ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED EXPANSION OF TEA PLANTATION, TEA FACTORY AND MACADAMIA FARMING IN PLOT NO. 1, BLOCK A, TEWE VILLAGE, MAPLE WARD, KOROGWE DISTRICT, TANGA REGION.

Proponent:

Mohammed Enterprises Tanzania Limited

Golden Jubilee Towers, Ohio Street, 20th Floor

P.O. Box 20660, Dar-Es-Salaam,

Tel; 075455227

Email; george@metl.net

Consultant

Arms on Environment Ltd,

P. O. Box 22413

Mob: +255 754 309679/ +255 655 770 772

E-Mail; armsrajabu47@gmail.com

Submission Date

19th October, 2023

ACKNOWLEDGEMENT

This Report has been prepared by ARMS on Environment Limited of Dar es Salaam on behalf of Mohammed Enterprises Tanzania Limited. The Proponent wishes to thank all stakeholders and the Regulatory institution i.e., National Environment Management Council (NEMC) and individuals who have contributed views and ideas that form part of this report.

In particular, we wish to thank the Korogwe District Council officers, leadership at the local community level (ward and villages), and all other stakeholders for their valuable views and comments.

STUDY TEAM

This Environmental Impact Statement report has been prepared by ARMS ON ENVIRONMENT LTD under the leadership of Dr. Abubakar S. Rajabu (Team Leader and an Environmental Scientist responsible for the characterization of biophysical environment of the study area. He was supported by other experts. These are comprised of; - Mary Ngajilo (Sociologist was responsible for conducting socio-economic baseline survey and organizing stakeholder consultations), Noela Chuyi (Planner was responsible for providing spatial information and mapping of various significant features in the project).

Table 1; Lead consultant information (Team leader)

Name	Title	Qualification & Experiences	Signature
Dr. Abubakar S Rajabu	Lead Consultant (Team Leader)	Registered EIA/EA Expert (Reg. No. NEMC EIA/0048 and NEMC/EA/0021)	
Mary Ngajilo	Sociologist	Registered EIA Expert NEMC/EC/EE-EIA/2021/0113	
Noela Chuyi	Planner	Non- registered	

EXECUTIVE SUMMARY

Environmental Impact Assessment for The Proposed Expansion of Tea Plantation, Tea Factory and Macadamia Farming in Plot No. 1, Block A, Tewe Village, Maple Ward, Korogwe District, Tanga Region.

E1.0 NAME AND ADDRESS OF THE PROPONENT

Mohammed Enterprises Tanzania Limited

Golden Jubilee Towers, Ohio Street, 20th Floor

P.O. Box 20660, Dar-Es-Salaam,

Tel; 075455227

Email; george@metl.net

E1.1 NAME AND ADDRESS OF THE CONSULTANT

Arms on Environment Ltd,

P. O. Box 22413

Mob: +255 754 309679/ +255 655 770 772

E-Mail; armsrajabu47@gmail.com

E2.0 INTRODUCTION

Tea, is the most widely consumed beverage in the world, it has strong historical, socio-economic and cultural importance in tea growing communities. For developing countries, like Tanzania, tea is an important commodity in terms of jobs creation and export earnings. In Tanzania, tea is grown in about 23,000 ha and the sub-sector is divided between estates (above 200 ha farms) and out-growers (less than 200 ha farms), which include medium-scale farmers with average tea holdings of 16 ha and small-scale farmers with an average 0.37 ha.

The macadamia nut tree is a fast-growing, medium-sized evergreen tree with heavy, dark green foliage. Macadamia is a genus of four species of trees indigenous to Australia. Currently, macadamia plants are grown in various regions of the world, namely Brazil, United States, Costa Rica, Israel, South Africa, Kenya, China, Bolivia, New Zealand, Colombia, Guatemala and Malawi. Macadamia plant provides a valuable source of nutrition via a hard-shelled nut. The nut is rich in a variety of nutrients like Vitamins B6, B12, and micronutrients, to name a few. Macadamia nuts possess more fat than conventional nuts.

The proposed project involves increasing production of non-organic tea and macadamia nuts in Tanzania. The project will, also, involve expansion of tea factories facilities to match with the expected increase in tea production from the estates as well as small-holder's tea farmers.

The Legislation in Tanzania requires project Proponents to carry out an Environmental Impact Assessment (EIA) for the undertaking prior to implementation. Being aware of the aforementioned legal requirement, the proponent (Mohammed Enterprises Tanzania Limited) commissioned ARMS on Environment Limited to conduct Environmental Impact Assessment for the proposed Expansion of Tea Plantation, Tea Factory and Macadamia Farming in Tewe Village, Maple Ward, Korogwe District, Tanga Region.

In this regard, the EIA study is conducted in accordance with the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulation of 2018.), formulated after the Environmental Management Act No. 20 of 2004. The Regulation gives mandate to NEMC to oversee the EIA process, which culminates with an award of the Environmental Permit (EP) by the Ministry responsible for Environment.

E2.1 OBJECTIVE OF ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

The objective of the ESIA study was to ensure that environmental concerns are integrated in all project activities in order to contribute to sustainable development. The specific objectives of conducting the Environment and Social Impact Assessment study with respect to the project was:

i. To identify and evaluate the significant environmental impacts of the project
ii. To evaluate the impacts of the various alternatives on the project
iii. To propose mitigation measures for the significant negative impacts of the project on the environment.
iv. To generate baseline data for monitoring and evaluating impacts, including mitigation measures during the project cycle.
v. To seek the views and concerns of all stakeholders in regards to the proposed project.
vi. Develop an Environmental and Social Management Plan with mechanisms for monitoring and evaluating compliance and environmental performance.

E2.2 ESIA APPROACH AND METHODOLOGY USED

Approach - Several approaches and study methods to be used in carrying out this assignment with the view of obtaining quantitative and qualitative data (baseline data) in order to prepare the report. Main approaches used were;

i. Follow Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulation of 2018.)
ii. Follow broad ecological examinations such as transect walk and detail analysis of the project area.
iii. The scoping is being undertaken as initial stakeholder identification through identification of issues, problems and concerns, summary of results and ToR for EIA.

Methodology - The ESIA study for the project was carried out in accordance with the approved Terms of Reference. The study included the following methodologies:

- Meeting and Interview;
- Review of Documents;
- Transect Walk
- Site visits;
- Measurement of environmental parameters

E3.0 BRIEF DESCRIPTION OF THE PROJECT SITE

E3.1 Project Existing situation

The proposed project area is located on plot no. 1, Block A, Tewe Village, Maple Ward, Korogwe District, Tanga Region. The Dindira Tea estate has tea processing factory in operation with different production capacities using different technologies. The type of tea produced is black tea. The estate has a total land area of 2,061 ha of which 655 ha (32%) are under tea plantation; 353 ha (16%) are under fuel wood plantation; 360 ha (17%) are forestry reserve; and 140 ha (7%) account for estates infrastructure including areas for roads and buildings. Presently, about 571 ha (28%) are yet to be exploited. The estates contribute about 26% of the company's tea production. The estates have set aside 260 ha (13%) for additional fuel wood plantation and 311 ha (15%) for additional tea plantation under contract farming.

Thus, about 47% (966 ha) of the estates will be under tea plantation and 28% (613 ha) under fuel wood plantation.

The factory at Dindira estate is a double-line tea factory installed with withering, CTC line, fermenting line, drying machine, sorter/grader machine and a boiler. The plant has an installed capacity to produce 2500 tons of made tea per annum. The factory requires replacement due to wear and tear. The company is planning to procure and install a new line that will have capacity to process 600 kg of Greenleaf per hour.

Other infrastructure and utilities

i. Buildings– The estate has office blocks, residential houses for management staff, worker's houses, factory buildings and stores buildings. The estate has well maintained access roads linking the estates and surrounding villages and farm roads for transporting green leaf. Presently, Dindira estate has 50 workers houses which are considered not adequate due to growing demand for residential facilities.

ii. Motor vehicles – The estate has motor vehicles which include tractors, trucks, pick-ups and motorcycles. The motor vehicles are used for farm operation such as transport of green leaf, fuel wood, workers and other services. Dindira estates have 3-operating tractors, 5-trucks, one Pick-up and 5-motorcycles.

iii. Farm equipment – The estate has farm equipment for its workers including sprayers, tea plucking equipment and other equipment. Dindira estate has 14-sprayers and 25-tea plucking equipment.

iv. Utilities – Utilities include water, electricity, telecommunication and sewage systems. The estate has well supplied with natural spring water from the Usambara mountain range. The factory has water infrastructure including water tanks and water pipes connected to the factory sites. The factory site is connected to power supply using high-capacity electric generator and/or electricity from the national grid supplied by the Tanzania Electric Supply Company (TANESCO).

Farm Services/inputs

Extension services – the estates enjoy the services of qualified tea extension officers hired by the company. METL has since designed a program to assist smallholder farmers to have access to farm extension services. With the increased number of villagers engaged in tea growing, the extension

services offered to villagers become inadequate. When METL acquired the estates, smallholders accounted for only 5% to 10% of the total green leaf produced. Currently, smallholders account for over 30% of the total green leaf supplied to the factories with prospects of increasing to over 50% in the next 5-years.

Farm inputs – these include herbicides, insecticides, fungicides and fertilizers. The estates procure these inputs from various wholesalers. The smallholders usually buy the inputs from retailers at very high prices. METL has since designed a program to provide inputs to smallholder farmers on loan.

E3.2 Current Waste Management

As project is in operating therefore generates a variety of waste as described below;

i. Solid waste

Expected solid waste to be generated is garbage waste like papers, food remains, packaging materials for agrochemicals, also fire wood bulks and ash from boiler.

- The biodegradable waste will be decomposed and used as manure for the farms.
- Packaging materials for Agrochemicals like empty herbicides cans are been stored in designated place and disposed of as per regulations.
- Fertilizer package; Used by filling up with sand to use for prevention of soil erosion.
- Wood bulks are being decomposed and use as manure, saw dusts are also spread in tea field as mulching, ash dust is being buried underground. Same procedure will be adopted after expansion of tea factory.

ii. Liquid waste

The main sources of waste water will be from sanitation facilities. During operation phase at the factory, liquid wastes will be managed through septic tank and soak away pits.

iii. Hazardous wastes

Hazardous wastes will be mainly due to scrap metal from used and worn – out production machines and vehicles, plastics and used oil from servicing of vehicles and generators.

- The plastic wastes are disposed of in the designated land fill.
- Currently, scrap metal is stored at designated locations across the site to be given to scrap metal collectors.

- Waste oil, and lubricants will be collected and disposed of in accordance with environmental regulations.
- Waste tires: Waste tires are used for decorations across Estate.

E3.3 PROJECT COMPONENTS

The proposed project will entail the following facilities:

i. Expansion of Existing Non-Organic Tea Farm

The project involves additional farming of 500 hectares of the existing farmland. It is planned that in the four consecutive years, 125-hectares will be planted with new tea, annually. Generally, the project will increase farm size from the existing 655-hectares to 1155-hectares.

ii. Expansion of Tea Factory

The processing capacity of the existing tea factory is now being fully utilized when the green leaf intake reaches the peak season. The project, also, involves procurement and installation of plant and machinery for the primary processing made tea.

iii. Macadamia Farming

The project will involve growing of macadamia in an area covering 200 hectares situated in Dindira Tea Estate of the METL Group. The project will entail land preparation, planting and maintenance of macadamia plantation and investment in the support facilities including farm equipment and other facilities. The project will earmark and develop different pockets of land which is part of the two tea estates. During the first four years the project will undertake soil preparation, planting fertilization, weeding, irrigation, mulching, pruning and pests and diseases control. The project is estimated to plant about 312 macadamia plants per hectare which is equivalent to 62,400 plants in the 200 hectares' farm.

E3.4 PROJECT ACTIVITIES

A. PLANNING PHASE

Activities to Be Involved in The Planning Phase Include;

i. Land preparation
ii. Planning and seeking of the appropriate approvals from the relevant authorities
iii. EIA Project Report preparation

B. CONSTRUCTION / RENOVATION / EXPANSION PHASE

Activities to Be Involved in This Phase Includes;

i. Expansion of Tea Plantation

The Tea planting and maintenance entail the following activities;

- Land Clearance: use of heavy-duty crawler tractors with suitable equipment such as dozer blades used to clear bush and old tea plants. The brush cut area is usually given rest of about two months to allow rotting of the brush cut plant materials. Also involves heaping, stumping and burning of the dead vegetative materials in order to prepare the land for ploughing.
- Land Cultivation: The use of heavy-duty tractors with appropriate equipment.
- Planting & Maintenance: Include measuring, holing, digging planting materials from mature nurseries, transport of the planting materials, actual planting, infilling of dead planted crop and application of fertilizers.
- Growing and fertilization, weeding, irrigation, mulching, pruning: The crop is planted using well-established nursery materials. Tea is plucked and collected from collection centers, and transported to the factory for processing.
- Pest and Herb Control: Involves the use of regulated pesticides and herbicides.
- Harvesting: Tea is plucked and packaged in back-baskets, before delivering to the collection centers. There are plans to automate the plucking using mechanical application.

ii. Macadamia plantation;

The origin of macadamia is Australia. The tree can reach a height of up to 20m. Grafted varieties take 3-4 years after planting to start producing while local varieties usually take 6-7 years. The project concept has been influenced by the growing opportunity in the macadamia market and the presence of adequate land and suitable climate for macadamia growing.

- Farming Practices; Suitable Ecological Conditions - Macadamia are tropical trees hence do well in areas where they get full sunlight but sheltered from wind for healthy fruit production. The soil required should be deep and well drained, acidic to slightly acidic with a Ph level of 5-6.5. Rainfall should be between 800-1200mm per year. The ideal range of temperature is between 16-250C.
- Irrigation - Irrigation is key during the first two years of the macadamia seedling development. A 60cm diameter basin is made to improve water holding capacity. At this young stage 20L of water is required every two weeks. Frequency of irrigation is reduced once the tree matures.

- Weeding - The southern green stink bug cannot survive on macadamia nuts alone but requires a primary food plant. Weeding hosts plants should be done since the stink bugs reproduce and develop here before feeding on macadamia. Non selective herbicides can be used in weed management in between the nut trees.
- Mulching - This done frequently to preserve moisture, nutrients and prevent growth of weeds.
- Pruning - These aids in maintaining a good structure of the tree and improving yields. It is done before flowering and after completion of harvesting. Fungicides can be used to disinfect pruning shears to prevent spread of diseases. Damaged wood is removed during pruning to reduce competition of nutrients.
- Crop Nutrition - Leaf and soil sampling are done in order to determine the fertilizer requirements of the crop.
- Pests and Diseases - Macadamia trees are potential to be infected by a range of pests and diseases including termites, stink bug, nut borer, mealybugs, scale infestation, thrips and caterpillars. Others are husk spot disease, root rot, macadamia canker and pre-mature nut drop. There are various pesticides and farm management practices for controlling the pests and diseases.
- Harvesting - Nuts are harvested when the skin begins to crack. The husk of unripe macadamia is white and usually changes to chocolate brown when ripe. The nuts are very easy to harvest as mostly drop off the trees when they are mature. It should be clear underneath the trees to facilitate easier collection of all the nuts. Processing of macadamia nuts involves removal of the outer shell to obtain the kernels. The project will procure and install machines for processing and packing macadamia kernels.

iii. Renovation of the factory production lines,

On the plant side, before it was a single-line tea factory installed with withering, CTC machine, CFU line, drying section, sorting/grading section and a boiler. The plant has an installed capacity to produce 2500 tons of made tea per annum. The proposed plan involves adding another production line in to the factory, this involves procurement and installation of plant and machineries for the primary processing

made tea. The project will involve replacement of the existing plant with a new 600 kg/hour capacity plant. Other utilities material supply.

iv. Buildings and Civil Works

The estate has plans to add office blocks, kitchen, sanitary facilities, access roads, residential houses for management staff, worker's quarters, factory buildings and stores buildings. and all support infrastructures.

Projects Resources; During this phase the project resources to be used are;

Water – water during this phase will be sourced from the natural spring water from the Usambara mountain range. The factory has water infrastructure including water tanks and water pipes connected to the factory sites.

Energy – source of energy to be used during this phase will be from the Tanzania Electric Supply Company (TANESCO). There is also one standby generator (Type - CUMMINS) with the capacity of 550 KVA.

Raw materials – Building materials will be sourced locally and transported to the project site from their extraction, manufacture, or storage sites using transport trucks. Raw materials during this phase will be Aggregates, Sand, Cement, Reinforcement bars, Timber and machines. The machines to be installed in the factory shall be procured from outside Tanzania.

Manpower – the management will hire approximately 100 workers to work on construction and renovation sites and other workers to work on the plantations.

Different machinery will be used to construct the additional project facilities. These will include: Bulldozers for clearing the site, removal of topsoil and vegetation materials, and pushing out stumps; Motor graders for grading and levelling land for buildings and access road formation; Tippers/lorries for transporting construction materials and workers; Heavy rollers for access roads compaction; Front-end loader for loading materials onto tippers and lorries; equipment like wheel burrows, shovels, picks; Concrete mixers; Earthmover; Compactor; Wheelbarrow; and Hammers and bolt and nut fasteners, hand saw, electric and gas welders, electric saws and grinders, load roller, trucks, hand drills and drill bits, wire cutters, concrete mixer trucks, wheel loader, forklift, excavator etc.

Project Construction / Renovation Wastes

It is anticipated that the project will generate a variety of waste during its construction / renovation phase. The characteristics of the wastes are discussed in this section.

i. Soil: The soil generated during excavation will be stockpiled along the foundation trenches and used for re-establishment of the site at the end of the project.

ii. Pieces of timber/wood, empty cement bags and pieces of iron steel: Large pieces of timber/wood generated during the construction phase will be transported back to the contractor's yard for reuse in future while the small pieces of timber/wood will be disposed-off. Empty cement bags will be collected and disposed to the dumpsite/ sold to local vendors.

iii. Empty paint buckets: The empty paint buckets will be disposed-off to registered plastic waste dealers.

iv. Excess sand and stockpiles: These can be used for future construction activities e.g., renovations. Upon completion of the project, these will be moved by the contractor to a suitable yard.

v. Domestic wastes such as Food remains etc.: The proponent will provide dust bins for temporary storage of waste within the premises before final disposal to the designated dumping site.

C. OPERATIONAL PHASE

During Operation Phase the following activities will take place; Tea processing which will include;

- Withering - Fresh green leaves will be brought to the factory and will be weighed at the factory upon delivery and spread in the troughs for the withering process. Air is blown through the leaves to reduce the moisture content to about 70%. During rainy season, the leaves are wet with surface moisture and therefore hot air is used to obtain the required wither. After overnight or 10-18 hours of withering the leaves are taken for further processing. The withered leaves are passed through green leaf sifter to remove sand if any and for uniform feeding in to the Rotor vane where the leaf is macerated to squeeze out the plant sap. Then the leaf material with the expressed sap is passed through CTC machine wherein the leaf undergoes crush, tear & curl process and delivered into a continuous fermenting machine through conveyor.
- Fermentation - The fermenting process is actually the oxidation of plant sap facilitated by blowing cold humid air. During this process the crushed tea leaf changes the colour from green to

yellowish green to reddish green and develop aroma. The time duration of fermentation has to be manually adjusted every day according to prevailing weather conditions. Under fermentation or over fermentation would drastically affect the quality of made tea.

- Drying - The tea driers are equipped with steam boilers and radiators to generate hot air to dry the tea and arrest the fermentation. The dried tea is black in colour with particles of different sizes and some plant fibres. At this stage the manufacturing process is over and is called bulk tea.
- Grading - The bulk tea is cleaned to remove the fibre (BMF grade) in Fibromat and graded in Vibroscreen. According to the size and density of the particles, tea is graded into BP1, PF1, PD & D1 (primary grades); and BP, PF, Fannings, Dust and BMF (secondary grades).
- Packing - The quality of tea varies day to day to some extent according to the standard of green leaf and weather conditions. Though Quality control is done during processing by periodical tea tasting, the graded teas of few days manufacturing are bulked before packing. For auction sale, primary grades are packed in paper sacks and secondary grades in PP bags.
- Tea sales - Garden invoices of 20 or 40 bags of each grade are made and sent various markets including the auction centers at Mombasa, Kenya and Dar es Salaam Tanzania. A portion of tea sales is via direct export to buyers abroad. The appointed tea brokers take sample and send to registered buyers. Auction sales take place every week and the sale realization are collected by the Broker and remitted to Seller after deducting the brokerage as per auction regulations.

Macadamia processing which will include;

- Harvesting - Nuts are harvested when the skin begins to crack. The husk of unripe macadamia is white and usually changes to chocolate brown when ripe. The nuts are very easy to harvest as mostly drop off the trees when they are mature. It should be clear underneath the trees to facilitate easier collection of all the nuts.
- Processing of macadamia nuts involves removal of the outer shell to obtain the kernels. The project will procure and install machines for processing and packing macadamia kernels.

Project Operation Materials / Resources

- Farm equipment and tools – The equipment to be used includes tea harvesting sacks, sprayers, tea plucking and pruning equipment and farm gears – gloves, boots, aprons and hats. In future, the company will use mechanical harvesting method.
- Motor vehicles –METL uses tractors to collect green leaf from the estate farms and out- growers' farms to the main roads for offloading to the trucks which transport the leaves to the factory. Currently, Dindira Tea Estate has a total of 12-tractors and 18 trucks.
- Office Furniture and Equipment - The project will use office furniture and equipment to replace the existing worn-out assets.
- Water – water during this phase will be sourced from the natural spring water from the Usambara mountain range. The factory has water infrastructure including water tanks and water pipes connected to the factory sites.
- Energy – source of energy to be used during this phase will be from the Tanzania Electric Supply Company (TANESCO). There is also one standby generator (Type - CUMMINS) with the capacity of 550 KVA and a boiler.
- Manpower – Currently the project employs over 17-including seasonal workers. At the factory workers are working in three shifts during peak seasons, but during low season only two shifts are taking place. Workers are provided with PPEs depending on their line of duty. After expansion the number of workers will increase depending on the season.
- Sanitary facilities - At the factory, there are fifteen sanitary facilities (Nine for male, five for female and one for management staff) and changing rooms used by the staffs.
- Infrastructure - The project site can be accessed by earth roads which are in good condition throughout the seasons, more access roads are still being constructed for easily transportation of goods and services. The estate uses tractors and motorcycles as their means of transport means within the farms and factory.

Project Operation Wastes

It is anticipated that the project will generate a variety of wastes during operation phase. These are;

a) Solid waste

Expected solid wastes to be generated are garbage waste like papers, food remains, packaging materials for agrochemicals, also fire wood bulks and ash from boiler.

- The biodegradable waste will be decomposed and used as manure for the farms.
- Packaging materials for Agrochemicals like empty herbicides cans are been stored in designated place and disposed off as per regulations.
- Fertilizer package; Used by filling up with sand to use for prevention of soil erosion.
- Wood bulks are being decomposed and used as manure, saw dusts are also spread in tea field as mulching, ash dust is being buried underground. Same procedure will be adopted after expansion of tea factory.

b) Liquid waste

The main sources of waste water will be from sanitation facilities. During operation phase at the factory, liquid wastes will be managed through septic tank and soak away pits.

c) Hazardous wastes

Hazardous wastes will be mainly due to scrap metal from used and worn – out production machines and vehicles, plastics and used oil from servicing of vehicles and generators.

- The plastic wastes are disposed of in the designated land fill.
- Currently, scrap metal is stored at designated locations across the site to be given to scrap metal collectors while used oil is reused in protecting firewood from insects.
- Waste oil and lubricants will be collected and disposed of in accordance with environmental regulations.
- Waste tires: Waste tires are used for decorations across Estate.

D. DECOMMISSIONING PHASE

The minimum lifespan of the proposed Tea factory might be more than thirty years though the actual time of decommissioning is uncertain. However, when it comes to decommissioning of the factory, major activities will be carried out to remove unused construction materials including demolition temporary structures. The developer will have to close the facility and rehabilitate the site back to its original

environmental status; the main challenge will be how to deal with the solid waste generated from the demolition of the structure for safe disposal.

