulation 18 of the EIS and Audit Regulations.	
v.	Developer should ensure that development condition stipulated in a title deed is for use group 'L' use class (a) or use group 'M' use class (a) otherwise change of land use should be seek out in order to comply with Urban Planning Act, No.8 of2007 section 30.	This has been addressed on appendix 4
vi.	On the cover page, remove the word "complex" if does not reflects the technologies used during construction or operation of the silos. Hence remain with "proposed expansion of Grain storage facilities on Plot No. 20&21, Block	The comment was addressed cover page
2.0	**Specific Comments**	
REVIEW AREA I: Description of the Development, Local Environment Regulatory Framework and Baseline Conditions.		
1.0	Provide process flow of raw materials from receiving to final point.	The comment was addressed on page 16, section 2.3.5 in second paragraph
2.0	Objectives and Rationale. Provide a backup statement from sustainable Development Goals especially goal 2.	The comment has been addressed on page 2, section 1.2.2
3.0	Write the rationale of the project with respect to the increase in population and planned expansion of the project.	The comment has been addressed on page 2, section 1.2.2 in second paragraph
4.0	Provide information about the borehole to be drilled at the site, permits, quality and quantity of water.	The comment has been addressed on page 14, section 2.2.5 in second paragraph
5.0	Provide .information on how construction materials will be transported to the proposed project site.	The comment has been addressed on page 15, section 2.3.4

S/N	**COMMENTS**	**RESPONSE**
6.0	Provide an estimation of the quantity of liquid waste (non-degradable i.e. Scrap metals, drums, Tins, gasses and plastics) during construction phase.	The comment has been addressed on page 15, section 2.3.4.1 in first paragraph
7.0	Provide an estimation of the quantity of liquid waste in terms of oil and greases during construction phase.	The comment has been addressed on page 15, section 2.3.4.1 in second paragraph
8.0	Project location, location maps should be clearly illustrating the location of project in hierarchical order from National level to Local level.	The comment has been addressed on Figure 2.1
9.0	Project Design. Should be Mobilization phase, Construction phase and Operation phase. All sub activities described in pre-construction phase have been conducted.	The comment has been addressed, see section 2.4 page 16
10.0	Statement for project design is missing. Project design should be include and design considerations might be;-	
	i/ Topographical of the area.	The comment has been addressed on page 15 section 2.3.2.1
	ii/ Existing facilities	The comment has been addressed on page 15 section 2.3.2.2
	iii/ Clint requirement	
	iv/ Technological aspect	The comment was addressed on page 15 section 2.3.2.4
	v./ Geographical survey	The comment has been addressed on page 15 section 2.3.2.3
	vi./ Compatibility of facilities/components.	The comment has been addressed on page 16 section 2.3.2.5
11.0	Included the following information in the project description.-	
	I. Number of people to be using the proposed building	The comment has been addressed on page 13, section 2.2.4
	II. Provide actual number of cars to be accommodated by proposed buildings as well as criteria for selecting that numbers.	The comment has been addressed, see page 14 section 2.3.2 in second paragraph
12.0	On page 7, section 2.1.1. Provide distance covered between the proposed project and borders facilities. Example if possible name the surrounded industrial Plots and other existing facilities borders the site example Abattoir.	The comment has been addressed on page 11, section 2.1.5
13.0	. On page 7 Provide sources of information to all	The comment was

S/N	**COMMENTS**	**RESPONSE**
	Tables and Figures presented building in EIA report. For example Table 2.1 and Table 2.2 on page 12 etc.	addressed on entire report
14.0	On page 7 section 5.2.1.1 describe all adjacent developments bordering the project on all four sides (East, West, South and North) showing the proximity to such developments.	The comment has been addressed on page 11, section 2.1.5
15.0	On page 7 state the source of information of land use of the area i.e. Industrial area.	Addressed on page 7
16.0	On page 9, section 2.1.2 define the measuring of some abbreviations used example 20,000MT.	The comment has been addressed on page xviii
17.0	On page 9. Report should describe whether the existing facility has been subjected to Environmental Audit or EIA.	The comment has been addressed on page 11, section 2.1.4
18.0	On page 11. Discuss the fate of the Residential Settlements to the South& Western side, impacts they will occur as the rescue of the project activities.	The comment has been addressed , see section 6.4.6 and 6.4.7 on page 55
19.0	On page 12, table 2.2-2.3, clearly state types of laboratory to be built since is not appeared on this Table as part of the structure to be constructed.	The comment was addressed on page 11, section 2.1.6.2 in 2nd paragraph, last sentence
20.0	Page 12 Table 2.2 State the status of the equipment available at the site.	The comment has been addressed, see page 10 section 2.1.4
21.0	On page 13, section 2.2.1, provide specification of the septic tanks and soak away pit that will be used by the proposed project for managing liquid waste generated at the site.	No new septic tank to be designed, there is existing septic tank
22.0	On page 14 section 2.2.5, provide specification of a borehole that will be used as an alternative water resource in the project site.	The comment has been addressed, see section 2.2.5 in second paragraph
23.0	On page 16, Table 2.4, provide actual place where construction materials (Aggregates, sand, cement) will be sourced during phase rather than saying will be obtained locally or in Mbeya and Dar es Salaam.	The comment has been addressed on Table 2.4
24.0	On page 16, Table 2.4. Clearly state Authorized borrow pits and quarries existing which will be used for source of sand, stones and aggregates.	No authorized borrow pits in Sumbawanga at the moment
25.0	Add to the following Legislation.	
	(i) The plant Protection Act, 1997.	The comment is addressed on page 31 section 3.4.22
	(ii) The environmental (Solid Waste Management) Regulations, 2009	The comment is addressed on page 32 in section 3.4.24
	(iii) The Industrials and Consumers Chemicals Management and Control	The comment has been addressed on page 31