Proper handling methods including disposal of solid waste must be followed as outlined in this EIA. Solid waste might be land filled in pits and covered with soil; preferably top soils stored to encourage indigenous trees and grass to regenerate or otherwise indigenous plants must then be planted to ensure the area returns to its original condition. The other challenge is how to deal with laid off labor force and the loss of income that was coming from the factory to the local communities and the national economy. Various mitigation measures are proposed in the previous chapter that will reduce the effect of decommissioning.

A detailed decommissioning plan that takes environmental issues into consideration shall be prepared by the developer prior to the decommissioning works. Should it be done, decommissioning may entail change of use (functional changes) or demolition triggered by change of land use. Therefore, what is presented here is just a Preliminary Decommissioning Plan which gives light to what shall be done if the need for decommissioning arises.

E4.0 ENVIRONMENT HEALTH AND SAFETY RISKS

The EHS risks related to the project activities are explained as follows

a) Environment risks;

- Dust Activation
- Noise
- Exhaust gas
- Visual Impacts
- Soil Erosion
- Loss of wetland
- Water Pollution (silt/Fertilizer)
- Bush Fires
- Waste Generation
- Social Issues
- Induced crime at tea farms

b) Safety & Health risks

- Dust Activation
- Noise
- Exhaust gas
- Motor Accidents
- Fatigue
- Cuts and bruises
- Snake or insect bites
- Ergonomics (transportation)
- Weather Conditions (Heat/Cold)
- Uneven Grounds
- Traffic Hazards impacting community
- Traffic hazards impacting company staffs

E5.0 POLICY AND LEGAL FRAMEWORK

Policies, legislation and regulations that apply and are relevant to the establishment and operations of the proposed project are discussed. They cover both the National and International aspects. For each policy, legal and regulatory guideline, the levels of compliance by the proponent based on ESIA study findings are recommended. This has been done to ensure that adequate measures are taken by the proponent to conform to the existing policies, laws, and regulations, and international best practices.

E6.0 RELEVANT INTERNATIONAL AGREEMENTS, CONVENTIONS AND TREATIES

Tanzania is signatory to a number of international agreements and conventions relating to environmental management, community rights and Indigenous Peoples. The international conventions are not always translated into national legislation. Some of the key agreements are listed in in the table below.

a) Climate Change/Air Quality

- Vienna Convention for the Protection of the Ozone Layer, 1985
- Montreal Protocol on Substances that Deplete Ozone Layer,1989

- United Nations Framework Convention on Climate Change (UNFCC), 1994
- Kyoto Protocol, 1997

b) Biodiversity/Protected Areas

- Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention), 1971
- Convention on the International Trade of Endangered Species of Wild Fauna and Flora (CITES), 1973
- United Nations Convention on Biological Diversity, 1992
- United Nations Convention to Combat Desertification, 1994

c) Labor/Health/Safety

- Constitution of the International Labor Organization
- Forced Labour Convention, 1930
- World Health Organization

d) Pesticides use

- Rotterdam convention

E7.0 AFDB OPERATIONAL STANDARDS

Operational Safeguards—OS - The Bank selected the Operational Safeguards (Oss) for inclusion in the ISS on the basis of the following considerations:

- Commitments in the Bank's existing policies;
- Relevance to key environmental and social issues in the region;
- Lessons learned from applying the environmental and social policies/procedures in the Bank;
- Commitments in the Bank's existing policies;
- Relevance to key environmental and social issues in the region;
- Lessons learned from applying the environmental and social policies/procedures in the Bank;
- Harmonization with other multilateral development banks and alignment with relevant international conventions and standards;
- Outcomes of stakeholder consultations; and
- Limiting the number of OSs to just what is required to achieve the optimal functioning of the ISS. The OSs are intended to:

- Better integrate considerations of environmental and social impacts into Bank operations to promote sustainability and long-term development in Africa;
- Prevent projects from adversely affecting the environment and local communities or, where prevention is not possible, minimize, mitigate and/or compensate for adverse effects and maximize development benefits;
- Systematically consider the impact of climate change on the sustainability of investment projects and the contribution of projects to global greenhouse gas emissions;
- Delineate the roles and responsibilities of the Bank and its borrowers or clients in implementing projects, achieving sustainable outcomes, and promoting local participation; and
- Assist regional member countries and borrowers/ clients in strengthening their own safeguards systems and their capacity to manage environmental and social risks.

The Operational Standards are;

- OS 1: Assessment and Management of Environmental and Social Risk and Impact
- OS 2: Labor and working Conditions
- OS 3: Resources Efficiency and Pollution Prevention and Management
- OS 4: Community Health, Safety and Security
- OS 5: Land Acquisition, Restrictions on Access to Land and Land Use, and Involuntary Resettlement
- OS 6: Habitat and Biodiversity Conservation & Sustainable Management of Living Natural Resources
- OS 10 Stakeholder Engagement and Disclosure of Information

E8.0 STAKEHOLDER CONSULTATION

Various stakeholders were consulted on 10th August, 2022 and 19th September, 2023, during the study stakeholders from various levels were consulted to obtain their views and concerns as well as the villagers attended the meeting to get clear information concerning the project and give out their views on the same. Also, a village meeting was done in Dindira Tea Estate on 20th September, 2023, where by eighty-nine (89) villagers attended. The information from the stakeholders was obtained through interviews, meetings and observation.

The stakeholders identified included;

- Korogwe District Council staff (District Executive Director (DED), Ag. District Environmental Management Officer (DEMO), Environmental Management Officer (EMO), District Land and Natural Resources Officer (DLNRO), Ag. District Agriculture, Irrigation and Cooperative Officer (DAICO)),
- Tewe Village,
- Tanzania Smallholders Tea Development Agency (TSHTDA)
- Project Proponent.

Some of the underlying issues raised are;

- Farm inputs
- Corporate social responsibility
- Job opportunity

E9.0 GRIEVANCE REDRESS MECHANISMS

A Grievance Redress Mechanism (GRM) is necessary for addressing the legitimate concerns of the project-affected persons. Grievance handling mechanisms provide a formal avenue for affected groups or stakeholders to engage with the project on issues of concern or unaddressed impacts. Grievances are any complaints or suggestions about the way a project is being implemented, and they may take the form of specific complaints for damages/injury, concerns around resettlement and compensation, concerns about routine project activities, or perceived incidents or impacts. GRM provide a formal avenue for affected groups or stakeholders to engage with the project on issues of concern or unaddressed impacts. In order to make this aim a reality, METL will develop a grievance handling mechanisms and procedures to address grievances associated with the proposed project related to PAP.

Levels of Grievances handling

The grievance redress mechanisms at Dindira Tea Estate will involve three levels as displayed below.

Level one;

- To resolve an issue quickly, politely, and transparently and amicably in order to facilitate project activities to move forward
- Existing mechanisms such as at the Village level will be utilized as needed to address complaints on specific issues depending on their nature.

Level two;

- Grievances that can't be resolved by team above or the one that's complicated in nature will be referred to the Higher Management who will be responsible for receiving and resolving grievances in a fair, objective, and constructive manner, all claims or complaints raised by project affected persons.

Level three;

- The PAP that will not be satisfied by the decision of METL Management will be advised to seek for further redress to the higher company leaders

Grievance Procedure for the extension and Operation of the Tea Estate

For a grievance to be fully resolved, a number of procedures that the whole process will go through should be followed as displayed below.

- Step one: Submission of Grievances
- Step Two: Logging the Grievance
- Step Three: Providing the Initial Response
- Step Four: Investigating the Grievance
- Step Five: Communication of the Response
- Step Six: Complainant Response
- Step Seven: Grievance Closure or Taking Further Steps if the Grievance Remains Open

E10.0 POTENTIAL SIGNIFICANT ENVIRONMENTAL AND SOCIAL IMPACTS

The development of the proposed project will lead to a number of potential impacts in each project cycle. The impacts were identified, predicted and assessed. These were done through checklists together with professional judgment of the consultant and basing other similar projects. Some of the impacts are;

Impacts associated with Renovation / Construction phase

Negative Social impacts

- HIV/AIDs, STDs and other diseases (i.e., COVID – 19)
- Incidences of risks, hazards and accidents
- Community Health and Safety

- Child Labour
- Labour Influx
- Occupational Safety and Health impacts
- Gender Based Violence/Sexual Harassment/Exploitation

Negative impacts on physical environment

- Impacts associated with solid waste generation
- Impacts associated with noise and vibration
- Impacts associated with disposal of sewage.
- Soil contamination

Positive Social Impacts

- Employment opportunities
- Income generation

Impacts associated with Operation phase

Positive social impact

- Increase in revenue to the National and District Government,
- Income generation to local communities/ villagers
- Corporate Social responsibility benefits
- Employment opportunities

Negative Social Impacts

- Increased pressure on social services and utilities
- HIV/AIDs, STDs and other diseases (i.e., COVID – 19)
- Child Labour
- Labour Influx.
- Gender Based Violence/Sexual Harassment/Exploitation

Negative impacts on physical environment

- Risks of fire hazards
- Impacts associated with Solid waste generation
- Soil contamination
- Ground water and surface water pollution

Impacts associated with Decommissioning phase

Negative Social Impacts

- Loss of employment
- Incidences of risks, hazards and accidents

Negative impacts on physical environment

- Impacts associated with Solid Waste Generation
- Dust emission
- Impacts associated with Noise and vibration
- Soil contamination
- Ground water and surface water pollution

E11.0 MITIGATION MEASURES

The Environmental mitigation consists of measures that can mitigate/reduce the negative environmental impacts associated with implementation (Construction / Renovation / Expansion, and Operation) of the project. Mitigation measures have been identified that would reduce both existing and potential impacts associated with the project development objectives during biding phase, construction / renovation / expansion, and operational phases.

Impacts Proposed Mitigation Measures

Impacts	**Proposed Mitigation Measures**
Air Quality Pollution	• Ensure adequate maintenance and repair equipment & Machineries. • Ensure that vehicles and machines are switched off when not in use. • Avoid burning materials resulting from onsite clearance • Ensure that persons working in areas prone to dust are provided PPEs • Ensure the use of high-quality diesel for generators and Vehicles • Maintain minimum traffic speed on-site and on access roads • Cover all vehicles hauling materials likely to give off excessive dust emissions • Regularly water spray surfaces to control dust emissions

Pollution of Water Resources	• Ensure to install sediment and erosion control measures • Follow guidelines and procedures for immediate clean-up of spillages (oil, fuel, chemicals) • Cover open stockpiles of construction materials on site with tarpaulins during rainstorm events to prevent the washing away of construction materials • Compact earthworks as soon as the final surfaces are formed to prevent erosion especially during the wet season • Ensure to grade gravel roads for maintenance of existing drainage patterns • Ensure to avoid dumping of construction waste into water bodies • Ensure that proper storage of chemicals and onsite materials is done
Wastewater Generation	• In the construction phase, proper containment and management of concrete washout within designated area. • Ensure that any unforeseen effluent releases from construction and operational activities are directed away from any natural and constructed waterways.
Impact on soil	• Landscape the excavated areas in a suitable way to allow native vegetation to regrow naturally • Suspend activities during extreme rainfall events • Ensure to Provide drainage channels and silt traps for all parts of the topsoil storage areas • Ensure to rehabilitate areas with topsoil and revegetate after completion of activities • Grade unpaved roads

Solid Waste generation	• Promote recycling and reuse of general refuse • Ensure that disposal of hazardous and non-hazardous waste is carried out in line with relevant national legislative and regulatory requirements; any hazardous waste generated on construction sites must be collected, transported and further • management by competent and licensed contractors • Prohibit the burning of refuse on the construction and operation site • Recycle onsite whenever feasible • Fence construction site to prevent flying materials to deposit in nature • Ensure that vehicles transporting wastes are fully covered • Ensure adequate onsite waste segregation, including segregation at source for all waste streams (hazardous waste, various recyclables etc.) • Adopt good housekeeping practices during all phases of the project • Prohibit all forms of littering on-site
Noise generation during the construction works	• Keep equipment speed as low as possible • Minimize idling time for pickup trucks and other equipment • Limit site working hours where feasible • Ensure that all workers exposed to noise emanating environment are equipped with hearing protection and relevant PPEs • Schedule noisy activities during the morning hours • Enforce noise monitoring • Inform the locals when noisy activities are planned • Utilize and properly maintain silencers or mufflers that reduce vibration on construction equipment • Operate only well-maintained mechanical equipment on-site
Employment opportunities	• Ensure to set up a formal compliant register system which responds to complaints about nuisances in a timely manner

	• Adopt policies for recruiting locally and hiring local sub- contractors as much as possible • Include local communities in the consultations and participation process throughout the project activities • Ensure high rate of local employment to minimize influx of foreign workers • Ensure equal employment opportunities • Adhere to prohibition of child labour • Prohibit discrimination in any form or manner such as religion, ethnicity, tribe, creed etc. • Adopt a grievance mechanism to enable the communities and employees to relate concerns that arise from the Project or Contractors.

Occupational health and safety risks	• Provide surveillance and active screening of workers • Provide health care benefits to workers and Conduct health awareness initiative • Ensure that employee/workers/ contractors are informed about the risks and prevention methods for Covid 19, HIV, STDs, and others • Conduct firefighting and leak checks training drills for staff • Ensure that workers are qualified, well trained and instructed in handling their equipment, including PPEs • Install warning signs at the entrance of the site to prohibit public access • Provide appropriate PPE (gloves, work ing overalls, safety boots, safety helmets, ears muff for workers exposed to noise levels exceeding 85 dBA) • Develop and implement an Emergency Preparedness & Response Plan • Designate an area where contaminated materials and hazardous can be stored for proper disposal in line with relevant statutes and regulations • Provide training to personnel on occupational health and safety and safety procedures prior to beginning work at sites • Ensure that presence of an onsite first aid treatment facility • Adopt good housekeeping practices for ensuring hygiene on site • Ensure the presence of firefighting equipment such as dry powder extinguisher • Ensure that safety specialist is recruited to manage the preparation, implementation, and maintenance of a comprehensive safety program • Ensure that protective materials are used at all times

E12.0 PROJECT ALTERNATIVES

The project alternative is defined as a possible course of action, in place of another that will meet the same purpose and needs. The role of project alternatives is to find the most effective way of meeting the need and purpose of the project, either through enhancing environmental benefits of the proposed

activity, and or through reducing or avoiding potentially significant negative impacts. The assessment has therefore analyzed the following alternatives:

i. No project alternative
ii. Different Site Selection/ Location.
iii. Alternative Source of Water
iv. Alternative Source of Power
v. Solid Waste Management Alternatives
vi. Waste Water Management Alternatives
vii. Alternative for use of firewood
viii. Alternative pesticides

E13.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The options to minimize or prevent the identified social and environmental impacts as well as a monitoring plan have been suggested in this report and are contained in the ESMP. Many of them are based on good environmental and engineering practices. The Environmental and Social Management Plan (ESMP) presents the implementation schedule for the proposed mitigation measures to both environmental and social impacts as well as planning for long-term monitoring activities. The ESMP also includes the associated environmental costs needed to implement the recommended mitigation measures. The engineering designs have already included some of the mitigation measures recommended in this report. Additional recommendations are provided in the ESMP to enable the proposed Plant become more environmentally friendly. The implementation steps will involve the proponent, including the local government offices, Contractor, NEMC, OSHA, FIRE and Rescue force and some utilities provider, and the local communities at large.

Financing agency - Mohammed Enterprises Tanzania Limited (METL) is the financing agency for this project. They are responsible for providing funds for implementation of mitigation measures and compliance monitoring.

Implementing agency - The implementing agency for this project is the Mohammed Enterprises Tanzania Limited (METL). The organization holds final responsibility for the environmental performance of the project. The implementation steps will involve the proponent, including the local government offices,

Contractor, NEMC, OSHA, FIRE and rescue force and some utilities provider, and the local communities at large.

METL ENVIRONMENT SOCIAL HEALTH AND SAFETY (ESHS)

METL will allocate sufficient management, human and financial resources on an ongoing basis to ensure that all ESHS policies, commitments and plans are met.

The ESHS (EHS Department) is a sub-section under Compliance and Sustainability Section, operating under the HR Department. There are three HSE Managers in charge of

i. Food Industries
ii. Non-Food Industries, and
iii. Agriculture projects.

The management office is based at Dar-es-Salaam. The field units are spread over the country, and are managed by Field HSE Officers.

The HSE Officers play advisory roles to the Unit Heads, but also inspect/monitor activities. They report to the Unit Heads on ESHS needs, and to the EHS Managers/Head of Compliance Unit on relative key issues affecting ESHS on ground. They also document and database field-based data, simplify communication on regulatory requirements for Unit use and follow-ups.

The EHS Managers make a close follow-up on the progress of EHS Officers, capacity build the officers, and communicate with the Compliance Manager on key issues affecting the respective clusters as they cascade advises to the Unit EHS Officers. The EHS managers make periodic strategic field visits. Each of the units have internal EHS Committee, chaired by the Unit head, and with the HSE Officer acting as the Secretary.

Some of the field units are in clusters represented by a Field HSE Officer who coordinates with the Unit Head and EHS Committee. Their distribution is as follows:

METL Region	Specific Units
Moshi/Kilimanjaro Units:	A-One Moshi, Hussein at Mwanga and Hassani near Same

Tanga Units:	Mazinde, Mjesani, Dindira and Arc Mountain with the regional office at Tanga
Pwani/Morogoro Units	Alavi and Fatemi
Mbeya Units	Chivanjee Tea Estate and A-One

Before making recent changes, HSE Officers were only two for all units, and were based at Tanga and Morogoro. The changes have seen additional two HSE Officers being absorbed for Moshi and Mbeya. Additionally, three qualified HSE Managers were incorporated to develop the management system and to guide the HSE Development process. The existing HSE Officers will be capacity built for competency in dealing with the projected expansions. Additional HSEs shall be considered depending on the progressive challenges.

- Supervision Consultant - The Supervision Consultant is appointed by the implementing agency and is responsible for monitoring and supervision of the construction works including implementation of ESMP. The Consultant shall appoint a Resident Engineer to oversee the construction works and monitor the works undertaken by the Contractor and implementation of ESMP to ensure compliance with contract specification and contractual requirements. However, for supervision and monitoring of the implementation of ESMP throughout the construction phase the implementing agency can engage an Independent Environmental Consultant team. The Environmental Consultant team (including Environmental Scientists, Sociologists and Environmental Engineers) shall be responsible for environmental compliance monitoring. This includes checking, verifying and validating the overall environmental performance of the project through regular audits, inspection and review of project submissions.
- Contractor - The Contractor shall be responsible for implementation of construction works and ensure compliance with environmental requirements. The Contractor shall appoint a Site Engineer who shall be responsible for implementation and management of the ESMP programme and the required environmental monitoring works. Most important will be occupational safety and Health of workers. METL will require the Contractor to allocate sufficient management,

human and financial resources on an ongoing basis to implement all ESHS policies, commitments and plans. METL will require the Contractor to ensure that all personnel including skilled and unskilled labour, foreign and local employees, supervisory and supporting staff, site engineers, foremen, office staff, and managers, are aware and capable of their responsibilities in relation to ESHS management.

- Local government authorities and local NGOs / CBOs - The involvement of local authorities is crucial for successful implementation of ESMP because some of the mitigation measures are better undertaken by local communities with the support of the Local Government Authorities and NGOs. It is therefore important that the Korogwe District Council be involved in the implementation of ESMP. The respective Local Government Authorities and local NGOs should be well informed and invited to comment on the ESIA report at the design stage rather than when all major decisions have been made. One copy of this report should be sent to Korogwe District Council to ensure that, the Council through its Environmental Management Officer will be involved in monitoring compliance with mitigation measures.
- Local communities - In general, the local communities do support the project because they know it is going to benefit them and the nation at large. However, the project can obtain maximum benefit if it involves the local communities and spends some amount of funds for the benefit of the local communities.

HEALTH AND SAFETY MANAGEMENT PLAN - Health Safety Management Plan (HSMP) helps in implementation, maintaining and continually improve Health and Safety management system in accordance with the requirements of Occupational Health and Safety Assessment Series (OHSAS) standards. It is therefore important that this is reflected in the project operations and responsibilities of every level of management within an organization. This plan shall help to implement the Safety and Health direction of project phases. It clearly states the requirements of donors, legislations, suppliers, management and employees in Safety and Health management.

Responsibilities

- METL Management: The management is committed to the principle of safe working and desires that on no account should any person ever be exposed to risk.

- Supervisors: It is the responsibility of the Supervisors to review and ensure awareness of emergency procedures among all the personnel.
- Employees: It is also the responsibility of all employees to continually familiarize themselves with the assembly procedures for their relevant areas of work.
- General: Any information being relayed about an emergency shall be clear and precise giving the exact location, the nature of the emergency and the seriousness of the emergency and contact numbers and names.

Training - Suitable training will be provided to all personnel during various stages of the project and when new work force is added.

Awareness - Necessary posters and boards announcing action in case of an emergency will be put up at prominent places, and at all assembly areas.

Emergency plan - All actions will be coordinated with the overall emergency plan operated by the Supervisor. The General Manager is overall responsible to coordinate all emergency procedures along with the Health & Safety Manager. All emergency telephone numbers and contact names shall be posted at strategic points on site. Subsequent actions as listed below will be taken either as in instruction from the Supervisor.

- Stop all work and report to the nearest evacuation area/ assembly area and await further instructions.
- Stop all equipment and vehicles.
- Contact the Health & Safety Manager and relay message to the Supervisor and General Manager.
- Ensure all personnel are aware of the emergency.

Assembly Point - In an emergency all personnel are to proceed in an orderly manner to the nearest safe assembly point

Head Count - The Supervisor shall take a head count and check all employee's area at the assembly point. He /She shall also inform the General Manager of the result of the head count.

Rescue Team - For missing personnel, a rescue team will be formed in consultation with the Engineer and depending upon the type and status of emergency, all efforts will be made to rescue the missing personnel.

Fire Fighting - In case of a fire, after the alarm has been sounded, all efforts will be made to put off the fire by use of fire extinguishers, fire hydrants, hoses etc. until more professional help come. Fire extinguishers will be available on site at strategic locations near stores, laydown area, and electrical distribution cabinets.

All Clear - Normal work will be resumed only after all clear signal is received from the Supervisor. As such the supervisors shall make all arrangements to meet the concerned authorities.

E14.0 PROPOSED MONITORING AND AUDITING

Recommendations for monitoring have been included in the report. The Monitoring Plan also assigns responsibilities for monitoring activities. However, the proponent in collaboration with Local Government Environmental Committees and District Environmental Committee will participate in the long-term daily monitoring of the project. It is recommended that environmental audits be carried out on the project as part of the on-going maintenance programme. The audits will unveil the actual performance of mitigation measures and will allow effective measures to be included in future projects based on the legislation in force. As per operative EIA documents in Tanzania, Environmental Audits would be a responsibility of the developer and the National Environment Management Council (NEMC).

E15.0 RECOMMENDATION

The EIA study recommends two major things. For the identified positive impact; there is need to improve and enhancing them throughout the project run. Specifically, the project should operate within given rates/ standards to avoid damage in environmental, social and economic rules of the country. Pilot rules for such as safety, health and standards as guided by responsible organ/institution must be adhered adequately in order to minimize the occurrence of the identified impacts and hazards. Also, the factory Manager should follow appropriate mitigation measures proposed in this report for the environmental sustainability of the area. That is, to have a long-term solution for conserving environment and safety concerns, the Plant Management should use an Environmental Management Plan (EMP) developed regularly to audit environmental parameters for compliances. Nevertheless, the effective implementation of EMP requires financial commitment from the project proponent. In this regards some

cost estimates for mitigation measures have been included in EMP. It is anticipated that the project proponent shall be able to allocate adequate funds annually in order to implement the EMP.

LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunity Deficiency Syndrome
C:	Degrees Centigrade
CTC:	Cutting, Tearing & Curling
dB	Decibel
DOE	Division of Environment
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMA	Environmental Management Act
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESIA	Environmental and Social Impact Assessment
ES	Environmental and Social
ESA	Environmental and Social Assessment
ESMP	Environmental and Social Plan
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
GBV	Gender-Based Violence
GCF	Green Climate Fund
GHG	Greenhouse Gas
GM	Grievance Mechanism

GIIP	Good International Industry Practice
HIV	Human Immune Virus
ILO	International Labour Organization
IPM	Integrated Pest Management
IRM	Independent Recourse Mechanism
ISS	Integrated Safeguards System
KVA	Kilo Volt Amperes
NEMC	National Environment Management Council
METL	Mohammed Enterprises (Tanzania) Ltd
NEP	National Environment Policy
NGOs	Non-Governmental Organizations
OHS:	Occupational Health and Safety
O&M	Operation and Maintenance
OP	Operational Policy
OS	Environmental and Social Operational Safeguard
OSHA	Occupational Safety and Health Authority
PMP	Pest Management Plan
PPE	Personal Protective Equipment
PPP	Public-Private Partnership
RAP	Resettlement Action Plan
RHA	Risk Hazard Assessment

SDGs	Sustainable Development Goals
SEAH	Sexual Exploitation, Abuse and Harassment
SEP	Stakeholder Engagement Plan
SESA	Strategic Environmental and Social Assessment
TANESCO	Tanzania Electricity Supply Company
TASHTDA	Tanzania Small Holder Tea Development Agency
TBS	Tanzania Bureau of Standards
TBT	Tea Board of Tanzania
TIN	Taxpayer Identification Number
TOR	Terms of Reference
URT	United Republic of Tanzania
VAT	Value Added Tax

Contents

ACKNOWLEDGEMENT ii

STUDY TEAM iii

EXECUTIVE SUMMARY iv

LIST OF ABBREVIATIONS AND ACRONYMS xxxvi

CHAPTER ONE 1

1.0 Introduction 1

1.1 Project Background 1

1.2 Project Proponent Profile 3

1.3 Project Consultant Profile 3

1.4 Project Rationale 3

1.5 Objective of Environmental and Social Impact Assessment Study 3

1.6 Scope of work 3

1.7 ESIA Approach and Methodology 4

1.7.1 Approach 4

1.7.2 Methodology 4

1.8 Report Structure 7

CHAPTER TWO 8

2.0 Project Description 8

2.1 Introduction 8

2.2 Nature of the project 8

2.3 Project Location and Accessibility 9

2.4 Land tenure, use, ownership and management 9

2.5 Existing Environment and Surrounding 9

2.5.1 Farm Services/inputs and Out-growers 10
2.5.2 Packaging of the products 11
2.5.3 Storage of the materials and management at site 11
2.5.4 Equipment's used on site 12
2.6 Current Waste Management 12
2.7 Project components 13
2.7.1 Expected Output 14
2.7.2 Quality Assurance and Quality control 14
2.8 Project Activities 14
2.8.1 Planning Phase 14
2.8.2 Construction / Renovation/ Expansion phase 15
2.8.3 Operational Phase 21
2.8.4 Decommissioning Phase 25
2.9 Environmental Health and Safety related risks 27
2.10 Project Utilities 28
2.11 Project Boundaries 29
2.12 Market Analysis 31
2.13 Project Investment Cost 31
CHAPTER THREE 32
3.5 Administrative Framework / Institutional Arrangement 59
3.6 Environmental and Social Management Framework 63
3.6.1 Operational Safeguards-- OS 63
3.6.2 Relevant E&S Operational Standards (Oss) 64

3.6.3 Good International Industry Practice (GIIP) 68
CHAPTER FOUR 70
4.0 Environmental and Social Baseline Conditions 70
4.1 Introduction 70
4.2 Physical characteristics 70
4.3 Biological Environment 72
4.4 Socio Economic Activities 72
4.5 Baseline Measurements for Occupational health and safety at the factory 76
4.5.1 Air quality 77
4.5.2 Dust level measurement 78
4.5.3 Sound level measurement 78
CHAPTER FIVE 80
5.0 Stakeholder Involvement 80
5.1 Overview 80
5.2 Stakeholder Engagement Plan (SEP) 80
5.3 Approach and Methodology 82
5.3.1 Approach 82
5.3.2 Applied Study Methodology 83
5.4 Identification of Issues and Problems 83
5.5 Identification of Stakeholders 84
5.6 Stakeholders Views and Concerns 84
5.7 Grievance Redress Mechanisms 89
5.7.1 Levels of Grievances handling 89

5.7.2 Grievance Procedure for the extension and Operational of the Tea Estate 90

CHAPTER SIX 95

6.0 Impact Assessment 95

6.1 Overview 95

6.2 Impact significance 95

6.3 Positive Impacts – Construction /Renovation / expansion Phase 95

6.4 Negative Impacts – Construction / Renovation / expansion Phase 96

6.5 Positive Impacts – Operational Phase 98

6.6 Negatives Impacts –Operational Phase 99

6.7 Positive Impacts - Decommissioning Phase 101

6.8 Negative Impacts - Decommissioning Phase 102

CHAPTER SEVEN 104

7.0 Mitigation and Enhancement Measures 104

7.1 Overview 104

CHAPTER EIGHT 122

8.0 Project Alternatives 122

8.1 Overview 122

8.2 No Project Alternative 122

8.3 Project Alternative 122

8.4 Different Site Selection/ Location. 123

8.5 Alternative Source of Water 123

8.6 Alternative Source of Power 124

8.7 Solid Waste Management Alternatives 124

8.8 Waste Water Management Alternatives 125
8.9 Alternative for use of firewood 125
8.10 Alternative pesticides 126
CHAPTER NINE 128
9.0 Environmental and Social Management Plans 128
9.1 Overview 128
9.2 Institutional roles and responsibilities 128
9.2.1 Financing agency 128
9.2.2 Implementing agency 128
9.2.3 Mohammed Enterprises Tanzania Limited ESHS 129
9.2.4 Supervision Consultant 130
9.2.5 Contractor 130
9.2.6 Local government authorities and local NGOs / CBOs 131
9.2.7 Local communities 131
9.3 Health and Safety Management plan 131
9.3.1 Responsibilities 132
9.3.2 Training 132
9.3.3 Awareness 132
9.3.4 Emergency plan 132
9.3.5 Ensure all personnel are aware of the emergency Assembly Point 133
9.3.6 Head Count 133
9.3.7 Rescue Team 133
9.3.8 Fire Fighting 133

9.3.9 All Clear 133
CHAPTER TEN 146
10.0 Environmental Monitoring Plan 146
10.1 General Overview 146
10.2 Implementation of monitoring plan 147
10.3 Monitoring Frequency and Reporting 153
CHAPTER ELEVEN 155
11.0 Conclusion and Recommendations 155
11.1 Conclusion 155
11.2 Recommendations 155

LISTS OF TABLES

Table 1; Lead consultant information (Team leader) iii
Table 2; Workers Quarters Construction specification/ materials 18
Table 3; Types, amounts and treatment/disposal of wastes during the construction phase 20
Table 4; Types, amounts and treatment/disposal of wastes during the operation phase 24
Table 5; Relevant International Agreements, Conventions and Treaties 56
Table 6; Institutional framework 61
Table 7: Average values of Measured Ambient Gaseous Emissions 77
Table 8; Average values of measured Dust levels 78
Table 9: Onsite noise (dBA) levels 79
Table 10; Approach to SEP 81
Table 11: Categories of issues and problems 83
Table 12: Stakeholders consulted and their views 84
Table 13; Levels of grievance redress mechanisms 90
Table 14; Grievance Procedure 91

Table 15; Impacts Mitigation / Enhancement measures 104
Table 16: Shows Environmental and Social Management Plan 134
Table 17; Monitoring plan for the proposed project 147
Table 18; Environmental Monitoring Plan 149

CHAPTER ONE

1.0 Introduction

1.1 Project Background

Tea, is the most widely consumed beverage in the world, it has strong historical, socio-economic and cultural importance in tea growing communities. For developing countries, like Tanzania, tea is an important commodity in terms of jobs creation and export earnings. In Tanzania, tea is grown in about 23,000 ha and the sub-sector is divided between estates (above 200 ha farms) and out-growers (less than 200 ha farms), which include medium-scale farmers with average tea holdings of 16 ha and small-scale farmers with an average 0.37 ha.

The macadamia nut tree is a fast-growing, medium-sized evergreen tree with heavy, dark green foliage. Macadamia is a genus of four species of trees indigenous to Australia. Currently, macadamia plants are grown in various regions of the world, namely Brazil, United States, Costa Rica, Israel, South Africa, Kenya, China, Bolivia, New Zealand, Colombia, Guatemala and Malawi. Macadamia plant provides a valuable source of nutrition via a hard-shelled nut. The nut is rich in a variety of nutrients like Vitamins B6, B12, and micronutrients, to name a few. Macadamia nuts possess more fat than conventional nuts.

The proposed project involves increasing production of non-organic tea and macadamia nuts in Tanzania. The project will, also, involve expansion of tea factory facilities to match with the expected increase in tea production from the estates as well as small-holder's tea farmers.

Benefit of the project

The proposed project is expecting to benefit local communities' / Tea farmers in terms of employment and creating linkages with local economy. The facility will require work force from local communities during construction and operation, which is expected to benefit local communities. These benefits will in turn trickle down to the local economy. Similarly, the project will directly benefit local communities and promote local economy in terms of increased use of local resources sale including sale of goods and services to the Factory.

Projected Profitability

The analysis of the profitability of the overall project indicates that the project is a profitable undertaking with long-term-term returns to the investors.

The overall gross margins are projected to average 50% resulting increased non-organic tea farming and new tea processing machines. The project Net Margins are projected to increase from an average of 6% to about 24% in a 10- year period. The summary of the projected Profit and Loss Statements for the first 10-years of operation is presented. The project has assumed corporate tax of 30% on the profit after finance costs.

Other Economic Benefits

- Tax Income – the project will pay income taxes, property taxes, corporate taxes and other taxes to the government.
- Dividends – the shareholders will receive dividends from the project.
- Jobs Creation – the project supports more than 400 direct jobs and 0ver 2,000 indirect employments.
- Source of foreign currency- the project will produce non-organic Made Tea, an export crop which will earn the country the much-needed foreign currency.
- Agricultural development - The project will add value of small-scale as well as large- scale agriculture in the country, an important factor for the country's economic growth and development.

The Legislation in Tanzania requires project Proponents to carry out an Environmental Impact Assessment (EIA) for the undertaking prior to implementation. Being aware of the aforementioned legal requirement, the proponent (Mohammed Enterprises Tanzania Limited) commissioned ARMS on Environment Limited to conduct Environmental Impact Assessment for the proposed Expansion of Tea Plantation, Tea Factory and Macadamia Farming in Tewe Village, Maple Ward, Korogwe District, Tanga Region.

In this regard, the EIA study is conducted in accordance with the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulation of 2018.), formulated after the Environmental Management Act No. 20 of 2004. The Regulation gives mandate to NEMC to oversee the EIA process, which culminates with an award of the Environmental Permit (EP) by the Ministry responsible for Environment.

1.2 Project Proponent Profile

Mohammed Enterprises Tanzania Limited has numerous industries in Tanzania. In the agriculture sector they focus on among other things production of Non – Organic Tea, sisal, cotton, cashew, and palm oil.

1.3 Project Consultant Profile

ARMS ON ENVIRONMENT LTD is a registered Company with certificates of incorporation No. 63081 since 6 November 2007 with TIN number 106-824-495 and business license be 01384953. The company has been registered with the National Environment Management Council (NEMC) allowed to undertake Environmental Impact Assessment (EIA) and Environmental Audit (EA) with registration number NEMC/EIA/0013 and EA registration Number NEMC/EA/0011 of 2002.

1.4 Project Rationale

The proposed project has been planned for purposes of increasing production of non-organic tea and macadamia nuts in Tanzania. The project will, also, involve expansion of tea factory to match with the expected increase in tea production from the estates as well as small-holder's tea farmers.

1.5 Objective of Environmental and Social Impact Assessment Study

The objective of the ESIA study was to ensure that environmental concerns are integrated in all project activities in order to contribute to sustainable development. The specific objectives of conducting the Environment and Social Impact Assessment study with respect to the project was:

- To identify and evaluate the significant environmental impacts of the project
- To evaluate the impacts of the various alternatives on the project
- To propose mitigation measures for the significant negative impacts of the project on the environment.
- To generate baseline data for monitoring and evaluating impacts, including mitigation measures during the project cycle.
- To seek the views and concerns of all stakeholders in regards to the proposed project.
- Develop an Environmental and Social Management Plan with mechanisms for monitoring and evaluating compliance and environmental performance.

1.6 Scope of work

This study entailed the following: -

- To provide description of the relevant parts of the project including project location, design, components and activities;
- To review of policies, legislation, standards and regulations governing Environment at International, Regional and Local levels;
- To assemble, evaluate, and present baseline data on the relevant environmental and social characteristics of the project area;
- To make consultation with Government agencies, local communities and the private sector operating near the project area;
- To assess and quantify the potential environmental impacts resulting from the building development, especially within the zone of influence of the project;
- Describe alternatives that were examined in the course of developing the proposed project and identify other alternatives, which would achieve the same objectives;
- To develop an Environmental Management Plan (EMP) detailing actions and responsibilities for impacts mitigation and monitoring.

1.7 ESIA Approach and Methodology

1.7.1 Approach

Several approaches and study methods to be used in carrying out this assignment with the view of obtaining quantitative and qualitative data (baseline data) in order to prepare the report. Main approaches used were;

- Follow Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulation of 2018.)
- Follow broad ecological examinations such as transect walk and detail analysis of the project area.
- The scoping is being undertaken as initial stakeholder identification through identification of issues, problems and concerns, summary of results and ToR for EIA.

1.7.2 Methodology

The ESIA study for the project was carried out in accordance with the approved Terms of Reference. The study included the following methodologies:

- Meeting and Interview;
- Review of Documents;
- Transect Walk
- Site visits;
- Measurement of environmental parameters

a) Meeting and Interview

Key stakeholders were identified and specific meetings and interviews schedules to gather their views and perceptions on the project. Some of the key Stakeholders consulted in this process include the following; Korogwe District Council staff (District Executive Director (DED), Ag. District Environmental Management Officer (DEMO), Environmental Management Officer (EMO), District Land and Natural Resources Officer (DLNRO), Ag. District Agriculture, Irrigation and Cooperative Officer (DAICO)), Tewe Village, Tanzania Smallholders Tea Development Agency (TSHTDA) and Project Proponent. Some of the noted underlying issues are related to the source of water, safety, waste management, and infrastructure.

b) Review of Document

Reviews involved acquisition and review of project documents, reports, maps and drawings relevant to the project. Other documents reviewed included different pieces of national legislation, policies, guidelines and regulations as well as international policies and guidelines and procedures.

c) Site visits

The objectives of site visits were to observe and capture baseline data on the existing biophysical and socio-economic environment of the project area. In addition, the visits provided an opportunity to consult stakeholders and senior government officials on their views regarding the project and its potential impacts

d) Transect Walk

The EIA team undertook a transect walk around the project site. This exercise was carried out in order to observe physical features existing in the project site to establish relationships with the project building that pose environmental and social issues worth noting for studies and identify the major environmental and socially sensitive receptors. The transect walk was undertaken in sub wards in the vicinity of the project to consult members living near the project site.

e) Measurement of environmental parameters

The ESIA team collected and analyzed baseline air quality and noise level at the proposed project site. Five (4) sampling locations were selected based on relative distance to the proposed project sites, and existing multiple sources of air pollution in the campus. The ESIA team considered the four corners of the project site and the standby generator to be the main sources of air pollution at the area.

The collection of data was done around 1420hrs to 1800hrs) so as to predict the level of air quality during the construction phase.

- *Measurement of ambient dust levels (PM2.5 and PM10)*

Dust levels from the sampling points were determined using the Air quality detector (HT-9600). The equipment is capable to sample dust in the range from 0.01 to 2500 mg/m^3 with a resolution of 0.001 mg/m^3 or (1µg/m^3). The Air quality detector (HT-9600) measures particulate concentrations using a near forward angle light scattering technique. Infrared light of 880 nm wavelength is projected through the sampling volume where contact with particles causes the light to scatter. The amount of scatter is proportional to the mass concentration and is measured by the photo detector. Samples were collected at a breathing height of approximately 1.5 meters above the ground.

- *Ambient Gaseous Assessment*

The ambient air quality (gases emission) to the sampling locations was assessed using Portable Multi Gas Detector BH-4S model. The instrument operates using a heated metal oxide semiconductor. The gas molecules adsorb onto the heated surface where an oxidation-reduction reaction occurs causing a change in the electrical conductivity of the metal oxide. This change is proportional to the concentration of the gas of interest.

The gas detectors established the air composition characteristics by recording the proportions of Oxygen (O2) [%], Methane (CH4) [%], Carbon monoxide (CO) [mg/m^3], Carbon dioxide (CO2) [%], Nitrogen oxide (NO) [mg/m^3], Nitrogen dioxides (NO2) [mg/m^3], Sulphur dioxide (SO2) [mg/m^3], and Hydrogen sulphide (H2S) [%]. At the sites, the equipment was mounted at 1.5m above the ground. Three reading were collected at each sampling point, and the mean value was used as a representative value of that particular point. Results were compared with local and international standards.

- *Ambient Noise Levels*

Noise levels assessment was carried out using a Digital Sound Level Meter at a range of 30dB – 180dB

(A). On taking measurement, the meter was set to the "A" weighed measurement scale, which enables the meter to respond in the same manner as the human ear. The "A" scale is applicable for workplace compliance testing, environmental measurement, and workplace design and law enforcement. The meter was held approximately 1.5 m above the floor and at least 0.5 m away from hard reflecting surfaces such as walls.

1.8 Report Structure

The ESIA study was prepared as per the guidelines provided under the Environmental Management Act No. 20 of 2004 (Cap 191) (Amendment 2018) and its subsequent EIA and Audits Regulations GN 349 of 2005. Thus, EIS is comprised of the following;

a) Executive Summary
b) Introduction, objectives, rationale and methodology
c) Project description, location and relevant components of the project and project activities
d) Policy, Legal and Administrative Framework
e) Baseline Information
f) Public Participation and Stakeholder's Consultations
g) Assessment of Impacts and Identification of Alternatives
h) Environmental Mitigation measures
i) Environmental and Social Management Plan
j) Environmental and Social Monitoring Plan
k) Cost Benefit Analysis
l) Decommissioning
m) Summary and Conclusions
n) List of References

CHAPTER TWO

2.0 Project Description

2.1 Introduction

In this chapter an attempt has been made to describe the location and accessibility of the project site, project boundaries, existing situation, project components, project utilities, and project activities to be undertaken.

2.2 Nature of the project

The proposed project will therefore entail the following facilities:

1. Expansion of Existing Non-Organic Tea Farm

The project involves additional farming of 500 hectares of the existing farmland. It is planned that in the four consecutive years, 125-hectares will be planted with new tea, annually. Generally, the project will increase farm size from the existing 655-hectares to 1155-hectares.

2. Expansion of Tea Factory, building and other civil works

This is a double-line tea factory installed with withering, CTC machine, CFU line, drying section, sorting/grading section and a boiler. The plant has an installed capacity to produce 2500 tons of made tea per annum. The proposed plan involves adding another production line in to the factory, this involves procurement and installation of plant and machineries for the primary processing made tea. The project will involve replacement of the existing plant with a new 600 kg/hour capacity plant. The management also has plans to add office blocks, kitchen, sanitary facilities, access roads, residential houses for management staff, workers quarters, factory buildings and stores buildings. and all support infrastructures.

3. Macadamia Farming

The project will involve growing of macadamia in an area covering 200 hectares situated in Dindira Tea Estate of the METL Group. The project will entail land preparation, planting and maintenance of macadamia plantation and investment in the support facilities including farm equipment and other facilities. The project will earmark and develop different pockets of land which is part of the two tea estates. During the first four years the project will undertake soil preparation, planting fertilization, weeding, irrigation, mulching, pruning and pests and diseases control. The project is estimated to plant

about 312 macadamia plants per hectare which is equivalent to 62,400 plants in the 200 hectares' farm.

2.3 Project Location and Accessibility

The proposed project area is located on plot no. 1, Block A, Tewe Village, Maple Ward, Korogwe District, Tanga Region. The Estate is situated on the slopes of Usambara mountain ranges in Korogwe District, Tanga region. The Estate is located in the Northeast Tea Growing Zone of Tanzania. The Estate can be accessed by Road Via Old Korogwe road to the Dindira Tea Estate. The tea estate is bordered by other farms and villages.

Table 2; Coordinates for the Proposed Area

GPS Coordinates of the proposed site		
	East	North
Point A	432500.00	9445000.00
Point B	435000.00	9447500.00
Point C	437500.00	
Point D	440000.00"	

Source: EIA team on 10th August 2022

2.4 Land tenure, use, ownership and management

The land has title no. 7902. All that piece or parcel of land situate at Dindira in the District of Korogwe, consisting twenty thousand and sixty-one (2061) ha or thereabouts.

2.5 Existing Environment and Surrounding

The estate has a total land area of 2,061 ha of which 655 ha (32%) are under tea plantation; 353 ha (16%) are under fuel wood plantation; 360 ha (17%) are forestry reserve; and 140 ha (7%) account for estates infrastructure including areas for roads and buildings. Presently, about 571 ha (28%) are yet to be exploited. The estates contribute about 26% of the company's tea production. The factory depends on the tea leaves from out growers by 70% approximately 6,052,148kg of green leaf from out growers.

Other infrastructure and utilities

- Buildings– The estate has office blocks, residential houses for management staff, worker's houses, factory buildings and stores buildings. The estate has well maintained access roads linking the estates and surrounding villages and farm roads for transporting green leaf. Presently, Dindira estate has 50 worker's houses; The houses are considered not adequate due to growing demand for residential facilities.
- Motor vehicles – The estate has motor vehicles which include tractors, trucks, pick-ups and motorcycles. The motor vehicles are used for farm operation such as transport of green leaf, fuel wood, workers and other services. Dindira estates have 3- operating tractors, 5-trucks, one Pick-up and 5-motorcycles.
- Farm equipment – The estate has farm equipment for its workers including sprayers, tea plucking equipment and other equipment. Dindira estate has 14-sprayers and 25- tea plucking equipment.
- Utilities – Utilities include water, electricity, telecommunication and sewage systems. The estate has well supplied with natural spring water from the Usambara mountain range. The factory has water infrastructure including water tanks and water pipes connected to the factory sites. The factory site is connected to power supply using high-capacity electric generator and/or electricity from the national grid supplied by the Tanzania Electric Supply Company (TANESCO).

2.5.1 Farm Services/inputs and Out-growers

- *Extension services* – the estates enjoy the services of qualified tea extension officers hired by the company. METL has since designed a program to assist smallholder farmers to have access to farm extension services. With the increased number of villagers engaged in tea growing, the extension services offered to villagers become inadequate. When METL acquired the estates, smallholders accounted for only 5% to 10% of the total green leaf produced. Currently, smallholders account for over 30% of the total green leaf supplied to the factories with prospects of increasing to over 50% in the next 5-years.
- *Farm inputs* – these include herbicides, insecticides, fungicides and fertilizers. The estates procure these inputs from various wholesalers. The smallholders usually buy the inputs from

retailers at very high prices. METL has since designed a program to provide inputs to smallholder farmers on loan.

- *Out growers' basic activities* – These will not be different from the activities carried out within the METL estate. The Out growers will acquire seedlings and plant in prepared farms, nurture to full growth just as done in the estates, harvest the leaf and the harvests collected by the estate tractors just as in the Estate farms. The distinct difference will include tuning the out growers by training, supporting with necessary farm inputs, offering follow-up monitoring services to ascertain consistency and quality assurance, and other minor associations. The distance to out grower farms may be a little greater (though not significantly far from the estate itself). The factory depends on the tea leaves from out growers by 40% which is equivalent 1,108,222Kg purchased from out growers.