S/N	COMMENTS		RESPONSE
		Act, 2003	section 3.4.23
	(iv)	The Local Government (Urban and Authorities) Act, No.8 of 1982 section 55(2).	The comment has been addressed on page 32 section 3.4.25
	(v)	The Urban Planning Act, No.8 of2007 section 29, 31, 32 and 33.	The comment has been addressed see page 26 section 3.4.5
	(vi)	The Land Act, No.4 of 1999 section 4 and 19	The comment has been addressed see page 33, section 3.4.26
	(vii)	National Agriculture Policy 2013 and not 2012;	The comment has been addressed on page 23 section 3.3.9
	(viii)	Grazing Land and Animal Feed Resources Act 2010;	The comment was addressed, see page 33 section 3.4.26
26.0	Page 18 Policy Framework		
	(i)	Section 3.3 Page 20, change the word RELEVANCE POLICIES to RELEVANT POLICIES	The comment was addressed on page 20, section 3.3
	(ii)	Subtitles from section 3.3.6 to 3.3.8, remove the word URT.	The comment was addressed by removal of URT
	(iii)	Section 3.3.9, The National Agriculture and livestock Policy 1997 does not exist. Use The National Agriculture Policy 2013 and link the policy to the project	The comment has been addressed on page 23 section 3.3.9
27.0	Review and include texts from Plans and programs such as;-		
	(i)	Tanzania Agriculture and Food Security Investments Plan (TAFSIP) 2011/12 to 2020/21.	The comment has been addressed, see page 1 section 1.2.1 in second paragraph
	(ii)	ASDP II especially Component 3. Improved and expanded rural marketing and value addition promoted by a thriving competitive private sector and effective farmer organization (indicate the link between the component and the storage facility).	The comment has been addressed on 3.3.13
	(iii)	Add CSA programme CSA (Link Component 3: Improved Food Storage and Distribution with the proposed grain storage facility	The comment has been addressed on 3.3.14
28.0	EMP- during operational phase-need to have an indication of regular Training on the handling and safe use of pesticides.		The comment has been addressed on EMP in table 9.1
29.0	The site layout plan should be indicates the		The comment has been

S/N	COMMENTS	RESPONSE
	existing facilities which will be used the by the proposed project without renovation because as it is seems to be all facilities will be new.	addressed on appendix 5
REVIEW AREA II: Identification and Evaluation of key Impacts		
1.0	Provide discussion on impacts that will be associated with the transportation of construction materials and its mitigation measures.	The comment has been addressed, see sections 6.3.2, 6.3.3 &6.3.9 in page 55 and sections 7.3.1, 7.3.2 & 7.3.7 respectively
2.0	Provide discussion on impacts that will be associated with the demolition activities and its mitigation measures.	The comment has been addressed, see sections 6.2.2, 6.2.3 &6.2.4 in page 54 and sections 7.2.2., 7.2.3 &7.2.4
3.0	Developer should ensure proper management of waste water and solid waste during implementation and operation phases.	Taken for action
4.0	All impacts should be identified, analyses as per each generator area through the total impacts for poor hands of Agrochemicals and empty containers.	The comment has been addressed, see section 6.4.2 in page 56 and section 7.4.6 in page 72
5.0	Environmental weaknesses that have been observed in previous operation should be incorporate in EMP's.	Taken for action
6.0	Impacts of vibration should be analyzed in construction phase and operation.	The comment has been addressed, see page 55 section 6.3.2 and page 57 section 6.4.8
REVIEW AREA III: Alternatives, Mitigation Measures and commitment		
1.0	Attach Land ownership documents for verification of Name of the owner, Land use, Plot size and other details.	The comment has been addressed as Appendix 4
2.0	Provide source of all information used within the documents, e.g. Paragraphs.	Addressed in entire report
3.0	Indicate time when EIA study was undertaken.	The comment was addressed, see page 4 section 1.5
4.0	The date of submitting EIS and Non-Technical Executive Summary Report to NEMC should be the similar. The date for submitting EIS to NEMC is on 6th July 2017 while in Non-Technical Executive Summary Report is on Sh July 2017.	This has been rectified
5.0	The Executive Summary should briefly include the following;-	
	(i) Project life span and investment cost.	The comment has been addressed, see page ii
	(ii) Land ownership and land use status of	The comment has been

S/N	**COMMENTS**	**RESPONSE**
	the proposed site.	addressed, see page ii
	(iii) Briefly discussions on the existing storage activities at the site, waste management, refer page ii- renovation of existing facilities.	The comment has been addressed, see page ii
6.0	Provide total area covered by the existing facilities	The comment has been addressed, see page 7 section 2.1.1 last line
7.0	The final report of this project must be submitted to Sumbawanga Municipality. This will facilitate monitoring and evaluation of the project.	Taken for action
8.0	Consultation should be done to TPRI	The comment has been addressed, see Table 5.2

Appendix 5: Site Layout plan of proposed silos complex