2.5.2 Packaging of the products

After sorting and grading process, tea will be packed into packages based on the following packaging volumes, BP1 55kg per paper sack, PF1 60kg per paper sack, PD 63kg per paper sack and D1 70kg per paper sacks. For secondary grades, it is packaged in poly bags (PP bags) PF 50kg, BP 45kg, Fangs 50kg, Dust 63kg and BMF 40kg. The following are tea grades produced in the following category:

- Primary grades brands such as BP1, PF1, PD, D1
- Secondary grade brands such as PF, BP, Fangs, Dust, BMF.

Packaging materials for tea will be same even after expansion. Agrochemicals will be same, such as herbicide, insecticide and Fertilizers. Fertilizers will always be sourced as per government guidelines & directives in the agriculture sector.

2.5.3 Storage of the materials and management at site

The packaging materials will be stored in designated place, same applies to fertilizers and herbicides they have separate stores and they are locked only authorized personnel can have access. The estates have set aside 260 ha (13%) for additional fuel wood plantation and 311 ha (15%) for additional tea plantation under contract farming. Thus, about 47% (966 ha) of the estates will be under tea plantation and 28% (613 ha) under fuel wood plantation.

The factory at Dindira estate is a double-line tea factory installed with withering, CTC machines, fermenting unit, drying machine, sorting/grading machine and a boiler. The plant has an installed capacity to produce 2500 tons of made tea per annum. The factory requires replacement due to wear and tear. The company is planning to procure and install a new line that will have capacity to process 600 kg of Greenleaf per hour.

2.5.4 Equipment's used on site

Boiler, Green leaf troughs with axial fans and motors (GL-troughs) for tea withering, weighing scales, rotor van & 4cut CTC machine for cutting, tearing and curling green leaf, CFM unit for fermentation process, conveyor belt, Vibratory fluid Bed Drier, pre-sorter1, fiber extractor 1, fiber extractor 2, vibro sorter machine 1&2, secondary grade machine, winnower machine for cleaning black tea, packing machine, air compressor, generator, server power stabilizer, farm equipment like vehicles, tractors, ,motor bicycle, lath machines, boiler water tanks, fire wood splitter, circular saw bench,

2.6 Current Waste Management

i. Solid waste

Solid wastes generated are garbage waste like papers, food remains, packaging materials for agrochemicals, seedling sleeves and fire wood bulks and ash from boiler.

- The biodegradable waste will be decomposed and used as manure for the farms.
- Packaging materials for Agrochemicals like empty herbicides cans are been stored in designated place and disposed off as per regulations. Fertilizer package; Used by filling up with sand to use for prevention of soil erosion,
- Wood bulks are being decomposed and used as manure, saw dusts are also spread in tea field as mulching, ash dust is being buried underground. Same procedure will be adopted after expansion of tea factory.

ii. Liquid waste

The main sources of waste water will be from sanitation facilities. During operation phase at the factory, liquid wastes will be managed through septic tank and soak away pits.

iii. Hazardous wastes

Hazardous wastes are mainly due to scrap metal from used and worn – out production machines and vehicles, plastics and used oil from servicing of vehicles and generators.

- The plastic wastes are disposed of in the designated land fill.
- Currently, scrap metals are stored at designated locations across the site to be given to scrap metal collectors while used oil is reused in protecting firewood from insects.
- Waste oil and lubricants will be collected and disposed of in accordance with environmental regulations.
- Waste tires: Waste tires are used for decorations across Estate.

2.7 Project components

The proposed project will therefore entail the following;

i. Expansion of Existing Non-Organic Tea Farm

The project involves additional farming of 500 hectares of the existing farmland. It is planned that in the four consecutive years, 125-hectares will be planted with new tea, annually. Generally, the project will increase farm size from the existing 655-hectares to 1155-hectares.

ii. Expansion of Tea Factory and other buildings and civil works

This is a double-line tea factory installed with withering, CTC machine, CFU unit, drying section, sorting/grading section and a boiler. The plant has an installed capacity to produce 2500 tons of made tea per annum. The proposed plan involves adding another production line in to the factory, this involves procurement and installation of plant and machineries for the primary processing made tea. The project will involve replacement of the existing plant with a new 600 kg/hour capacity plant. The management also has plans to add office blocks, kitchen, sanitary facilities, access roads, residential houses for management staff, worker's quarters, factory buildings and stores buildings. and all support infrastructures.

iii. Macadamia Farming

The project will involve growing of macadamia in an area covering 200 hectares situated in Dindira Tea Estate of the METL Group. The project will entail land preparation, planting and maintenance of macadamia plantation and investment in the support facilities including buildings, farm equipment and other facilities. The project will earmark and develop different pockets of land which is part of the two tea estates. During the first four years the project will undertake soil preparation, planting fertilization, weeding, irrigation, mulching, pruning and pests and diseases control. The project is estimated to plant about 312 macadamia plants per hectare which is equivalent to 62,400 plants in the 200 hectares' farm.

2.7.1 Expected Output

- Increased production of Greenleaf in the estates by over 20% due to availability of higher tea processing capacity and increase farm size.
- Increased production of out-growers' Greenleaf resulting from increased capacity of primary processing machineries.
- Increased revenues and profitability of the tea estates resulting from provision of improved tea quality and quantity.

2.7.2 Quality Assurance and Quality control

From farm to final product there are quality assurance and quality control checks that ensure safe & quality production of safe product,

2.8 Project Activities

The project endeavors to increase tea production. There are four basic types of tea: green, black, oolong and white. All tea come from single species of plant, Camellia sinensis. The different flavors and types of tea are the result of the unique environments in which tea is grown, how the tea is harvested, processed, selected for blending and packed.

2.8.1 Planning Phase

Activities to be involved in the planning phase include;

- Land preparation

- Appraisal of baseline condition to determine supply and demand for required infrastructural services
- EIA Project Report preparation

2.8.2 Construction / Renovation/ Expansion phase

Activities to be involved in this phase includes;

i. Expansion of Tea Plantation

- Land Clearance: use of heavy-duty crawler tractors with suitable equipment such as dozer blades used to clear bush and old tea plants.
- Land Cultivation: The use of heavy-duty tractors with appropriate equipment.
- Planting & Maintenance: Include measuring, holing, digging planting materials from mature nurseries, transport of the planting materials, actual planting, refilling of dead planted crop and application of fertilizers.
- Growing and fertilization, weeding, irrigation, mulching, pruning: The crop is planted using well-established nursery materials. Tea is plucked and collected from collection centers, and transported to the factory for processing.
- Pest and Herb Control: Involved the use of designated pesticides and herbicides.
- Harvesting: Tea is plucked and packaged in back-baskets, before delivering to the collection centers. There are plans to automate the plucking using mechanical application.

ii. Macadamia plantation

Introduction - The origin of macadamia is Australia. The tree can reach a height of up to 20m. Grafted varieties take 3-4 years after planting to start producing while local varieties usually take 6-7 years. The project concept has been influenced by the growing opportunity in the macadamia market and the presence of adequate land and suitable climate for macadamia growing.

- Farming Practices - Suitable Ecological Conditions - Macadamia are tropical trees hence do well in areas where they get full sunlight but sheltered from wind for healthy fruit production. The soil required should be deep and well drained, acidic to slightly acidic with a Ph level of 5-6.5. Rainfall should be between 800-1200mm per year. The ideal range of temperature is between 16-250C.

- Irrigation - Irrigation is key during the first two years of the macadamia seedling development. A 60cm diameter basin is made to improve water holding capacity. At this young stage 20L of water is required every two weeks. Frequency of irrigation is reduced once the tree matures.
- Weeding - The southern green stink bug cannot survive on macadamia nuts alone but requires a primary food plant. Weeding hosts plants should be done since the stink bugs reproduce and develop here before feeding on macadamia. Non selective herbicides like CATAPULT can be used in weed management in between the nut trees. Notorious weeds like black jack can be eliminated by mixing AGROMINE and CATAPULT.
- Mulching - This done frequently to preserve moisture, nutrients and prevent growth of weeds.
- Pruning - These aids in maintaining a good structure of the tree and improving yields. It is done before flowering and after completion of harvesting. BIOSURE can be used to disinfect pruning shears to prevent spread of diseases. Damaged wood is removed during pruning to reduce competition of nutrients.
- Crop Nutrition - Leaf and soil sampling are done in order to determine the fertilizer requirements of the crop.
- Pests and Diseases - Macadamia trees are potential to be infected by a range of pests and diseases including termites, stink bug, nut borer, mealybugs, scale infestation, thrips and caterpillars. Others are husk spot disease, root rot, macadamia canker and pre-mature nut drop. There are various pesticides and farm management practices for controlling the pests and diseases.
- Harvesting - Nuts are harvested when the skin begins to crack. The husk of unripe macadamia is white and usually changes to chocolate brown when ripe. The nuts are very easy to harvest as mostly drop off the trees when they are mature. It should be clear underneath the trees to facilitate easier collection of all the nuts. Processing of macadamia nuts involves removal of the outer shell to obtain the kernels. The project will procure and install machines for processing and packing macadamia kernels.

iii. Renovation of the factory production lines

On the plant side, before it was a single-line tea factory installed with withering, CTC machine, CFU unit, drying section, sorting/grading section and a boiler. The plant has an installed capacity to produce 2500

tons of made tea per annum. The proposed plan involves adding another production line in to the factory, this involves procurement and installation of plant and machineries for the primary processing made tea. The project will involve replacement of the existing plant with a new 600 kg/hour capacity plant. Other utilities material supply.

iv. Building and civil works

The management also has plans to add office blocks, kitchen, sanitary facilities, access roads, residential houses for management staff, worker's quarters, factory buildings and stores buildings. and all support infrastructures.

Projects Resources; During this phase the project resources to be used are;

- Water – water during this phase will be sourced from the natural spring water from the Usambara mountain range. The factory has water infrastructure including water tanks and water pipes connected to the factory sites.
- Energy – source of energy to be used during this phase will be from the Tanzania Electric Supply Company (TANESCO). There is also one standby generator (Type - CUMMINS) with the capacity of 550 KVA.
- Raw materials – the raw materials during this phase will be bought locally and for the machines to be installed they shall be procured from outside Tanzania.
- Manpower – the management will hire approximately 100 workers to work on construction sites and other workers to work on the plantations.

Different machinery will be used to construct the additional project facilities. These will include: Bulldozers for clearing the site and vegetation materials, and pushing out stumps; Motor graders for grading and levelling land for buildings and access road formation; Tippers/lorries for transporting construction materials and workers; Heavy rollers for access roads compaction; Front-end loader for loading materials onto tippers and lorries; equipment like wheel burrows, shovels, picks; Concrete mixers; Earthmover; Compactor; Wheelbarrow; and Hammers and bolt and nut fasteners, hand saw, electric and gas welders, electric saws and grinders, load roller, trucks, hand drills and drill bits, wire cutters, concrete mixer trucks, wheel loader, forklift, excavator etc. Building materials will be sourced

locally and transported to the project site from their extraction, manufacture, or storage sites using transport trucks.

Table 3; Workers Quarters Construction specification/ materials

Component for Workers Quarters Housing	Description	Responsibility
Substructures	Excavations for the basement, construction of foundations. Excavated soils will be spread within the facility as there is adequate space.	Main contractor
Reinforced concrete frame	Construction of columns beams and slabs that make up the building's framed structure.	
	Associated waste will constitute cement bags and some polythene	
External and internal walling	Missionary walling in the building exterior and walling used as partitioning internally. Associated waste will constitute cement bags and some polythene.	
Curtain walling	A form of external lightweight cladding attached to the framed structure to form complete envelops around the structural frame and shall mainly comprise an aluminium structure clad with glass.	
Roofing	Roofing structure will include timber, iron sheets and ceiling boards. Associated waste will include end cuts of iron sheets, timber and some paper materials	
Windows	Framed in aluminium and in filled with glass.	
Doors	Timber aluminium and steel.	

External finishes	Applies finishes to the exterior fabric of the building.	
Internal floor finishes	Concrete with red oxide.	
Internal wall finishes	Plastering and painting	
Fittings and fixtures	Joinery fittings, i.e. vanity units, closets, reception counters, shelving, wine racks, kitchen cabinetry, e.t.c.	Furniture specialist
Land Scape	Levelling ground and paving walkways and wash areas	Main contractor
Equipment's	Excavator, Bulldozer, Motor grader, Plate compactor, Trucks, Construction Crane	Contractor

Project Construction / Renovation Wastes

It is anticipated that the project will generate a variety of wastes during its construction / renovation phase. The characteristics of the wastes are discussed in this section.

- Soil: The soil generated during excavation will be stockpiled along the foundation trenches and used for re-establishment of the site at the end of the project.
- Pieces of timber/wood, empty cement bags: Large pieces of timber/wood generated during the construction phase will be transported back to the contractor's yard for reuse in future while the small pieces of timber/wood will be disposed-off. Empty cement bags will be collected and disposed to the dumpsite/ sold to local vendors.
- Excess sand and stockpiles: These can be used for future construction activities e.g. renovations. Upon completion of the project, these will be moved by the contractor to a suitable yard.
- Domestic wastes such as Food remains etc.: The proponent will provide dust bins for temporary storage of waste within the premises before final disposal to the designated dumping site.
- Fertilizer package; Used by filling up with sand to use for prevention of soil erosion,
- Liquid waste; The main sources of waste water will be from sanitation facilities. During expansion phase at the factory, liquid wastes will be managed through septic tank and soak away pits.

- Hazardous wastes - Hazardous wastes will be mainly due to scrap metal from used and worn – out production machines and vehicles and used oil from servicing of vehicles and generators. The plastic wastes will be disposed of in the designated land fill. Scrap metal will be stored at designated locations across the site to be given to scrap metal collectors while used oil and lubricants will be collected and disposed of in accordance with environmental regulations. Waste tires will be used for decorations across Estate.

Table 4; Types, amounts and treatment/disposal of wastes during the construction phase

Waste	**Types**	**Amount**	**Treatment/ Disposal**
Solid Waste (Degradable)	Vegetation	Considerable amount is expected, based on the total area to be planted and constructed.	The logs shall be decomposed and use as compost manure.
	Garbage waste (like papers, food remains)	Considerable amount.	The proponent will provide dust bins for temporary storage of waste within the premises before final disposal to the designated dumping site.
Solid Waste (Non-Degradable)	Soil	Considerable amount, based on the area to be excavated.	This will be stockpiled along the foundation trenches and used for re-establishment of the site at the end of the project.
Liquid waste	Sewage	Considerable amount.	To be directed to the Septic Tank-Soak away System that is present at the site

Hazardous wastes	Oils and greases	None	Oil and lubricants will be collected and disposed of in accordance with environmental regulations.
	Scrap metals, Plastics Waste tires	5 – 10 kg -	Scrap metal is given to scrap metal Collectors. Plastics are disposed in the designated landfill. Waste tires will be used for decorations across Estate.

2.8.3 Operational Phase

During operation phase the following activities will take place;

i. Tea processing which will include;

- Withering - Fresh green leaves will be brought to the factory and will be weighed at the factory upon delivery and spread in the troughs for the withering process. Air is blown through the leaves to reduce the moisture content to about 70%. During rainy season, the leaves are wet with surface moisture and therefore hot air is used to obtain the required wither. After overnight or 10-18 hours of withering the leaves are taken for further processing. The withered leaves are passed through green leaf sifter to remove sand if any and for uniform feeding in to the Rotor vane where the leaf is macerated to squeeze out the plant sap. Then the leaf material with the expressed sap is passed through CTC machine wherein the leaf undergoes crush, tear & curl process and delivered into a continuous fermenting machine through conveyor.
- Fermentation: - The fermenting process is actually the oxidation of plant sap facilitated by blowing cold humid air. During this process the crushed tea leaf changes the colour from green to yellowish green to reddish green and develop aroma. The time duration of fermentation has to be manually adjusted every day according to prevailing weather conditions. Under fermentation or over fermentation would drastically affect the quality of made tea.
- Drying: - The tea driers are equipped with steam boilers and radiators to generate hot air to dry

the tea and arrest the fermentation. The dried tea is black in colour with particles of different sizes and some plant fibres. At this stage the manufacturing process is over and is called bulk tea.

- Grading: - The bulk tea is cleaned to remove the fibre (BMF grade) in Fibromat and graded in Vibroscreen. According to the size and density of the particles, tea is graded into BP1, PF1, PD & D1 (primary grades); and BP, PF, Fannings, Dust and BMF (secondary grades).
- Packing: - The quality of tea varies day to day to some extent according to the standard of green leaf and weather conditions. Though Quality control is done during processing by periodical tea tasting, the graded teas of few days manufacturing are bulked before packing. For auction sale, primary grades are packed in paper sacks and secondary grades in PP bags.
- Tea sales- Garden invoices of 20 or 40 bags of each grade are made and sent various markets including the auction centers at Mombasa, Kenya and Dar es Salaam Tanzania. A portion of tea sales is via direct export to buyers abroad. The appointed tea brokers take sample and send to registered buyers. Auction sales take place every week and the sale realization are collected by the Broker and remitted to Seller after deducting the brokerage as per auction regulations.

ii. Macadamia processing which will include;

- Harvesting - Nuts are harvested when the skin begins to crack. The husk of unripe macadamia is white and usually changes to chocolate brown when ripe. The nuts are very easy to harvest as mostly drop off the trees when they are mature. It should be clear underneath the trees to facilitate easier collection of all the nuts.
- Processing of macadamia nuts involves removal of the outer shell to obtain the kernels. The project will procure and install machines for processing and packing macadamia kernels.

<u>Project Operation Materials / Resources</u>

- Farm equipment and tools – The equipment's to be used includes tea harvesting sacks, sprayers, tea plucking and pruning equipment and farm gears – gloves, boots, aprons and hats. The company will use mechanical harvesting method.
- Motor vehicles –METL uses tractors to collect green leaf from the estates and out- growers' farms to the main roads for offloading to the trucks which transport the leaves to the factory. Currently, METL has a total of 12-tractors and 18 trucks.
- Office Furniture and Equipment - The project will use office furniture and equipment to replace

the existing worn-out assets.

- Water – water during this phase will be sourced from the natural spring water from the Usambara mountain range. The factory has water infrastructure including water tanks and water pipes connected to the factory sites.
- Energy – source of energy to be used during this phase will be from the Tanzania Electric Supply Company (TANESCO). There is also one standby generator (Type CUMMINS) with the capacity of 550 KVA and a boiler.
- Manpower – Currently the project employs over 17-including seasonal workers. At the factory workers are working in three shifts during peak seasons, but during low season only two shifts are taking place. Workers are provided with PPEs depending on their line of duty. After expansion the number of workers will increase depending on the season.
- Sanitary facilities - At the factory, there are fifteen sanitary facilities (Nine for male, five for female and one for management staff) and changing rooms used by the staffs.
- Infrastructure - The project site can be accessed by earth roads which are in good condition throughout the seasons, more access roads are still being constructed for easy transportation of goods and services. The estate uses tractors and motorcycles as their means of transport means within the farms and factory.

Project Operation Wastes

It is anticipated that the project will generate a variety of wastes during operation phase. These are;

i. Solid waste

Expected solid wastes to be generated are garbage waste like papers, food remains, packaging materials for agrochemicals, also fire wood bulks and ash from boiler.

- The biodegradable waste will be decomposed and used as manure for the farms.
- Packaging materials for Agrochemicals like empty herbicides cans are been stored in designated place and disposed off as per regulations.
- Fertilizer package; Used by filling up with sand to use for prevention of soil erosion.
- Wood bulks are being decomposed and use as manure, saw dusts are also spread in tea field as mulching, ash dust is being buried underground. Same procedure will be adopted after expansion of tea factory.

ii. Liquid waste

The main sources of waste water will be from sanitation facilities. During operation phase at the factory, liquid wastes will be managed through septic tank and soak away pits.

iii. Hazardous wastes

Hazardous wastes will be mainly due to scrap metal from used and worn – out production machines and vehicles, plastics and used oil from servicing of vehicles and generators.

- The plastic wastes are disposed of in the designated land fill.
- Currently, scrap metal is stored at designated locations across the site to be given to scrap metal collectors.
- Waste oil and lubricants will be collected and disposed of in accordance with environmental regulations.
- Waste tires: Waste tires are used for decorations across Estate.

Table 5; Types, amounts and treatment/disposal of wastes during the operation phase

Waste	Types	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Garbage waste (like papers, food remains)	Considerable amount.	The proponent will provide dust bins for storage of waste within the premises before final disposal to the designated dumping site.
Liquid waste	Sewage	Considerable amount.	To be directed to the Septic Tank-Soak away System that is present at the site
Hazardous wastes	Oils and greases	None	Waste oil and lubricants will be collected and disposed of in accordance with environmental regulations.

	Scrap metals, plastics	5 – 10 kg	Scrap metal is given to scrap metal collectors Plastics are disposed in the designated landfill.

2.8.4 Decommissioning Phase

The minimum lifespan of the proposed Tea factory might be more than thirty years though the actual time of decommissioning is uncertain. However, when it comes to decommissioning of the factory, major activities will be carried out to remove unused construction materials including demolition temporary structures. The developer will have to close the facility and rehabilitate the site back to its original environmental status; the main challenge will be how to deal with the solid waste generated from the demolition of the structure for safe disposal.

Proper handling methods including disposal of solid waste must be followed as outlined in this EIA. Solid waste might be land filled in pits and covered with soil; preferably top soils stored to encourage indigenous trees and grass to regenerate or otherwise indigenous plants must then be planted to ensure the area returns to its original condition. The other challenge is how to deal with laid off labor force and the loss of income that was coming from the factory to the local communities and the national economy. Various mitigation measures are proposed in the previous chapter that will reduce the effect of decommissioning.

A detailed decommissioning plan that takes environmental issues into consideration shall be prepared by the developer prior to the decommissioning works. Should it be done, decommissioning may entail change of use (functional changes) or demolition triggered by change of land use. Therefore, what is presented here is just a Preliminary Decommissioning Plan which gives light to what shall be done if the need for decommissioning arises.

- **Preliminary Decommissioning Plan**

This Section provides a brief outline of the works required to demolish the proposed Tea factory on the site in case it happens. This Plan will be used as a reference document that provides the framework to ensure that demolition activities on the site do not adversely affect the health, safety, habitat, diversity

or the environment of the people in Dindira area and Korogwe District at large.

The Contractor will be required to prepare a detailed Demolition Plan and Construction Management Plan to the satisfaction of the Proponent and relevant Authorities (NEMC) prior to the commencement of works on site.

- **Demolition Methods**

It is anticipated that the Contractor will prepare a detailed Demolition Plan prior to the commencement of work on site; however, the indicative demolition methodology will be as follows:

- ❖ The strip out and removal of non-structural elements will be undertaken utilizing manual worker and small plant including excavators and loaders.
- ❖ The materials will be removed from site using small to medium sized trucks.
- ❖ The structures will be demolished using larger plant and equipment including hydraulic excavators.
- ❖ During the demolition process erosion control measures will be established. These will include treatment of dust and potential discharge into catchment area.
- ❖ Rehabilitation of the site by planting indigenous vegetation.

- **Materials Handling**

All the debris from the site will be used to backfill the excavated area and the remains taken offsite to the approved dumpsite. The contractor shall submit a Demolition Waste Management Plan to NEMC which outlines the objectives of:

- ❖ maximization, reuse and recycling of demolition material
- ❖ minimization of waste disposal
- ❖ evidence of implementation for specified arrangements of waste management

On-site storage of reusable materials will occur at Site. Recycling and disposal containers will also be accommodated at this location for collection vehicles. A hazardous materials inspection will be undertaken by an accredited consultant and a report issued. Hazardous materials will be removed in accordance with EMA 2004.

- **Proposed Sequence**

The Contractor will be required to prepare the following documentation prior to the commencement of demolition and/or excavation works:

- Destruction Survey
- Construction Waste Management Plan

2.9 Environmental Health and Safety related risks

Environmental related risks that may arise from the above-mentioned project activities are as follows;

Environmental related risks

- Dust Activation
- Noise
- Exhaust gas
- Visual Impacts
- Soil Erosion
- Loss of wetland
- Water Pollution (silt/Fertilizer)
- Bush Fires
- Waste Generation
- Social Issues
- Induced crime at tea farms

Safety & Health risks

- Dust Activation
- Noise
- Exhaust gas
- Motor Accidents
- Fatigue
- Cuts and bruises
- Snake or insect bites
- Ergonomics (transportation)
- Weather Conditions (Heat/Cold)
- Uneven Grounds
- Traffic Hazards impacting community

- ❖ Traffic hazards impacting company staffs

2.10 Project Utilities

Some of the major utilities for the project include energy, waste management, water supply, fuel and raw materials.

- Energy

The factory site is connected to power supply using high-capacity electricity from the national grid supplied by the Tanzania Electric Supply Company (TANESCO). There are also two standby generators with the capacity of 220 KVA and 500 KVA. The factories also use boilers. The mechanism set for control of emission from the boiler considering firewood is used is as follows;

The presence of chimney in boiler which prevent smoke from spreading around the work area, as well as in-tangent local areas, lagging (covering) of steam pipes with cotton wool to control excessive heat been released into the surrounding.

Periodic service and maintenance of the boiler doors using refractory castable cement to prevent heat emissions into the surrounding.

- Water

The estate is well supplied with natural spring water from the Usambara mountain range. The factory has water infrastructure including water tanks and water pipes connected to the factory sites.

- Raw materials

Currently, smallholders account for over 30% of the total green leaf supplied to the factories with prospects of increasing to over 50% in the next 5-years.

- Manpower

Currently the project employs over 17-including seasonal workers. At the factory workers are working in three shifts during peak seasons, but during low season only two shifts are taking place. Workers are provided with PPEs depending on their line of duty. After expansion the number of workers will increase depending on the season.

- Extension Equipment's

A large percent of the extension equipment's shall be sourced through importation via certified suppliers. However, quality and quantity availability shall dictate the material sources. The quantities of

materials shall be specified in the Bills of Quantities (BOQ). The company is planning to procure and install a new line that will have capacity to process 600 kg of Greenleaf per hour.

- Sanitary facilities

At the factory, there are fifteen sanitary facilities (Nine for male, five for female and one for management staff) and changing rooms used by the staffs.

- Infrastructure

The project site can be accessed by earth roads which are in good condition throughout the seasons, more access roads are still being constructed for easy transportation of goods and services.

- Poverty and Livelihoods

Today, the population of the Usambara Mountains region has one of the highest growth rates (about 4% compared to the Tanzanian national average of 2.1%), a staggering amount of poverty, and highest densities of people in all of Tanzania. Most of the inhabitants are subsistence farmers who rely heavily on the forests around them for timber, medicinal plants, clearing for agriculture, and fuelwood. There are still many places that attract visitors looking for experiences beyond developed tourist resorts. These include the trade town of Lushoto (German colonial era Wilhelmsthal).

2.11 Project Boundaries

We can identify three types of boundaries that are considered in conducting EIA. The boundaries are Institutional, Temporal and Spatial boundaries.

i. Institutional Boundaries

Institutional boundaries refer to those institutions and sectoral boundaries in which the project lies or interacts. These can be determined from political boundaries, Acts, regulations and institutional mandates and administrative structures. This proposed development touches the interest of a number of people and administrative units in relation to several policies, laws and plans, and the overall land and settlements acts. The institutional framework includes; Minister responsible for environment in the Vice President's office, Division of Environment NEMC, District Council and Ward and sub-ward (with committees for environment).

ii. Temporal Boundaries

Temporal boundaries refer to the lifespan and reversibility of impacts. The impact of the proposed project will have implications that stretch very far into the future until when decommissioning is undertaken. Also, consideration needs to be given to what happens when the project ends, where there is need for site restoration and decommissioning of the project.

iii. Spatial Boundaries

Spatial boundaries are crucial to decide on whether impacts are likely to occur at Local, Regional, National or International Level. The proposed project will have wide ranging implications that could be felt Locally, Regionally, Nationally and probably outside the country thus, causing impacts as far as those areas. In this study, spatial impacts will be determined from the core project area (the area within the proposed project development). The Area of Impact and Area of Influence.

- Core Project Area

In determining the spatial dimension of the project, it is important to consider impact in a contour layout, starting with the Core Project Area (CPA). This is the area where the project is located and, which will bear most impacts than the rest. In this case the Tewe Village, Maple Ward, Korogwe District, is the Core Project Area (CPA).

- Area of Impact (AoI)

This is the area which surrounds the Core Project Area (CPA). This is an area that borders the proposed project area. This area plays an important role and bears some positive or negative impacts. The area of Impact in the case of the proposed project would include Korogwe, Lushoto, Handeni etc. These areas will be linked with the proposed development through road transport, supply of services and goods as well as labor force.

- Area of Influence (AoI)

The area beyond the area of impact is further away from the proposed project. It consists of the centers of decision making that can influence the development of the industry. This center of decision making includes National Environment Management Council and the Ministry responsible for Environment. The proposed project may attract contractors and consultants beyond Tanzania.

2.12 Market Analysis

Driven by increasing demand for tea worldwide, the market is expected to continue an upward consumption trend over the next decade. Market performance is forecast to decelerate, expanding with an anticipated CAGR of +2.9% for the period from 2018 to 2030, which is projected to bring the market volume to 9.3M tons by the end of 2030.

Tea Exports - About 15% of total made tea produced in Tanzania is domestically consumed and the remaining bulk of the production about 85% is exported through organized tea auction center at Mombasa in Kenya or by direct export. Tanzania sold between 5,000 and 8,000 tons of made tea through the Mombasa Tea Auction. Of recent, the government of Tanzania has started initiatives to establish the Dar-es-salaam Tea Auction. The government has already developed two warehouses with capacity to store 13,000 tons of made tea. The new auction will be conducted by the Tanzania Mercantile Exchange (TMX) via an online system. Tanzania farmers have a capacity to produce and supply 6 million to 7 million tons of tea per month.

Domestic Tea Consumption - Tanzania consumes about 15% of the locally produced tea. Besides the locally grown tea, there are also imports mainly from Kenya. Currently, the country consumes about 5,000 to 6,000 tons of made tea annually.

2.13 Project Investment Cost

The total capital investment cost is estimated at USD 10.0 million for the establishment of the project including initial working capital.

CHAPTER THREE

3.0 Policy, Legal and Administrative Framework

3.1 Overview

This project needs to comply with the Tanzania's national environmental policy and legislation because it is going to be implemented in Tanzania. Tanzania currently aims at achieving sustainable development through rational use of natural resources and incorporating measures in any development activities in order to safeguard the environment. The main legal document which drives towards achieving this goal is the National Environmental Policy (NEP), which was approved by the GOT in 1997. The NEP advocates the adoption of Environmental Impact Assessment (EIA) tool for screening development projects, which are likely to cause environmental impacts.

3.2 National Policies Framework

Relevant policies and legislation pertaining to ground water and surface water pollution, pollution of soil, land and land use, air pollution health and safety were examined, among others in order to ensure that the proposed establishment of scholastic material and packaging material manufacturing factory meets and abide to the existing regulations. These are described below.

Various national policies relevant to this project have been considered. The summary of policies reviewed and their relevance is provided below.

1. **National Environmental Policy2021**

The Policy highlights sustainable development as its core concept. It states that Tanzania is committed to sustainable development in the short, medium and long-term and adopts key principles of sustainable development. It is the main policy document governing environmental management in Tanzania by addressing environmental issues as both natural and social concerns. The policy has also proposed framework environmental legislation to take account of the numerous agencies of Government involved in regulating various sectors. Thus, the NEP defines strategic plans for environmental management at various levels and provides approach for mainstreaming environmental issues for decision-making and defining sector policy action plans.

In regards to environmental management and protection the policy identifies six key problem areas as; Land degradation; Lack of access to good quality water; Environmental pollution; Loss of wildlife habitat and biodiversity; Deterioration of aquatic ecosystems; and Deforestation.

In order to achieve the above policy objectives; the following measures shall be put in place; Planning and implementation of water resources and other development programmes in an integrated manner and in ways that protect water catchment areas and their vegetation cover; and improved management and conservation of wetlands.

Relevance to the Project: The project will be required to address policy objectives by ensuring that damage to the biophysical and social environment is avoided or minimized during implementation of the project activities which are expected to have impacts.

2. National Land Policy 1995

The National Land Policy of 1995 (Revised in 1997) recognizes the need for protecting environmentally sensitive area such as catchment areas, rivers, fragile waterways, game reserves, etc. The policy stresses that these sensitive areas should not be allocated to individuals. Additionally, the policy promotes land tenure system to encourage the optimal use of land resources, and to facilitate transport-based social-economic development. The Land Policy provides for "full fair and prompt compensation" when land is acquired. Similarly, the project implementation will keenly observe the policy requirements.

The National Land Policy set in motion a land reform giving respect to customary and common rights. In addition, roles of government in land tenure and management have been devolved to the local level and establishment of supporting systems for land registration and entitlement to the sub ward level.

Furthermore, the policy emphasizes the protection of environment and natural ecosystems from pollution, degradation and physical destruction. In addition, the policy recognizes the importance of social services such as water, roads, energy and solid waste management for environmental protection. It also identifies the need for conservation and preservation of prehistoric/historic sites and buildings.

Relevance to the Project: This policy is relevant to the proposed project and the project design will ensure protection of existing land ownership patterns, social services, proper disposal of solid wastes and suitable landscape works to protect sensitive areas in the project area.

3. Natural Water Policy 2002

NAWAPO's objective is to develop a comprehensive framework for sustainable management of the national water resources. In this case the policy recognizes the need to protect water sources against pollution and environmental degradation. The Water Policy reflects the shift in approach towards comprehensiveness and economics. In addition, the Policy aims at ensuring that beneficiaries participate

fully in all states of water resource developments and recognizes the fundamental but intricate linkages between water and socio-economic development, including environmental requirements. The Policy expounds on the importance of water for domestic use, agriculture, livestock keeping, mining energy, fisheries, environment, human health, wildlife and tourism, forestry, navigation and trans-boundary requirements. The policy states that "a holistic water (river) basin approach, integrating multi-sector and multi-objective planning and management, should be taken in order to ensure sustainability and protection of the resource."

With these basic shifts in approach and the attempt to co-ordinate and harmonize the sectoral policies, it is in line with though guidance from the Convention of Wetlands and the vision of the National Environmental Policy.

Relevance to the Project - The proposed project could result into pollution for ground and surface water in the area. In this case project designs will ensure water sources (including streams which ultimately flow into the water sources) are suitably protected to minimize impacts during the renovation and operational phases of the project.

4. **National Gender Development Policy 2000**

Main objective of this policy is to provide guidelines to ensure gender sensitive plans, programs and strategies in all sectors and institutions. The policy gives emphasis on gender equality with it aims at establishing strategies on poverty eradication through ensuring that both women and men get access to existing resources for their development. It values the role played by women in bringing about development in the society

Construction sector is also committed to ensuring gender mainstreaming at all levels, through provision of equal opportunities to both men and women in road works and related activities.

Relevance to the Project: The policy requires the project management ensure that gender issues are given emphasis. It also requires that women and men are given equal employment opportunities in the project, whenever possible. Therefore, this project will ensure that women, will be adequately involved at all levels of the project planning to implementation.

5. **National Employment Policy 1997**

The major aim of this policy is to promote mainly of Tanzania Nationals. Relevant sections of this policy are (i) Section 10, which lays down strategies for promoting employment and section

10.1 is particularly focused on industry and trade sectors (ii) Section 10.6 which deals with employment of special groups. It identifies women, youth, and persons with disabilities and (iii) Section 10.8 which deals with the tendencies of private industries to employ expatriates even where there are equally competent nationals.

It therefore aims at preparing conducive environment for the unemployed to employ themselves by directing more resources to the self-employment sector, identifying potential areas for employment and lay down strategies of how to utilize areas in promoting employment industry, identify and elaborate on the status and roles of various stakeholders in promoting and sustaining employment, and to develop the self-employment sector in the rural areas as to reduce the rate of migration to urban areas.

Relevance to the Project: The EIA study will fully abide by the provisions of this policy. The Management will abide to the relevant provisions of the policy to ensure that local residents, especially the youth, women and other vulnerable groups, are given priority in all employment opportunities that will arise during the renovation and operational phases of the project.

6. National Health Policy 2003

The Health Policy is a vital guide towards health development of any country. It is particularly, important in a country like ours where resources and technology are more limited than in other countries, which are relatively better off in both technology and resources The National Health Policy is aimed at providing direction towards improvement and sustainability of the health status of all the people, by reducing disability, morbidity and mortality, improving nutritional status and raising life expectancy. The policy recognizes that, good health is a major resource essential for poverty eradication and economic development. The main objectives of the policy are:

- Sensitize the community on common preventable health problems, and improve the capabilities at all levels of society to assess and analyse problems and design appropriate action through genuine community involvement.
- Promote awareness among Government employees and the community at large that, health problems can only be adequately solved through multi sectoral cooperation involving such sectors as Education, Agriculture, Water, Private Sector including Non- Governmental Organization, Civil Society and Central Ministries, as Regional Administration and Local Government, and Community Development, Gender and Children

- Promote and sustain public-private partnership in the delivery of health services.
- Relevance to the Project: The implementation of this project will ensure that all the staff, workers at the project site will have necessary personal protective equipment, such as gloves, dust mask and the local communities will be informed and protected against all health risks, including awareness on health problem so as to attain poverty reduction hence to achieve economic development.

7. National Policy on HIV/AIDS 2003

The policy provides a framework, direction and general principles in the national response to interventions in the prevention, care and support of the infected and affected by the HIV/AIDS epidemics and mitigation of its impacts. Tanzania is facing major threats to the survival of its people and the development chances of the nation from a concentrated and a generalized HIV

/AIDS epidemic. The National Multi-Sectoral Strategic Framework (NMSF) on HIV / AIDS will translate the National Policy of HIV/AIDS by providing strategic guidance to the planning of programmes, projects and interventions by various stakeholders in the fight against HIV/AIDS. In order to make sure that NMSF meets its objectives, the following goals were set;

GOAL 1: Reduce the spread of HIV in the country.

GOAL 2: Reduce HIV transmission to infants

GOAL 3: Political and government leaders consistently give high visibility to HIV /AIDS in their proceedings and public appearances.

GOAL 4: Political leaders, public and private programmes, projects and interventions address stigma and discrimination and take Human Rights of persons living with HIV /AIDS into account.

GOAL 5: HIV /AIDS concerns are fully integrated and prioritized in the National Poverty Reduction Strategy and Tanzania Assistance Strategy.

GOAL 6: Reduce the prevalence of STIs in the population.

GOAL 7: Increase the knowledge of HIV transmission in the population.

GOAL 8: Increase the number of Persons living with HIV /AIDS who have access to a continuum of Care and Support from Home / Community to Hospital levels.

GOAL 9: Reduce the adverse effects of HIV /AIDS on orphans

Relevance to the Project: The factory Management and the District Council is required to make sure that

there are no any discrimination and stigma and also take Human rights of person living with HIV/AIDS into account.

8. The National Investment Promotion Policy, 1996

The Policy is promoting investment opportunities that private sector can take up and increase economic growth. The Investment Promotion Policy outlines areas and conditions for investment and comes as a result of the economic liberalization program that promotes the role of the private sector in economic activities in Tanzania. The Policy encourages private sector investments whilst also taking into accounts environmental consideration so as to ensure investments yield the expected benefits.

Relevance to project: The proposed project came into being as a result of this policy that promotes the role of the private sector in economic development. This Environmental Impact Statement will assess the contribution of the proposed development to improvement of social welfare through employment and economic growth as well as an increase in availability of scholastic materials and packaging materials in Tanzania.

9. The Tanzania Development Vision 2025

Composite Development Goal for the Tanzania Development Vision 2025 (URT, 2000) foresees the alleviation of 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 of these objectives is to attain a sustainable development of the people. The Vision 2025 seeks to mobilize the people, the private sector and public resources towards achieving shared goals and achieve sustainable semi-industrialized middle market economy by year 2025.

Relevance to the Project: The establishment of the tea Factory aims at improved commercial and business status for development and improvement of livelihoods of the people in the region and national wide.

10. The National Strategy for Growth and Reduction of Poverty (NSGRP/ MKUKUTA)

The National Strategy for Growth and Reduction of Poverty (NSGRP) or Mkakati wa Kukuza Uchumi na Kuondoa Umaskini Tanzania (MKUKUTA) is focusing on promoting economic growth and reducing poverty in Tanzania. The NSGRP is a five years' program from 2005/06 to 2009/10, which addresses the

Tanzania Development Vision 2025 for high and shared growth, high quality livelihoods, peace, stability and unity, good governance, high quality education and international competitiveness. In addition, NSGRP is contributing to implementation of the Millennium Development Goals.

The main objective of the NSGRP is to stimulate economic growth and reduce poverty, improve quality of life and social well-being and improve good governance and accountability. The strategy recognizes the close linkages between economic growth, good governance and improved quality of life and social well-being, and poverty reduction. Among the various factors that have been identified to stimulate growth is the improvement of industrial sector in order to stimulate economic growth.

Relevance to the Project: Project implementation is consistent with the relevant provisions of the NSGRP, as it seeks to improve living standard of people.

3.3 National Legal Framework

This section addresses the legal (Laws, Regulation and Guidelines) and regulatory framework, which is relevant to the proposed project. The legal and regulatory framework provides the various legal aspects that must be adhered to as the project in designed, implemented and later when it is decommissioned

1. **Environmental Management Act 2004 – Cap 191**

Environmental Management Act No.20 of 2004 is the principle legislation governing environmental management in the country. The Act recognizes the right of every citizen to clean, safe and heath environment, and the right of access to environmental resources for recreational, educational, health, spiritual, cultural and economic purposes. Part IX provides for Waste Management. The section makes separate provisions on governing the management of solid waste; litter; disposal and transportation of liquid waste and sewerage; management of gaseous waste and management of hazardous waste. Local government authorities are given specific obligation to minimize solid, liquid, gaseous and hazardous wastes falling under their respective jurisdictions. The proponent has to observe environmental quality standards in respect of air water and soil as stated in 2007 Regulation. Also Carrying out self-Monitoring and environmental Audit and submit the reports to NEMC.

In order to ensure there is effective implementation of national environmental policy objectives, the Act has identified and outlined specific roles, responsibilities and functions of various key players and provides a comprehensive administrative and institutional arrangement which consists of: National Advisory committee; Minister responsible for environment; Director of environment; National

Environmental Management Council (NEMC); Sector ministries; Regional secretariat; and Local government authorities (City, Municipal, District and Town Councils).

Relevance to the Project: The Act is relevant because the project is expected to have some impacts to the environment (such as noise, vibration, and dust during renovation stage). Thus, monitoring of the mentioned parameters would require adherence to the developed environmental standards (international and national) and Environmental Management Plan (EMP) and Monitoring Plan (MP) to be prepared as part of design for the proposed project.

2. Occupational Health and Safety Act No. 5 of 2003

Part IV of this Act make provisions for safety, health and welfare for persons at work in factories and other places of work; to provide for the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with activities for persons at work. Proposed tea plantation and factory will entail the employment of both skilled and unskilled laborers, and as such will comply with this Act. Part 111 of the Act calls for theregistration of the market or workplaces to obtain compliance certificate as well as submission of drawings in blue prints which depict vital sections to the OSHA's Chief Inspector for approval. Occupational health and safety are key aspects in the operations. First aid equipment, sanitary facilities and effective Personal Protective gears will be provided to employees and maintained by the contractor during the period of renovation.

Relevance to the Project: EIA study and project management will be required to fully abide by the provisions of this Act to make sure that the safety of contractor's staff and people living along the construction corridor is effectively protected. The contract document prepared for the project requires the contractor to produce the following: Submit a work plan and provide training to staff regarding detailed description of site renovation features, trouble shooting and fault finding and proper use of the PPEs.

3. Local Government Act (District and Urban Authorities) of 1982

This Act provides for detailed responsibility for Urban and District Councils in the administration of their day-to-day activities. EIA and waste management are pointed out as one of the activities to be managed by both district and urban authorities.

Relevance to the Project: The project activities including this EIA study will seek to liaise closely with Rungwe District Council and other stakeholders in the project area will be required to fully abide the

provisions of this law in order to ensure effective management of waste to be generated.

4. **The Land Act, 2019**

The Land Act seeks to control land use and clarify issues pertaining to ownership of land and land-based resources, transactions on land and land administration. This Act identifies three categories of land – village, public and general, and distinguishes protected or restricted land (e.g. National parks, forest reserves, etc.) and ensures that tenure and rights of legitimate land users are considered and respected. Land sensitivity and potential environment impact of the proposed establishment of tea plantation and factory shall be considered in order to ensure that the land is not polluted and to allow for natural and rapid restoration of cleared vegetation or disturbed land

Relevance to the Project: The design and implementation of this EIA process is consistent with this legislation. The proposed project will be carried out within the limits of the site earmarked for the activity.

5. **The Fire and Rescue Army Act 2007**

The Fire Fighting and Rescue Act of 2007 stipulate that every building with more than one storey should be installed with a number of facilities for firefighting. Buildings have to be provided with adequate means of escape and firefighting facilities. Also, buildings as infrastructure require fire protection to facilitate their regular functioning and service delivery. Protection of buildings is not only necessary for such purposes, but also for the safety of the users.

Relevance to the project: The proposed development under the Act requires the installation of firefighting equipment's. Also, the proponent will employ skilled and knowledgeable personal to use the equipment and means against fire hazards could render attempts to contain fire outbreaks.

6. **Water Resource Management Act 2009**

The water resources management Act of 2009 principally seeks to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways that take into account ten (10) fundamental principles including:

Protecting biological diversity especially the aquatic ecosystems;

- Promoting the efficient, sustainable and beneficial use of water in the public interest;
- Providing for systems for managing the growing demand for water use through integrated planning and management of surface and groundwater resources, in ways that incorporate

economic, environmental and social dimension in the planning process;

- Proving implementation of international obligations stipulated under international legal instruments to which Tanzania is party and
- Facilitating social economic development.

Apart from incorporating sustainable water use principles and having pollution prevention conditionality in the water permits, the Act goes a step further by putting in place a regime for water resource protection, abstraction (surface and groundwater) and use. Under Section 33(1) of the Act, for the whole or part of a water source, a determination of the ecological reserve shall ensure that adequate allowance is made for each aspect of a reserve.

Relevance to the Project: This EIA study will ensure that all relevant potential impacts from the proposed establishment of tea plantation and Factory are properly mitigated to avoid any potential social and environmental problems. The discharge of waste water will be restricted as stated in the law, that waste water should be treated before discharged to the environment. renovation of the Factory will ensure sustainable and efficient use of water.

7. The Water Supply and Sanitation Act No. 12 of 2019

This legislation provides for sustainable management and adequate operation and transparent regulation of water supply and sanitation services; provides for establishment of water supply and sanitation authorities as well as community owned water supply organizations; and provides for appointment for service providers. The main aim of this law is to ensure the right of every Tanzanian to have access to efficient, effective and sustainable water supply and sanitation services for all purposes by taking into account among others protection and conservation of water resources and development and promotion of public health and sanitation; and protection of the interest of customers.

Under this law, the Minister responsible for water affairs shall establish water authority and cluster water authorities to achieve commercial viabilities.

Relevance to the Project: The project proponent will ensure that no kind of waste to be discharged in water sources so as to ensure water conservation and protection is well managed.

8. The Public Health Act 2009

Part IV of the Act provides for need to maintain cleanness and hygiene and prevent nuisance during renovation works. It calls for effective management of solid, liquid, gaseous, and hazardous wastes.

Section 76 of the Act specifically requires every authority to undertake periodic studies to determine the type of solid and liquid wastes generated from markets, institutions and industries; and determine appropriate methods for sorting and storage of the wastes

Relevance to the Project: This project will involve a level of waste generation and therefore the EIA study will design waste management activities to be implemented during the implementation of the project.

9. HIV and AIDS (prevention and Control) Act No. 28 of 2008

The Act provides for prevention, treatment, care, support and control of HIV and AIDS, for promotion of public health in relation to HIV and AIDS. HIV and AIDS education in workplace, the Act requires that every employer in consultation with the ministry shall establish and coordinate a workplace programme on HIV and AIDS for employee under his control and such a program shall include provision of gender response HIV and AIDS education, distribution of condoms and support to people living with HIV and AIDS.

Relevance to the Project: The project Proponent will observe the requirement of this Act during project implementation by promoting awareness and education concerning the prevention and control of the spread of the disease.

10. The workers Compensation Act No. 20 of 2008

The law provides 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 works compensation and to provide for related matter. **Relevance to the Project:** This Act is very relevant to this project as workers will be exposed to various hazards during renovation and operation of the Factory. The developer and the contractor will have to ensure safety and health of workers at the project environment.

11. The Urban Planning Act No. 8 of 2007

The law provides for the orderly and sustainable development of land in urban areas, to preserve and improve amenities; to provide for the grant of consent to develop land and powers of control over the use of land and to provide for other related matters. Expropriation of land for water infrastructure development and associated activities in urban areas shall comply with the provisions for this law. Under Section 3 among other things the law seeks to improve level of the provision of infrastructure and social services for sustainable human settlement development.

Relevance to the Project: This project seeks to improve education level also is a useful resource for those at national and district levels. The provision of the requirement by this project is in full compliance with the Urban Planning Act.

12. The Engineers Registration Act, 1997

There is hereby established Board known as the Engineers Registration Board which has responsibility of regulating the activities and conduct of engineers and of engineering consulting firms in accordance with the functions and powers conferred upon it by this Act. Qualification for registration of Engineers as stated in part iii section 10(1) of this act that "subject to the provisions of this Act, a person shall be entitled, on making an application to the Board in the prescribed manner and on payment to the Board of the prescribed fee, to be registered under this Act and to have his name entered in the register as a registered engineer".

Relevance to the project: This project has an engineering works which involves various designs for the renovation of the Factory. Example design for Building, Installation facilities such electricity, sewerage systems, waste management (waste water treatment plant, solid waste management system). All required engineering part will be done by a registered engineer to ensure compliance of the Act.

13. The Contractors Registration Act, 1997

There is hereby established Board known as the Contractors Registration Board. The purpose of contractor's registration Board is stated under this act in part ii section 3(2a-d). As explained in this act a contractor is "any person who himself as a developer or investor, undertakes the renovation, erection, installation or alteration of any structure, for public use or otherwise, situate below, on or above the ground or other work connected therewith or the execution of any alteration or otherwise to any structure, for public use or otherwise, or other work connected therewith, where such person undertaking to do any such work."

Part iii section 7(1) of this act states the registration of the contractors. "The Registrar shall keep and maintain registers of contractors of different types, categories and classes, in which the name of every person entitled to have his name in them as a registered contractor, shall be entered as soon as it is practicable after being accepted by the Board for registration."

Relevance to project: The proposed project contractors to be involved will be a registered member of the board as already being explained in part iii section 7(1) of the contractor's registration Act of 1997.

14. Environmental Impact Assessment and Audit Regulations as amended on 2018

The Environmental Impact Assessment and Audit regulations are made under Environmental Management Act. No 20 of 2004. The regulations provide basis for undertaking Environmental Impact Assessment and Environmental Audit for various development projects with significant environmental impacts in the country. This section gives a brief description of some provisions in the regulations that are relevant to this study.

Part 111 of the Environmental Impact Assessment and Audit Regulation, formed under G.N. No. 349 of 2005 deals with project registration and screening procedures. Section 5 requires the registration applicant for Environmental Impact Assessment Certificate to submit a project brief report in the format shown in the THIRD SCHEDULE of the EMA (2005) and FIRST SCHEDULE of the regulation. According to the provision, the applicant is required to submit a project brief report to the National Environmental Management Council (NEMC). Section 6 (1) requires a developer/project proponent to register the project in accordance with format specified in the THIRD SCHEDULE of the regulations. The section also, specifies issues to be covered by the proponent in the project brief report. Section 6 (3) requires a project brief to be prepared by a registered environmental impact assessment expert.

According to Section 11 (1) project proponent is required to undertake an environmental impact assessment especially if the project brief has no sufficient mitigation measures, or undertake a preliminary assessment if more information is required to determine a screening decision.

Further details and guidance for the conducting of EIA is provided; these include relevant steps for undertaking Preliminary Environmental Assessment (PEA -Section 11 (2)). Part IV Section 13(1) requires the proponent to conduct EIA in accordance with general environmental impact assessment guidelines and in accordance with the steps outlined in the FOURTH SCHEDULE of the regulations. Whereas Section 16 specifies EIA study should examine environmental, social, cultural economic and legal issues, The FIRST SCHEDULE gives list of projects subjected to EIA and those that do not requiring EIA and it categorizes the projects into two types namely: Type A (projects requiring a mandatory EIA) and Type B (project requiring PEA).

According to the schedule, Type B Projects are those projects that are likely to have some significant impacts but the magnitude of impacts is not well known. Thus, a PEA is required to determine whether the project should proceed without a full EIA.

Part X Section 44 (1 and 2) outlines the objectives of Environmental Audits and its principal functions. Section 45 outlines the basic principles under which the environmental audit is conducted and Section 46 (1) specifies the type of projects requiring environmental audits as specified in the THIRD SCHEDULE to EMA (2005) and FIRST SCHEDULE of the regulations.

Relevance to the Project: A project of this categorization is likely to have some social and environmental impacts. Following the review of the project brief submitted to NEMC, the decision was made to undertake Environmental Impact Assessment. Based on this, all phases of the EIA study will abide by the provisions of this Act.

15. Environmental Management (Air Quality Standards) Regulation, 2007.

The object of these regulations is to set baseline parameters on air quality and emissions and enforce minimum air quality standards. They are also meant to help developers including industrialists to keep abreast with environmentally friendly technologies and ensure that the public health as well as the environment is protected from various air pollution emissions sources. These Regulations stipulates the role and powers of the National Environmental Standards Committee. According to the regulations, the approval of a permit for emission of air pollutants shall be guided by ambient, receptor, emission and specification standards approved by the Minister. Offences and penalties for contraveners are also provided for in the regulations.

Emission and emission limits of sulphur and nitrogen dioxides, carbon monoxide, lead, ozone, black smoke and suspended particulate matter together with their test methods are specified. Tolerance limits and test methods for dust, sulphur dioxide and nitrogen oxides from cement factories into the air as well as from motor vehicles are also given. These pollutants are not expected to be generated from the project activities in significant amounts since special measures will be implemented to avoid emissions during operation.

Relevance to project: The proponent will ensure that mitigation measures on dust and gaseous emission are enforced on implementation of the project throughout the life cycle

16. Environmental Management (Soil Quality Standards) Regulation, 2007

These regulations set limits for soil contaminants in agriculture and habitat, enforce minimum soil quality standards, prescribe measures designated to maintain, restore and enhance the sustainable productivity of the soil and prescribe minimum soil quality standards for sustaining ecological integrity and

productivity of the soil. According to the regulations, among others, the National Environmental Standards Committee has the powers to set pollutant limits and specify procedures for determination of the quality of soil for protection of the soil from degradation as a result of anthropogenic activities such as agricultural and mining activities and waste disposal. Owners and operators of a main polluting activity are required to voluntarily register with NEMC and obtain a soil pollutants discharge permit. Obligations of polluters are also given. According to the regulations, the NEMC plays a crucial role in soil quality compliance and enforcement. Recording and reporting requirements, Offences and penalties for non-compliance as well as how appeals against aggrieved decisions should be handled are stipulated. Contaminant limits for selected soil pollutants mainly halogenated hydrocarbons (example, trichloethylene, dichloromethane, tetrachloroethylene, carbon tetrachloride, etc.), fuel hydrocarbons (benzene, ethylbenzene, total xylenes, toluene, etc.), organic and inorganic pesticides (lindane, Atrazine, DDT, sulphur, Hexachlorobenzene, Aldrin, etc.) and their respective test methods are specified. The Regulations also cover contaminant limits for some heavy metals (e.g. arsenic, cadmium, nickel, copper, zinc, etc.) together with their test methods. Most of the pollutants covered in these regulations will not be produced from the project activities in appreciable concentrations. However, there is a potential for soil pollution from petroleum hydrocarbons due to the use of fossil fuels for running machineries, plants and vehicles during the renovation phase. Fossil fuels will be applied in a rational manner to minimize residues and consequently soil and water pollution.

Relevance to project: The proponent will manage well all solid and liquid wastes to be generated and oil spills at each project phase to avoid the soil contamination.

17. Environmental Management (Water Quality Standard) Regulation, 2007

Among others, the object of the regulations is to enforce minimum water quality standards prescribed by the National Environmental Standards Committee, enable the National Environmental Standards Committee to determine water usages for purposes of establishing environmental quality standards and values for each usage and ensure all discharges of pollutants take into considerations the ability of the receiving water to accommodate contaminants for protection of human health and conservation of marine and aquatic environments. The Regulations elucidate the role of the National Environmental Standards Committee of Tanzania Bureau of Standards in setting minimum quality standards for water, sewerage, etc. They also give prohibitions and prescribed minimum water quality standards. The

applicant of water right is obliged to indicate the likely impact on the environment and comply with prescribed effluent or receiving water standards, which are not below the standards specified in these regulations if the water right or permit is granted. The regulations give NEMC the power to designate main water polluting activities for which prior grant of permit must be obtain from the Council. It can be observed from the regulations that, the NEMC plays a crucial role in water quality compliance and enforcement. Recording and reporting requirements, Offences and penalties for non- compliance as well as how appeals against aggrieved decisions should be handled are stipulated. The Regulations specify permissible limits for selected physical, inorganic, organic and microbiological components of Municipal and industrial effluents and the respective test methods of the pollutants. Specific tolerances and methods of testing for effluents of chrome and vegetable tanning industries and fertilizer industries are given. Regarding drinking water, the regulations specify microbiological requirements and classification of non-chlorinated piped water sources, chemical and physical limits as well as radioactive materials limits for quality of drinking water supplies. Also specified in the regulations are minimum distances from sources of water contamination and sampling frequency for water quality monitoring of various sources.

Relevance to project: The developer will minimize the impacts of the project activities to groundwater and nearby surface water sources and marine ecosystems.

18. The Local Government (Urban Development Control) Regulations, 2008, (GN No. 242/2008)

These regulations were made by the Prime Minister under powers conferred upon him by the Local Government (Urban Authorities) Act Cap 288. The Regulations provide for a mechanism for control of insanitary premises, management of night soil including its disposal. It prohibits depositing refuse on streets, pollution of water, fire in buildings or houses, straying animals, and construction of drainage

19. The Environment (Registration of Environment Experts) Regulations 2021

These Regulations make provision with respect to Environmental Experts and establish the Environmental Expert Committee. The Regulations provide for the certification and registration of Environmental Experts and contain rules relative to the practice and discipline of Environmental Experts and define functions, powers and internal organization of the Committee.

Relevance to project; The proponent complies with the requirements of this Act as it has engaged a registered and experienced Firm to conduct the Environmental Impact Assessment for the proposed project.

20. The urban planning (Use Group and Use Classes) Regulations. 2018:

The law provides for the orderly and sustainable development of land in urban areas, to preserve and improve amenities; to provide for the grant of consent to develop land and powers of control over the use of land and to provide for other related matters. Expropriation of land for water infrastructure development and associated activities in urban areas shall comply with the provisions for this law. Under Section 3 among other things the law seeks to improve level of the provision of infrastructure and social services for sustainable human settlement development.

Relevance to project: The proponent shall abide to the requirements of this Act by promoting proper use of land and protecting land.

21. The environment management (Hazardous Waste Control and Management) Regulation, 2021.

These Regulations may be cited as the Environmental Management (Hazardous Waste Control and Management) Regulations, 2021. These Regulations shall apply to all categories of hazardous waste and to the generation, collection, storage, transportation, treatment, recycling, reuse, recovery and disposal of hazardous waste and their movements in, into and out of Mainland Tanzania. The regulation requires that any person dealing with hazardous waste in Tanzania be guided by following principles of environment and sustainable development:

i. The precautionary principle
ii. Polluter pays principle, and
iii. The producer extended responsibility

Relevance to project: The management shall abide by the provision of this regulation through proper management of hazardous waste.

22. The Environment Management (Quality Standard for Control of Noise and Vibration pollution) Regulations, 2015

These Regulations shall apply to the control of noise and environmental vibrations in Mainland Tanzania. The objectives of these Regulations shall be to- (a) ensure the maintenance of a healthy environment for all the people in Mainland Tanzania, the tranquillity of their surrounding and their psychological wellbeing by regulating noise and vibration levels; (b) prescribe the maximum permissible noise and vibration levels from a facility or activity to which a person may be exposed; (c) provide for the control of noise and vibration and mitigating measures for the reduction of noise and vibration; (d) set baseline

parameters on noise and vibration permissible levels based on a number of practical considerations and acceptable limits; (e) enforce minimum noise and vibration limits prescribed by the National Environmental Standards Committee; (f) help developers such as industrialists to keep abreast with environmentally friendly technologies; and (g) ensure protection of human health and the environment from various sources of noise and vibration pollution.

Relevance to project: the management shall abide by this regulation and shall not make or cause to excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others and the environment; also the workers within the plant shall be provided with protective equipment's such as ear plugs to prevent the noises from the machines from affecting them.

23. The Environmental (Solid Waste Management) Regulations. 2009 as amended in 2016.

The regulation has been made under section 114, 115, 116,117, 118, 119, 120,121, 122 and 230 of Environmental Management Act, 2004. These regulations apply to all matter pertaining to solid waste management. They aimed among other things at setting standard for permit to operate solid waste disposal sites, permit to transport solid waste, permit to dispose solid waste and license to own or operate solid waste disposal site

Relevance to project: The Expected solid wastes to be generated are garbage waste like papers, food remains, packaging materials for agrochemicals, and plastics, also fire wood bulks and ash from boiler. The biodegradable waste will be decomposed and used as manure for the farms while the plastic wastes will be collected and given to the plastic recyclers. Same procedure will be adopted after expansion of tea factory.

24. The Fire rescue force (safety inspection and certificates) regulation, 2012.

The Act stipulate that the Certificate issued shall be valid for a period of one year from the date of issue, there after the property owner shall apply for it to be renewed. Any owner of the property, premises, vehicle, vessel who fails to renew his Fire Safety Certificate within one month after its expiry will be required to pay the principal amount payable in respect of that property plus penalty of twenty-five per centum (25%) for late payment.

Relevance to project: The contractor shall by the provision of this Act by consulting fire and rescue force for inspection and renewal of certificate annually.

25. Fire and rescue force (precautions in building) regulation,2015

The provisions of this Part shall apply in determining the design, renovation, protection, location, arrangement and maintenance of exit facilities to provide safe means of escape for occupants from all buildings hereafter erected, altered or changed in occupancy.

4.-(1) The areas which are designated as means of escape shall include- (a) exit staircase; (b) firefighting lobby; (c) smoke stop lobby; (d) exit passageway; and (e) escape corridors. (2) The areas which are designated as means of escape shall not be turned into other usage.

Relevance to project: The contractor shall abide by the provision of this Act by designating proper exit routes to be used during fire emergency.

26. The Companies Act 2002

An Act to repeal and replace a law relating to companies and other associations, to provide for more comprehensive provisions for regulation and control of companies, associations and related matters. 3.-(I) Any two or more persons, associated for any lawful purpose may, by subscribing their names to a memorandum of association and otherwise complying with the requirements of this Act in respect of registration, form an incorporated company, with or without limited liability. 15.-(I) On the registration of the memorandum of a company the Registrar shall certify under his hand that the company is incorporated and, in the case of a limited company, that the company is limited, and, in the case of a public company, that the company is a public company. Effect of registration (2) From the date of incorporation mentioned in the certificate of incorporation, the subscribers to the memorandum, together with such other persons as may from time to time become members of the company, shall be a body corporate by the name contained in the memorandum, capable of exercising all the functions of an incorporated company, but with such liability on the part of the members to contribute to the assets of the company in the event of its being wound up as provided for in this Act. 16.-(I) A certificate of incorporation given by the Registrar in respect of any association shall be conclusive evidence that all the requirements of this Act in respect of registration and of matters precedent and incidental thereto have been complied with and that the association. is a company authorized to be registered and duly registered un-Conclusiveness of certificate of incorporation der this Act.

Relevance to project: The proponent complies by the provision of this Act and the company is incorporated on the 18th day of January 2007.

27. The investment act 1997 cap 38 (R.E 2002)

An Act to make provision for investment in Tanzania, to provide for more favorable conditions for investors, and for related matters. All investors whether or not this Act applies to them to obtain necessary permits, authorizations, approvals, registrations, consents, licenses and any other matter required by law for a person to set up and operate an investment.

Relevance to project: The proponent shall abide by the provision of this Act by seeking proper permits, authorizations, approvals, registrations, consents required by law to operate the Tea Estate.

28. The Income Tax Act R.E 2019

An Act to make provisions for the charge, assessment and collection of Income Tax, for the ascertainment of the income to be charged and for matters incidental thereto. 4.-(1) Income tax shall be charged and is payable for each year of income in accordance with the procedure in Part VII by every person - (a) who has total income for the year of income or is a corporation which has a perpetual unrelieved loss determined under section 19 for the year of income and the previous two consecutive years of income; (b) who has a domestic permanent establishment that has repatriated income for the year of income; or (c) who receives a final withholding payment during the year of income. (2) The amount of income tax payable by a person for a year of income shall be equal to the sum of the income tax payable with respect to subsection (1).

Relevance to project: The Act is relevant because the project is expected to have income due to the operations of tea estate and factory. The proponent shall adhere to the provision of the Act and pay the required tax imposed by the Government.

29. The village land Act cap114 R E 2019

An Act to provide for the management and administration of land in villages, and for related matters. The village council shall, subject to the provisions of this Act, be responsible for the management of all village land. (2) The village council shall exercise the functions of management in accordance with the principles applicable to a trustee managing property on behalf of a beneficiary as if the council were a trustee of, and the villagers and other persons resident in the village were beneficiaries under a trust of the village land. (3) In the management of village land, a village council shall have regard to— (a) the principle of sustainable development in the management of village land and the relationship between land use, other natural resources and the environment in and contiguous to the village and village land;

(b) the need to consult with and take account of the views and, where it is so provided, comply with any decisions or orders, any public officer or public authority having jurisdiction over any matter in the area where the village land is; (c) the need to consult with and take account of the views of other local authorities having jurisdiction in the area where the village land is. (4) A village council may establish a committee to advise and make recommendations to it on the exercise of any of the functions of the management of village land but, notwithstanding the provisions of section 110 of the Local Government (District Authorities) Act such committee shall have no power to take any decisions concerning the management of village land.

Relevance to project: The proponent shall abide by the provision of this Act by cooperating with the village council on different matters

30. The Business Licensing Act, 1972

An Act to repeal and re-enact Trades Licensing Ordinance. (5) Any building or part of a building (including any out-house, shed or other structure, and also any part of land enclosed by a fence, howsoever constructed), which is used as an office, Shop, godown, store or warehouse or otherwise as a place where any business is normally carried on, or which is normally used by a person carrying on business for any purpose connected with his business shall, for the purposes of this Act be deemed to be a place where such business is being carried on: Provided that- (a) any place only temporarily used by a person carrying on business for any specific purpose connected with the business shall be deemed not to be a place where such business is normally carried on; (b) where two or more separate portions of a building or two or more separate Places on the land comprised in the same right of occupancy granted, or deemed by any written law to have been granted, under the Land ordinance, are used by the same person for the purpose of, or-in connection with, the business carried on by him, such portions or, as the case May be, places shall, in relation to such business, be deemed to be One Place of business.

3..-(l) No person shall carry on m Tanganyika, whether as a principal or agent, any business unless- (a) he is the holder of a valid business license issued to him In relation to such business; and (b) such business is being carried on at the place specified m the licence. (2) No person shall carry on business at two or more places, unless he is the holder of a separate business licence issued to him M' relation to such business for each of such place: provided that, m any such case, if a valid business licence exists m respect of any of the places of business (hereinafter referred to as -the principal place of business'') the holder

shall be deemed not to have contravened the provisions of this subsection-

Relevance to project: The proponent abides by the provisions of this Act and has a valid business license for the proposed project.

31. HIV and AIDS (prevention and Control) Act No. 28 of 2008

The Act provides for prevention, treatment, care, support and control of HIV and AIDS, for promotion of public health in relation to HIV and AIDS. HIV and AIDS education in workplace, the Act requires that every employer in consultation with the ministry shall establish and coordinate a workplace programme on HIV and AIDS for employee under his control and such a program shall include provision of gender response HIV and AIDS education, distribution of condoms and support to people living with HIV and AIDS.

Relevance to project: The project Proponent will observe the requirement of this Act during project implementation by promoting awareness and education concerning the prevention and control of the spread of the disease.

32. The Workers Compensation CAP 263 R.E 2015

The law provides 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 works compensation and to provide for related matter. Relevance to project: This Act is very relevant to this project as workers will be exposed to various hazards during renovation and operation of the Chivanjee tea estate. The developer and the contractor will ensure safety and health of workers at the project environment through provision of compensation to employees for disablement of death caused by or resulting from injuries or diseases sustained or contracted in the course of employment.

33. The urban planning Act, 2007

An Act to provide for the orderly and sustainable development of land in urban areas, to preserve and improve amenities; to provide for the grant of consent to develop land and powers of control over the use of land and to provide for other related matters.

Relevance to project: The proponent shall abide to the requirements of this Act by promoting proper use of land and protecting land.

34. The urban planning(building) regulations,2018;

Use Class: Individual dwelling houses designed for use as dwellings by single families, together with such outbuildings as are normally used therewith, but not including dwelling houses designed for occupation by more than one family, and not including dwelling accommodation built over or attached to commercial, office or industrial buildings of Groups E to M inclusive. Terraced dwelling houses (in blocks of two or more) each dwelling designed for use by a single family, together with such outbuildings as are normally used therewith, but not including dwelling accommodation attached to commercial, industrial or office buildings of Groups E to M inclusive. Dwelling houses occupied principally as dwellings, but also used by the occupiers or tenants for professions and occupations and not used in any way as industrial buildings or for the public display or sale of goods or for the storage of bulky equipment or materials used in the occupier's profession or occupation.

Relevance to project: The proponent shall abide to the requirements of this Act by adhering to the use as designated by the law.

35. The Government Chemist Laboratory Authority Act no 8 of 2016

This Act establishes the Government Chemistry Laboratory Authority and provides with respect to its functions, powers and administration. The authority shall be the supreme and referral laboratory of the Government of Tanzania. It shall carry out, among other things, testing of food and drugs. it shall also carry out functions under the Environmental Management Act. The Act also requires other laboratories to register with the Chief Government Chemist. The authority shall conduct research activities, laboratory analysis and advise the Government on matters relating to forensic toxicology, forensic biology, DNA, illicit drugs, forensic chemistry, food, drugs, occupational health, industrial and consumer chemicals and products and environmental samples for executing health, legal, social wellbeing and environmental interventions.

Relevance to project: The proponent shall abide to the requirements of this Act by adhering to standards in the products they produce (tea).

36. The industries and consumer chemicals (management and control) regulations,2020

5.-(1) Any person who imports or exports a chemical shall- (a) be registered and be issued a certificate; (b) register the premises and chemicals; (c) create awareness to the public on the inherent risks of indiscriminate use and misuse of chemicals; (d) set and adhere to the code of practice and guidelines on

the safe use and handling of chemicals; (e) apply for chemical importation or exportation permit for every chemical consignment prior to importation or exportation; and (f) submit to the Registrar, in writing, the name of an authorized agent.

Relevance to project: The proponent shall abide to the requirements of this Act by registering as the importer and user of chemicals, as well as proper usage of chemicals to control risks

37. The industrial and consumer's chemicals (management and control) Act, 2003

An Act to provide for the management and control of the production, importation, transportation, exportation, storage, dealing, and disposal of chemicals and for matters connected therewith. This Act introduces measures for the control of production, importation, exportation, transportation, storage, handling and placing on the market of industrial or consumer chemicals or chemical products and provides for the carrying out of such control.

Sections 3 to 10 provide for administration of this Act and establish for this purpose a Technical Committee and define the functions of the Government Chemist Laboratory Agency, the Chief Government Chemist, the Ministerial Advisory Board for the Government Chemist Laboratory Agency and the Emergency Response Committee. The Chief Government Chemist shall act as the Registrar of Chemicals, the functions of which are set out in section 10. Sections 11 to 47 contain provisions relative to the control of the production, importation, transportation, exportation, storage, handling, placing on the market and disposal of chemicals. Measures of control include registration of chemicals, certification, use restrictions, inspection, packing labelling requirements and precautionary measures. Other provisions of this Act concern financial arrangements, liability and regulation making powers of the Minister. Offences are defining and penalties prescribed

Relevance to project: The proponent shall abide to the requirements of this Act by providing proper management and control of the production, importation, transportation, exportation, storage, dealing, and disposal of chemicals to be used in the project.

38. The Employment and Labour Relations Act Cap 366 RE 2019

An Act to make provisions for core labour rights, to establish basic employment standards, to provide a framework for collective bargaining, to provide for the prevention and settlement of disputes, and to provide for related matters. 5.-(1) No person shall employ a child under the age of fourteen years. (2) A child of fourteen years of age may only be employed to do light work, which is not likely to be harmful

to the child's health and development; and does not prejudice the child's attendance at school, participation in vocational orientation or training programmes approved by the competent authority or the child's capacity to benefit from the instruction received. (3) A child under eighteen years of age shall not be employed in a mine, factory or as crew on a ship or in any other worksite including non-formal settings and agriculture, where work conditions may be considered hazardous by the Minister.

Relevance to project; The proponent shall abide to the requirements of this Act by not employing a child below 18 years old in factory site.

3.4 Relevant International Agreements, Conventions and Treaties

Tanzania is signatory to a number of international agreements and conventions relating to environmental management, community rights and Indigenous Peoples. The international conventions are not always translated into national legislation. Some of the key agreements are listed in in the table below.

Table 6; Relevant International Agreements, Conventions and Treaties

CLIMATE CHANGE/AIR QUALITY		
Agreement/Convention	**Notes/Comments**	**Relevance**
Vienna Convention for the Protection of the Ozone Layer, 1985	Protection of the ozone layer, came into force in 1988,	Sets international standards for protection of the ozone layer; emissions from project potential to harm ozone layer
Montreal Protocol on Substances that Deplete Ozone Layer,1989	Protection of the ozone layer.	As above

United Nations Framework Convention on Climate Change (UNFCC), 1994	Control of greenhouse gas emissions. Tanzania signed the Convention on 12 June, 1992 and ratified it on 17 April, 1996	Sets international guidelines on restrictions of GHG emissions in order to prevent climate change; Project will emit greenhouse gases from power generation through heavy fuel combustion
Kyoto Protocol, 1997	Greenhouse gas emissions targets.	As above
Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention), 1971	The conservation and sustainable utilization of wetlands, i.e., to stem progressive encroachment on and loss of wetlands now and in the future, recognizing the fundamental ecological functions of wetlands, them economic, cultural, value.	Sets international requirements for the protection of wetlands; project has potential to impact local wetland area
Convention on the International Trade of Endangered Species of Wild Fauna and Flora (CITES), 1973	To ensure that international trade in specimens of wild animals and plants does not threaten their survival and it accords varying degrees of protection to more than 33,000 species of animals and plants.	Sets international restrictions /bans on trade of certain wild animals/plants. Project takes place in high biodiversity area

United Nations Convention on Biological Diversity, 1992	Promotes development of national strategies for the conservation and sustainable use of biological diversity. Often seen as the key document regarding sustainable development.	Sets guidelines for protection and promotion of biological diversity. Project takes place in high biodiversity area.
United Nations Convention to Combat Desertification, 1994	To combat desertification and mitigate the effects of drought through national action programs that incorporate long-term strategies supported by international cooperation and partnership arrangements.	Sets guidelines to combat desertification. Project has potential to impact local water resources and quality and land use
Constitution of the International Labor Organization	Promotes opportunities for women and men to obtain decent and productive work, in conditions of freedom, equity, security and human dignity in a safe and healthy environment.	Sets international labour standards; project will employ large workforce
Forced Labour Convention, 1930	Tanzania ratified this Convention and thus undertakes to suppress the use of forced or compulsory labour in all its forms within the shortest possible period.	Although not likely to occur, this risk should not be underrated as the vast extent of secondary or tertiary associations may trigger this impact accidentally.

World Health Organization	To improve health and Living standards of the people in the World	Sets guidelines to improve health and living standards; project has potential to impact local health /living Standards.
Rotterdam convention	The objectives are to promote shared responsibility and cooperative efforts among parties in the international trade of certain hazardous chemicals to protect human health and the environment from potential harm, and to contribute to the environmentally sound use of those hazardous chemicals by: facilitating information exchange about their characteristics; providing for a national decision-making process on their import and export; and disseminating these decisions to parties.	To set guidelines for protection of human health and the environment from potential harm

3.5 Administrative Framework / Institutional Arrangement

The administrative and institutional arrangements for environmental management for all sectors in Tanzania are stipulated in the environmental Management Act No. 20 of 2004 (Cap 191). The Act mentions the Minister Responsible for Environment as the overall in-charge for the administration of all matters related to the environment. Part 111 of EMA, 2004 provides details of administrative and institutional framework for environmental management in Tanzania. The Act also mentions seven (7)

institutions which are involved in environmental management in Tanzania. The administrative authority for environmental assessment and monitoring at national level is vested in the office of the Vice-President, where the Minister Responsible for Environment is seated. Other legal institutions for environmental management in the country include: National Environmental Advisory Committee, Director of Environment, National Environment Management Council (NEMC), Sector Ministries, Regional Secretariat and Local Government Authorities (Township, Ward, Sub wars "Mtaa and Kitongoji").

The Minister Responsible for Environment - has overall responsibility of matters related to environment, including the approval of the EIA reports.

The National Environmental Advisory Committee (NEAC) - is comprised of members with experience in various fields of environmental management in the public and private sector and in civil society. The committee advises the Minister on any matter related to environmental management.

The Division of Environment (DoE) - headed by the Director of Environment deals with the development of Environmental policy and co-ordination of its implementation. It's also plays an advisory role to the Government on all matters pertaining to environmental management including overarching mandate on the functions of the National Environmental Management Council (NEMC).

National Environmental Management Council (NEMC) – headed by the Director General has the overall responsibility of undertaking enforcement, compliance, review and monitoring of Environmental Impact Assessment, and in this regard facilitates public participation in environmental decision making. Other functions of NEMC include recommendations to the Minister to approve, reject or approve with conditions, specific EIS and to make recommendations on whether to revoke EIA Certificates in cases of non-compliance.

The Sector Ministries- are required to establish Sector Environmental Sections headed by the Sector Environmental Coordinator which, among other things, have the responsibility to ensure environmental compliance by the Sector Ministry and to oversee the preparation of, and implementation of, all EIA's required for investments in the sector.

The Regional Secretariat -headed by the Regional Environmental Management Expert (REME), is responsible for the co-ordination of all environmental management programs in their respective regions. The regional administrative Act No. 9 of 1997 provide for Regional Commissioners to oversee regional secretariat Councils, with district commissioner directly supervising the district councils.

Table 7; Institutional framework

Level	Institution	Roles
National	The Vice President's Office (Division of Environment, NEMC)	- Co-ordinate Environmental Management Policy, Environmental Management Act and EIA guidelines - Approval of ToR, Review of EIA - Issuing an Environmental Certificate - Environmental Monitoring and Compliance Auditing - Advise Government on all environmental matters
	Ministry of Land, Housing and Human Settlements development	- Land use planning, - Issuing of Right of Occupancy, - Valuation and compensation.
Regional	Regional commissioner's Office	- Oversee and advice on implementation of national policies at regional level - Oversee enforcement of laws & regulations - Advice on implementation of development projects and activities at regional level

District	Rungwe District Commissioner's Office	- Oversee and advice on implementation of national policies at District level - Oversee enforcement of laws & regulations - Advice on implementation of development projects and activities at District level
	Rungwe District Council (District Executive Director Office)	- Overseeing all development activities in the district
Ward	Ward Development Committees (Ward Executive Officer, Ward Extension officers), Ward Environment committee	- Oversee general development plans for the Ward - Provide information on local situation and Extension services - Technical support & advice - Project Monitoring
Village (community)	Councils (Chairman /VEO, Environment Committee): and other leaders	- View on socio-economic and cultural value of the sites and project operations. - Rendering assistance and advice on the implementation of the project - Project Monitoring (watchdog for the environment, ensure wellbeing of residents and participate in project activities

Project proponent	Mohammed Enterprises Tanzania Limited	- Project design and planning and facilities renovation - EIA study - Project implementation (operation) - Project monitoring and internal auditing - Project decommissioning

3.6 Environmental and Social Management Framework

African Development Bank Environmental and Social Guideline and Policies

As a multilateral development bank, AfDB has joined the other international financing institutions in adopting environmental and social policies, guidelines, and procedures to ensure that its operations avoid impacts on people and the environment.

3.6.1 Operational Safeguards-- OS

The Bank selected the Operational Safeguards (Oss) for inclusion in the ISS on the basis of the following considerations:

- Commitments in the Bank's existing policies;
- Relevance to key environmental and social issues in the region;
- Lessons learned from applying the environmental and social policies/procedures in the Bank
- Harmonization with other multilateral development banks and alignment with relevant international conventions and standards;
- Outcomes of stakeholder consultations; and
- Limiting the number of OSs to just what is required to achieve the optimal functioning of the ISS. The OSs are intended to:
- Better integrate considerations of environmental and social impacts into Bank operations to promote sustainability and long-term development in Africa;

- Prevent projects from adversely affecting the environment and local communities or, where prevention is not possible, minimize, mitigate and/or compensate for adverse effects and maximize development benefits;
- Systematically consider the impact of climate change on the sustainability of investment projects and the contribution of projects to global greenhouse gas emissions;
- Delineate the roles and responsibilities of the Bank and its borrowers or clients in implementing projects, achieving sustainable outcomes, and promoting local participation; and
- Assist regional member countries and borrowers/ clients in strengthening their own safeguards systems and their capacity to manage environmental and social risks.

3.6.2 Relevant E&S Operational Standards (Oss)

E&S Operational Standards (Oss) of the African Development Bank Group that are triggered by the Project are summarized below;

OS 1: Assessment and Management of Environmental and Social Risk and Impact

This overarching safeguard governs the process of determining a project's environmental and social category and the resulting environmental and social assessment requirements: the scope of application; categorization; use of a SESA and ESIA, where appropriate; Environmental and Social Management Plans; climate change vulnerability assessment; public consultation; community impacts; appraisal and treatment of vulnerable groups; and grievance procedures. It updates and consolidates the policy commitments set out in the Bank's policy on the environment.

Compliance; The project is relevant as it has involved a consultant to conduct an Environmental and Social Impact Assessment (ESIA) and/or Environmental and Social Management Plans (ESMPs). Therefore, the project components have been screened to determine potential impacts and mitigation measures for their planned activities.

OS 2: Labor and working Conditions

his safeguard establishes the Bank's requirements for its borrowers or clients concerning workers' conditions, rights and protection from abuse or exploitation. It covers working conditions, workers' organizations, occupational health and safety, and avoidance of child or forced labor

At the beginning of the working relationship, workers shall be provided with information and documentation which shows rights related to hours of work, wages, overtime, compensation and benefits. During all project phases, the contractor or proponent shall not employ workers under 18 years' old and shall not practice any kind of forced labour. There shall be meetings with manager/employee to discuss the grievance, possibly with a union representative; expression of grievance in writing; HR, management union representative discussion. There shall be hazards and risk identification; provision of preventive and protective measures such as PPE's; regular safety trainings; emergency prevention and preparedness procedures and response plan.

Compliance; The operational standard is relevant as the proposed project activities will use labour in all project phases. The management shall promote fair treatment, non-discrimination, equal opportunity of workers, establish, maintain, and improve the worker-management relationship, promote compliance with national employment and labor laws and to protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the client's supply chain.

OS 3: Resources Efficiency and Pollution Prevention and Management

This safeguard covers the range of impacts of pollution, waste, and hazardous materials for which there are agreed international conventions and comprehensive industry-specific standards that other multilateral development banks follow. It also introduces vulnerability analysis and monitoring of greenhouse

Compliance; The standard is relevant as the management/contractor will avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities, promote more sustainable use of resources, including energy and water and reduce project-

related GHG emissions. The management shall conduct the baseline air quality study before project implementation and air quality monitoring shall be done during project implementation.

OS 4: Community Health, Safety and Security

The standard recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration and/or intensification of impacts due to project activities. While acknowledging the public authorities' role in promoting the health, safety, and security of the public, this Standard addresses the client's responsibility to avoid or minimize the risks and impacts to community health, safety, and security that may arise from project related-activities, with particular attention to vulnerable groups.

Compliance; The standard is relevant as the project management will make sure that the safety of community in all project phases are effectively protected by avoiding or minimizing the risks and impacts of the project.

OS 5: Land Acquisition, Restrictions on Access to Land and Land Use, and Involuntary Resettlement: Land Acquisition, Population Displacement and Compensation

This safeguard consolidates the policy commitments and requirements set out in the Bank's policy on involuntary resettlement, and it incorporates refinements designed to improve the operational effectiveness of those requirements. In particular, it embraces comprehensive and forward- looking notions of livelihood and assets, accounting for their social, cultural, and economic dimensions. It also adopts a definition of community and common property that emphasizes the need to maintain social cohesion, community structures, and the social interlinkages that common property provides. The safeguard retains the requirement to provide compensation at full replacement cost; reiterates the importance of a resettlement that improves standards of living, income-earning capacity, and overall means of livelihood; and emphasizes the need to ensure that social considerations, such as gender, age, and stakes in the project outcome, do not disenfranchise particular project-affected people.

Compliance; The standard is not relevant as there are will be no Land Acquisition, Population Displacement and Compensation at the project site. The proposed project areas are open areas owned by METL.

OS 6: Habitat and Biodiversity Conservation & Sustainable Management of Living Natural Resources

The overarching objective of this safeguard is to conserve biological diversity and promote the sustainable use of natural resources. It translates into OS requirements the Bank's commitments in its policy on integrated water resources management and the UN Convention on Biological Diversity. The safeguard reflects the importance of biodiversity on the African continent and the value of key ecosystems to the population, emphasizing the need to "respect, conserve and maintain [the] knowledge, innovations and practices of indigenous and local communities… [and] to protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements.

Compliance; The standard is relevant as the project shall protect and conserve biodiversity, maintain the benefits from ecosystem services and promote the sustainable management of living natural resources through the adoption of practices that integrates conservation needs and development priorities.

OS 10 Stakeholder Engagement and Disclosure of Information

The Bank acknowledges, in its quest to meet its primary objective of assisting African countries to attain economic development and social progress, that the right to effective participation in decision making is essential for the development of inclusive and just societies. This OS therefore recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.

Stakeholder engagement is an inclusive process conducted throughout the project life cycle. Where properly designed and implemented, it supports the development of strong, constructive and responsive relationships that are important for successful management of a project's environmental and social risks.

Stakeholder engagement is most effective when initiated at an early stage of the project development process, and is an integral part of early project decisions and the assessment, management and monitoring of the project's environmental and social risks and impacts.

Compliance; The standard is relevant due to the fact that the ESIA study conducted has taken into account stakeholder engagement effectively by consulting /engaging different stakeholders to get their opinions, and views of the project for proper decision making

3.6.3 Good International Industry Practice (GIIP)

Industry Best Practice means at any time the exercise or practice of that degree of skill, care, diligence, prudence, efficiency, foresight, standards, practices, methods, procedures and timeliness which would be expected at such time from a leading and expert company within the industry, such company seeking to comply with its contractual obligations in full and complying with all Applicable Laws. In our context, those relating to tea production and processing include the following:

i. Land Preparation and farming

- Terracing sloppy land to reduce soil erosion and water runoff
- Use of green manure to improve soil structure, increases the water holding capacity of the soil and decreases soil erosion. It also constitutes a valuable source of nitrogen.
- Retaining of forest patches for aesthetics, bird's corridor and additional water retaining
- Provision of mobile toilets for farm attendants
- Use of bio-degradable sleeves for the seedlings
- Communicating with stakeholders before chemical spraying and marking spray areas on farm
- Prevention of contamination from neighboring farms
- Monitor common water discharge points for siltation or nutrification

ii. Processing and packaging

- Adoption of transparent roofing opposed to lighting using electric grid sources for vision during the day
- Implementation of fine dust extractors to improve indoor air quality
- Limited use of pesticides (only when very necessary)

- Use of dedicated vehicles exclusively for tea transportation
- General
- Adoption of OSH and Environmental and Safety Industrial regulations
- Skills exchange to improve local based practices by fostering relations with common interest groups for learning purposes
- Records keeping from seedling acquisition through the farming and processing cycle to marketing and sales, traceable through consumer stage.

CHAPTER FOUR

4.0 Environmental and Social Baseline Conditions

4.1 Introduction

This section describes the baseline condition as they relate to physical environment, biological environment, the socio-economic environment within the core project area and the marginal zones. The sub sections of physical, economic, social characteristics and Infrastructure and demographic characteristics are based on secondary data observation, while the last sub section including biological environment are based on the primary survey obtained during field work.

4.2 Physical characteristics

i. Geographical location

Korogwe District also known as Korogwe District Council is one of the eleven districts of Tanga Region in Tanzania. The District covers an area of 6,534 km2 (2,523 sq mi). It is bordered to the northeast by the Lushoto District and north by Bumbuli District. Korogwe District also bordered to the east by the Mkinga District and the Muheza District, to the South by the Handeni Rural District and the Korogwe Urban District, and to the West by the Kilimanjaro Region. The highest point in Korogwe District is Mafi Peak at 1,442m. (Source; https://en.wikipedia.org/wiki/Korogwe_District) , see map figure 1.

ii. Climate

Located at an elevation of 305.48 meters (1002.23 feet) above sea level, Korogwe has a Tropical wet and dry or savanna ('summer' dry season) climate (Classification: As). The district's yearly temperature is 29.08ºC (84.34ºF) and it is 4.86% higher than Tanzania's averages. Korogwe typically receives about 103.57 millimeters (4.08 inches) of precipitation and has 185.83 rainy days (50.91% of the time) annually.

iii. Geology and Drainage

The West and East Usambaras are large ranges of Precambrian metamorphic geologic formations of acid-gneisses, pyroxenes, and amphiboles. These mountains were formed by faulting and uplifting creating the drainage system of troughs that form many watersheds, which provide water to a majority of the population of northeast Tanzania.

The usambara mountain range was formed nearly two million years ago. Due to a lack of glaciations and a relatively consistent climate, the rainforest has gone through a long term and unique evolution

resulting in an impressive amount of endemism and an old-growth cloud rainforest. The West and East Usambaras are large ranges of Precambrian metamorphic geologic formations of acid-gneisses, pyroxenes, and amphiboles. These mountains were formed by faulting and uplifting creating the drainage system of troughs that form many watersheds, which provide water to a majority of the population of northeast Tanzania. (Source; https://en.wikipedia.org/wiki/Usambara_Mountains).

iv. Hydrology

The main rivers draining Dindira and Arc Mountain are the Kizungu, Kwabululu and Mtungwi Rivers. Numerous tributaries flow from Dindira area into the Kwabululu while many more drain Dindira area into the three rivers. The rivers spring from the highland forests surrounding the general area, forming the head waters form the region, discharging into the Pangani River

v. The Agro-Ecological Zones

The variations in the topography and climate provide different cropping possibilities which can be defined into three major agro-ecological zones. Most of the district has loamy, sandy and clay soils while the natural vegetation is predominantly of the tropical type. These zones are the Mountainous, low wetlands, and Semi-Arid Zone. An Irrigation zone can also be identified along the major rivers. Each zone, however, has similar topography, climate and cropping possibilities.

The mountainous zone occupies about 25% of the district area, lies between 900-1500 meters above sea level, has a temperate climate and between 1000-2000mm of annual rainfall. The zone is ideal for growing bananas, beans, potatoes, temperate fruits, coffee, tea and cardamom. Livestock are also reared. Since the slopes are gentle, there are few erosion problems. This zone is over part of the Western Usambara Mountains includes Bungu Division, and some of Magoma division (Kizara ward).

The Low wetland zone occupies about 35% of the district, lies between 600-800 meters, is hothumid, and has an average rainfall between 800-1000mm per year. Several rivers, including the Pangani and Lwengera, drain this area to provide irrigation potentials. The main food crops grown are maize, paddy, beans, cassava and potatoes while the cash crops cultivated include cashew nuts, cotton, sisal and tropical fruits like mangoes, oranges and tangerines. Livestock (exotic and indigenous) is also reared for milk and meat. The zone covers Korogwe (Ngombezi ward) and some of Magoma divisions, Mombo division (Makuyuni ward)

The Semi-Arid Zone occupies about 40% of the district. Lies between 400-700 meters above sea level and has less than 600 mm of mean annual rainfall. The crops grown are millet, cassava, beans, paddy, sisal, cotton, sunflower, and cashew nuts. The zone covers Mkomazi, Mazinde, Mkalamo, Mombo and parts of Mashewa wards. The Irrigation zone extends through parts of the Low Wetland and Semi-Arid zones which are drained by the major rivers. Paddy is the main crop in these river valleys and cultivation depends on drawing water from the rivers. Some irrigation is also found locally in depressions among the mountainous zone and is used to grow vegetables like tomatoes, onions and cabbage

4.3 Biological Environment

This part gives details of natural biological factors (such as animals and plants) that affect human life (as in a particular place or period)

i. Flora

The forests in the reserve have been described as intermediate evergreen forests or submontane evergreen forest, a type of vegetative cover that tends to grow on the seaward side of both the West and East Usambaras. The dominant trees are *Allanblackia stuhlmannii, Isoberlinia scheffleri, Macaranga capensis, Cephalosphaera usambarensis, Myrianthus holstii, Newtonia buchananii* and *Parinari excelsa.*

ii. Fauna

Some of the endemic animals are named after the mountains in which the nature reserve is set, and these include the *Usambara weaver (Ploceus nicolli), Usambara akalat, Usambara hyliota (Hyliota usambara) and the Usambara eagle-owl (Bubo vosseleri).* Others are named after the reserve, and these include the Amani sunbird (*Hedydipna pallidigaster*) and the Amani tailorbird. There are also endemic tree frogs and chameleons unique to the area. (Source; https://en.wikipedia.org/wiki/Usambara_Mountains).

4.4 Socio Economic Activities

i. Social Services

- **Population**

According to the 2022 Tanzania National Census, the population of Korogwe Rural District was 272,870 with 3,203 km² Area 85.19/km² Population Density [2022] 1.2% Annual Population Change 2012 – 2022, (Source: National Bureau of Statistics Tanzania (web).

- **Education**

The awareness in education of the people in Korogwe is very high, there many primary schools, secondary schools as well as colleges. As of 2022, there were 165 Schools in Korogwe District,
138 of are primary schools and 27 are secondary schools. (Source;
https://en.wikipedia.org/wiki/Korogwe_District)

- **Employment**

The adult population of the district is categorized into two main groups: working and non- working. The working population includes all adults who had engaged in any type of work in the
4 weeks preceding the survey. Within the working population, a distinction is made between those employed to capacity and those who are underemployed. The underemployed are those individuals who report willingness to take on additional work. This category reflects the population that is not working as much as they want, so they reflect surplus in the worker supply. The non-working population consists of individuals who had not engaged in any type of work in the 4 weeks preceding the survey. This group is further subdivided into those who are unemployed and those who are economically inactive. While the economically inactive are individuals who had not engaged in any work in the 4 weeks preceding the survey due to illness, disability, age or school, unemployed individuals are those who were not working due to lack of employment opportunities but were actively looking for a job.

- **Gender empowerment**

Gender empowerment, among others ensures that the disadvantaged sex particularly women, fully participate in policy and decision-making processes and in all aspects of economic, sociocultural and political life. Various measures have already been put in place to minimize time spent by women and girls in attending home activities to allow more time to be used in the above-mentioned activities. These measures include proper use of family planning methods, opening and operating of day care centers, establishment of women economic groups, participation in SACCOS, CBOs and other cooperative activities. These initiatives are also implemented in Korogwe District Council.

- **Water and sanitation**

Nearly a quarter (24 percent) of households has a safe source of water, whereas 28 percent of them get it from an unprotected well. Safe sources of drinking water are treated pipes, bore holes, hand pumps, and protected wells. The analysis by cluster location shows that 33 percent of households in accessible

villages have a safe source of drinking water, whereas the share of households in remote villages is just 15 percent. The shares of households with unprotected wells are 19 percent for accessible and 37 percent for households in remote villages. Poverty status of the household shows important differences in access to safe source of water. 32 percent of poor households gets drinking water from unprotected well, whereas the share for non-poor households is 26 percent. Overall, 85 percent of households have safe sanitation, whereas up to7 percent use uncovered pit latrines. The breakdown by poverty status shows that 92 percent of non-poor household's report access rate to safe sanitation, while the share for poor households is 68 percent. In addition, 90 percent of nonpoor households use covered pit latrines compared to 67 percent of poor households. It is also noticeable that up to 27 percent of poor households in this district have no toilets.

- **Poverty and Livelihoods**

Today, the population of the Usambara Mountains region has one of the highest growth rates (about 4% compared to the Tanzanian national average of 2.1%), a staggering amount of poverty, and highest densities of people in all of Tanzania. Most of the inhabitants are subsistence farmers who rely heavily on the forests around them for timber, medicinal plants, clearing for agriculture, and fuelwood. There are still many places that attract visitors looking for experiences beyond developed tourist resorts. These include the trade town of Lushoto (German colonial era Wilhelmsthal).

Table below shows that the poverty rate is highest for households whose main income earner is in the 'other' socioeconomic group, at a rate of 46 percent, respectively. In turn, poverty is lowest for households where the main income earner is an employee, at 7 percent. In addition, the employees are the most likely to be located in accessible villages, at 78 percent, whereas the self-employed in agriculture and the self-employed in nonagricultural activities report the highest shares of households located in remote villages, at 49 and 46 percent, respectively.

Socio economic Group, Poverty rate and location

	Poverty Rate	Percentage Living in	
		Remote Clusters	Accessible Clusters
Socio-Economic Group			
Employees	7.3	22.0	78.0
Self-Employed Agriculture	26.1	48.6	51.4
Self-Employed Other	19.4	45.8	54.2
Other	46.3	30.7	69.3

Source: CWIQ 2007 Korogwe DC

- **Health**

In Terms of Healthcare facilities, as of 2022 Korogwe District is home to 3 health centers,1 hospital and 48 clinics (Source; https://en.wikipedia.org/wiki/Korogwe_District) nearby the project site there two health facilities built. Overall, fever or malaria is the most common sickness, affecting almost 63 percent of the total population. Coughing and breathing difficulties affected 19 percent of the ill population. Diarrhoea or abdominal pain and pain in back, joints or limbs follows, with 9 and 8 percent respectively, whereas other illnesses had minor shares. Males report being affected more often by coughing and breathing difficulties than females at 21 and 16 percent respectively. There are no sharp differences between males and females for the remainder of the sicknesses or injuries.

- **Energy**

Korogwe District Council is similar to other areas of the country, whereby TANESCO is the sole supplier of electricity in the council. Customers using electricity for institution, domestic and commercial purposers. The majority of Korogwe District Council population use firewood and charcoal for cooking it is important for the district council to continue encouraging people to use alternative sources of energy instead of fuel wood and charcoal in order to reduce the pressure being exerted on forests. Addition to that, electricity costs have to be further reduced especially in rural areas to increase number of electricity users.

- **Transport Infrastructures**

The classification of road network in Korogwe District Council has been divided into three types of road surfaces which are tarmac, gravel and earth surface.

- **Telecommunication Service**

Korogwe District Council enjoys internet and telephone services (both cellular phone and land line-based telephone services) and postal services. However, there are no television stations but famous Tanzania Local Television channels like Independent Television (ITV), Channel Ten; Tanzania National Broadcasting Television (TBC) can be accessed. There are 5 internet cafes in Council and the number is increasing as time goes by.

- **Commerce and industry**

General Business in Tanzania is an important sector of the country's economy, providing employment to millions of people and contributing significantly to the country's GDP. It is the backbone of the Tanzanian economy and encompasses a wide range of activities, from agriculture and manufacturing to services, retail, and tourism. In Maple Ward there is an existing Small-Scale Industry which is Tea Processing industry.

ii. Economic Activities

The main economic activities of Korogwe District are industries, trade and agriculture. The following maps are Soil map, Agro ecological map and crop suitability map of Korogwe district.

4.5 Baseline Measurements for Occupational health and safety at the factory

The Impact Assessment focused on the estimation of atmospheric emissions and impacts associated with the factory operation activities. The findings of the Impact Assessment components assist in creating informed recommendations for air quality, dust and noise management measures, including mitigation and monitoring. The total of 4 sampling points was established for gas emissions, noise and dust levels measurement. Measurements were taken in the afternoon at around 01:30Hours. Descriptions of the sampling points are summarized in the table below;

4.5.1 Air quality

Levels of gases emissions were measured using a BH-4S Portable Multi-Gas Detector. Parameters measured include: Carbon monoxide (CO) in mg/m3, Carbon dioxide (CO2) in %, Oxides of nitrogen (NO) in mg/m3, Sulphur dioxide (SO2) in mg/m3 in mg/m3. The results were compared with Local and International Standards as stipulated in Table below.

Table 8: Average values of Measured Ambient Gaseous Emissions

UNITS	Measured Parameters			
	CO_2	CO	NO	SO_2
	%	mg/m^3	mg/m^3	mg/m^3
Withering Area	0.05	23	0.012	0.023
Packaging Room	0.05	26	0.013	0.022
Factory Area	0.04	35	0.018	0.018
Boiler area	0.09	183	248	226
TBS		Maximum permitted exposure of 100 mg/m^3 for the periods not exceeding 15 minutes Boiler tolerance limit is 250	Boiler tolerance limit is 600	Daily average of hourly value not exceeding 0.15 For Boiler tolerance limit is 850
WHO		30	0.12	0.5

Source: EIA team on 10th August 2022

4.5.2 Dust level measurement

Dust levels from the sampling points were determined using the Air quality detector (HT-9600). The equipment is capable to sample dust in the range from 0.01 to 2500 mg/m3 with a resolution of 0.001 mg/m3 or (1µg/m3). Particulate matter concentrations were sampled at all selected locations. The average dust in terms of PM10 and PM2.5 concentrations are presented on Table below. Comparing the results with all standards, the concentrations of PM10 and PM2.5 were lower than the prescribed limits at sampled locations as depicted in the recorded data.

Table 9; Average values of measured Dust levels

Measured Dust parameter in mg/m3		
Sample collection point	PM2.5 [µg/m^3]	PM10 [µg/m^3]
Withering area	21	48
Packaging room	5	26
Factory area	17	43
Boiler area	13	46
Local standard (TZS: 845:2005)	N.M	60-90
International standard [WHO:2005]	25	50

Source: EIA team on 10th August 2022

4.5.3 Sound level measurement

Sound data were recorded at sampling stations established using a digital sound level meter, with measurement range of 30 to 130dB (A). During inspection, different noise levels were detected from different sampling sites as shown in Table below. In general, noise levels as baseline had low intensity which does not pose any effect to humans. The following are the sound level measurements obtained

Table 10: Onsite noise (dBA) levels

Name of Sampling Point (SP)	Noise level (dB)
Withering area	41.3
Packaging room	59.2
Factory area	56.1
Boiler area	66.7
TBS	85
WB/IFC Guideline	<70 during the day and night

Source: EIA team on 10th August 2022

CHAPTER FIVE

5.0 Stakeholder Involvement

5.1 Overview

Stakeholder involvement is a cornerstone of any EIA since it ensures that all the interested and affected parties are involved in the project. It also ensures collaboration between the proponent, interested and affected parties throughout all the phases of the project.

This section outlines a range of stakeholders consulted in the EIA process for the proposed development. The chapter identifies stakeholders and synthesizes their concerns regarding the proposed development in short by highlighting the most commonly and significantly noted views. However, all the views from stakeholders have largely been reflected in the whole document as the issues, problems and concerns discussed in the document come from the stakeholders consulted as well professional observations and assessment by the EIA team.

5.2 Stakeholder Engagement Plan (SEP)

A stakeholder engagement plan was developed to help us in outlining who our stakeholders are, their influence and interest levels. This influenced our communication strategy. Our main interest was to identify the best platform to use in order to appropriately reach the grassroot community through formal governing channels at the project area. We stratified our stakeholders into three main categories. These were:

- Project based stakeholders
- Statutory based stakeholders (lead institutions and support components)
- The community

The client already introduced the contact persons at the field offices, and also guided on how to reach such. The following approach as used to reach the broad stakeholder community:

Table 11; Approach to SEP

Stakeholder		Interests	Information to be sought & Engagement
Project Based	The Client at main office	ESIA Implementation	Key details pertaining the project management and permission to access the site, understanding of key controls such as information governance issues, technical information, and other protocols
	Field Offices	Management at field level	Physical site layout and site visits, understanding operations approach and technical logistics, accompaniment to community meetings, contact for potential inquiries.
Professionals	Statutory based	Regulatory information,	Issues on ground, Useful contacts on ground to reach the community, inquiries about the proposed project needs, social, forestry, security at locality, waste and water management, pollution and other matters related to the project, any other useful information.
Community (Only Where the institution is in considerable proximity)	Those that live within, in tangent or that are near the facility, or those with associations with the project	Welfare and good association.	Information on their relation with the company, grievances, wishes, jobs, etc

The above laid out approach assisted the consultant to prepare targeting tools for community engagement and also develop a working formula with specific timelines and requisite resources. The consultation approach was also laid out. Understanding the community and stakeholders in advance assisted the client to set ground rules in terms of self-presentation and vigilance when dealing with the community. The consultant kept in mind that the stakeholders were to be allowed to be free to engage the process at all times.

5.3 Approach and Methodology

5.3.1 Approach

During scoping, initial stakeholder identification was achieved. Through this process issues and concerns were also identified and summary of the outcome developed. The ToR for EIA guided this process. Reaching the actual respondents was as per the community entry protocol and involved all requisite statutory institutions. The community was engaged through the same approach and inquiry process was led by the Team of ESIA Experts. The Government approves this process by virtue of the registration status of the lead expert who is approved and licensed for the same. Security protocols were observed as per statutory requirements.

Approach to public Consultation: Approach used for the consultation include: lead Institutional consultation, Consultative meeting with Village Leaders, community and the host local administrative stakeholder.

Institutional Consultation (Statutory, Public and private): These are the decision makers that inform policy implementation regarding their department's position on the project. This makes the group of respondents significant to the project. The approach was designed to inform them of the project and to pull out their views on the proposed development. The discussions were made open to allow freedom of expression and to permit the respondents to discuss any information that would be useful to the project. A total of seven (7) No. Statutory institutional stakeholders were reached out to for this set of interviews. A summary of discussions is presented within this chapter (below).

Community Engagement: A full public meeting was held in Dindira Tea Estate on 20th September, 2023, where by eighty-nine (89) villagers attended. There was concern in Dindira tea estate that some village

communities have encroached into the land. Community leaders suggests closer cooperation between management and community. There is very little support to community. There is poor responsiveness on the part of the company support. Tea out growers complain that they receive very little support in enhancing good tea yield.

5.3.2 Applied Study Methodology

The applied study methods used in carrying out this assignment were objected at obtaining quantitative and qualitative data (baseline data). Some of the methods to be used are;

- Meetings and interviews.
- Focus Group Discussion
- Individual depth interviews,
- Observation.
- Key Informant Interview:
- Desktop Review of Relevant Documents

5.4 Identification of Issues and Problems

The field visits helped to identify a number of issues, problems and challenges regarding the proposed project. These issues and problems are organized into major categories, issues and problems within this categories and possible sources of data and information. Some of the underlying issues related to the Safety of workers, farm inputs, corporate social responsibility and job opportunity.

Table 12: Categories of issues and problems

S/N	Category of issues /problems	Issues/Problems	Source of information
1.	Farm inputs	Availability of farm inputs to the farmers	METL
2.	Job opportunity	Job creations	METL
3.	Corporate social responsibility	Provision other services and amenities	METL
4.	Safety of workers	Available safety measures in place	METL

5.5 Identification of Stakeholders

A Stakeholder is any entity with a declared or conceivable interest or a stake in a policy concern. The range of stakeholders relevant to consider for analysis varies according to the complexity of the issue in consideration reform area targeted and the type of reform proposed. Stakeholder can be of any form, size and capacity. They can be individuals, organizations or unorganized groups.

5.6 Stakeholders Views and Concerns

Initial consultation process focused on the Proponent. It considered various issues that may pose impacts on the environment. It included issues on employment, waste management and so on. The role of the consultant was to moderate the meeting, and the team assistant took notes. The question-and-answer sessions took place until questions were exhausted and some form of consensus was reached. The main issues discussed by some stakeholders are summarized in table below along with the list of people consulted during the consultation process.

Table 13: Stakeholders consulted and their views

SN	NAME & POSITION	ORGANIZATION	VIEWS	Response
1.	Halfan Magani District Executive Director (DED)	Korogwe District Council	- The proponent should give plots for establishment of some institutions such as hospitals, schools etc.	- Land has been allocated for schools, health centers and place for worship.
2.	Leonia S. Ngereza Ag. District Environmental Management Officer (DEMO)	Korogwe District Council	- Extension of the tea plantation, some trees will be cut which are easily replaceable so as to get area for planting tea.	- Tree cutting will be avoided during expansion of tree planted area. - Alternative source of energy will be considered with

			- The proponent should look for alternative source of energy.	emphasis on the use of renewable energy.
3.	Yusuph Mahanda Environmental Management Officer (EMO)	Korogwe District Council	- Extension of the tea plantation, some trees will be cut which are easily replaceable so as to get area for planting tea. - The proponent should look for alternative source of energy.	- Tree cutting will be avoided during expansion of tree planted area. - Alternative source of energy will be considered particularly on the renewable source of energy
4.	Serena Kimaro District Land and Natural Resources Officer (DLNRO)	Korogwe District Council	- The proponent's title is mainly for farming purposes. - The proponent pays the government tax in time. - The proponent's responsibility is to protect his boundary. - There should be proper agreement between the proponent and the villagers living within his boundary to prevent future land conflicts.	- The management will take all the necessary legal actions to maintain it is owner of the title area.

			- The proponent should provide commitment letter when giving up plots to villagers for building schools, hospitals etc.	
5.	Aisha Seng'andu Ag. District Agriculture, Irrigation and Cooperative Officer (DAICO)	Korogwe District Council	- Farmers need to be provided with adequate new tea seedlings, nurseries. - The proponent should take precautions on pests control and manure. - The proponent should provide valid farming data to the municipality.	- The management will provide farm inputs such as, fertilizers, herbicides and seedling etc. to the farmers. - Pest control and manure will be considered as per regulation. - Currently, farming data is shared with municipality however, more efforts to improve the communication on data sharing will be considered.
6.	Issa Sabudi Village Chairman	Tewe Village	- The proponent buy tea from small-scale farmers. - The proponent cooperates with the community in different areas; they	- Currently, tea leaf is being purchased from farmers however, more efforts will be

			provide vehicles to carry sick people to the hospital. - The proponent has given us some land to build school and clinic. - The youth are employed in farms and the factory.	considered during execution of the project. - The proponent will improve cooperation with the community leadership in different areas. - In employment opportunities at the factory, youth will be considered.
7.	Alfani Sabia Member	Tanzania Smallholders Tea Development Agency (TSHTDA)	- Farmers do not have tea factory of their own. - The price of tea is low as per kilogram tea is sold at Tsh. 314.	- Provision of factory to the farmers, is the responsibility of Tanzania Smallholders Tea Development Agency (TSHTDA). - The price is set by the Tea Board of Tanzania (TBT) and the Minister of Agriculture.

8.	Rashidi Saidi Member	Tanzania Smallholders Tea Development Agency (TSHTDA)	- The Agency (TSHTDA) is facing a challenge of small number of vehicles to transport tea from farms to the factory especially during peak seasons.	- METL will assist the agency (TSHTDA) in transporting of green leaf from smallholder farmers to the factory.
9.	S/SGT Jasho Mussa Operation officer	Fire and Rescue force	- During expansion of the factory, the management should install fire alarm system, smoke detectors and fire hydrant system. - Staff should be trained yearly on fire and emergency issues.	- Fire alarms system, smoke detectors and hydrant system will be installed at the factory during renovation phase. - Fire Safety training is regularly being conducted.
10.	Rose Sempindu Hygiene Inspector	OSHA-Northern Zone	- After installations of new line of production, the proponent should consult OSHA to come and inspect the factory before operations start.	- The management shall consult OSHA for inspection matters after renovation finishes. - Staff are taken for training to OSHA as the law abides.
11.	Edward Mwamkawa Food safety officer	TBS	- The operations should observe qualities of Tea in terms of moisture content - The factory has been inspected by TBS	- The management shall observe standard in their production process.

			- During operations, management should consider using alternative energy sources	- The use for alternative energy source such as solar power shall be considered.

The proposed expansion of Tea farms has a few challenges to be addressed. Some field have old which need to be uprooted and new ones planted. Also there is need to embark on supporting tea farmers, out growers to improve tea quality. METL Management should follow advice provided by District agricultural officer on what needs to be done to improve quality and volume of productivity.

5.7 Grievance Redress Mechanisms

A Grievance Redress Mechanism (GRM) is necessary for addressing the legitimate concerns of the project-affected persons. Grievance handling mechanisms provide a formal avenue for affected groups or stakeholders to engage with the project on issues of concern or unaddressed impacts. Grievances are any complaints or suggestions about the way a project is being implemented, and they may take the form of specific complaints for damages/injury, concerns around resettlement and compensation, concerns about routine project activities, or perceived incidents or impacts. GRM provide a formal avenue for affected groups or stakeholders to engage with the project on issues of concern or unaddressed impacts. In order to make this aim a reality, METL will develop a grievance handling mechanisms and procedures to address grievances associated with the proposed project related to PAP.

5.7.1 Levels of Grievances handling

The grievance redress mechanisms at Dindira Tea Estate will involve three levels as displayed in Table below;

Table 14; Levels of grievance redress mechanisms

SN	LEVEL OF GRIEVANCE	NATURE OF GRIEVANCES AND PROCEDURE FOR GRM	RESPOSNIBLE PERSON	SUPPORT PERSONS
1.	**Level One**	To resolve an issue quickly, politely, and transparently and amicably in order to facilitate project activities to move forward Existing mechanisms such as at the Village level will be utilized as needed to address complaints on specific issues depending on their nature	Legal Counsel /Officer of METL	Village Executive Officers and Village Chairpersons Management Representative from the contractor
2.	**Level Two**	Grievances that can't be resolved by team above or the one that's complicated in nature will be referred to the Higher Management who will be responsible for receiving and resolving grievances in a fair, objective, and constructive manner, all claims or complaints raised by project affected persons.	METL Management	Legal Counsel /Officer of METL
3.	**Level Three:**	1. The PAP that will not be satisfied by the decision of METL Management will be advised to seek for further redress to the higher company leaders	Chairman of the METL Group	Chairman of the METL Group Deputy chairman

5.7.2 Grievance Procedure for the extension and Operational of the Tea Estate

For a grievance to be full resolved, a number of procedures that the whole process will go through should be followed as displayed in the Table below.

Table 15; Grievance Procedure

Sn	Step	Procedure	Means of Communication	Timeframe	Responsible
1.	Step 1: Submission of Grievances	The affected person shall file their grievance to the company management which will be recorded in writing	Through suggestion box. During regular meetings held with stakeholders During informal meetings Letter addressed to the management email, messages and telephone	Anytime a grievance happens and the same will be channeled at the next stage within 5 working days after its submission	Legal Officer of METL
2.	Step Two: Logging the Grievance	Once a grievance has been received it must first be logged in the grievance database register before assigned a date for investigation and hearing	Through writing a formal letter By phone calls, messages and email, formal and informal meetings by METL	Registration is done once the grievance is received and processed within five working days	Legal Officer of METL
3.	Step Three: Providing the Initial Response	The person, community, or stakeholders that lodged the initial grievance will then be contacted within 2 days to acknowledge that the same has been received and provide its status and notification.	Through writing a formal letter By phone calls, messages and email, formal and informal meetings	Response to given within 5 days and the notification for next steps. In case of continuous harms, immediate	Legal Officer of METL

		The notification will include details of the next steps for investigation of the grievance, including the person/department responsible for the case and the proposed timeline for investigation and resolution which will depend on the severity of the incident. Depending on the context and situation, it may be necessary to provide an immediate response to avoid further harm while more detailed investigations are undertaken e.g., in the case of fatalities, workplace accidents, community safety pollution of natural resources, conflict with communities etc.		response will be taken without delay to prevent the harm	
4.	Step Four: Investigating the Grievance	The GRM team will initiate investigation within one weeks after a grievance is received.	Through writing a formal letter By phone calls, messages and email,	The team will continually update the aggrieved on	Team to be selected by the Director depending on

		Depending on the nature of the grievance, the team involved in the investigation will vary. The investigation team will involve the aggrieved person/people in this investigation, where possible.	formal and informal meetings	the progress of the investigation and the timeline for conclusion. The investigation should be completed within the period of 14 days	the issue at hand
5.	Step Five: Communication of the Response	The grievances team will outline the steps taken to ensure that the grievance does not re-occur and any measures needed to resolve the complaint.	Through writing a formal letter By phone calls, messages and email, formal and informal meetings	The response Will be communicated within 1 day of the resolution being determined.	Legal Officer of METL

6.	Step Six: Complainant Response	When complainant is satisfied then the team will seek their sign off The team and the complainant will agree and determine if any follow up is needed to monitor the implementation of the resolution.	Through writing a formal letter By phone calls, messages and email, formal and informal meetings	Within a period of 5 days	Legal Officer of METL
7.	Step Seven: Grievance Closure or Taking Further Steps if the Grievance Remains Open	Once the measures have been Implemented to the complainant's satisfaction, the grievance should be closed. If, however the grievance still stands then the team will initiate further investigation and determine the steps for future action. Once all possible redress has been proposed and if the compliant is still not satisfied then they should be advised of their right to the next step of contacting the top Director	Through writing a formal letter By phone calls, messages and email, formal and informal meetings		

CHAPTER SIX

6.0 Impact Assessment

6.1 Overview

Various impacts were identified through fieldwork; discussion with key stakeholders within the project boundaries that defines the limit with which the project has an influence or that influences the project. A checklist and matrix of impacts were also used in identifying and analyzing the impacts.

6.2 Impact significance

The purpose of study is to identify the significant impacts related to the project or activity under consideration and then to determine the appropriate means to avoid or mitigate those which are negative, and if possible, enhance any positive effects resulting from the project.

Significant impacts are defined, not necessarily in order of importance, as being those which:

- Are subject to legislative control
- Relate to protected areas or to historically and culturally important areas
- Are of public concern and importance
- Are determined as such by technically competent specialists;
- Trigger subsequent secondary impacts
- Elevate the risk to life threatening circumstances.
- Affect sensitive Environmental factors and parameters.

6.3 Positive Impacts – Construction /Renovation / expansion Phase

i. Employment opportunities

The proposed Project will directly and indirectly create employment for a number of workers, especially casual workers within the project location. Though the employment terms will be temporary or permanent, those who will be employed will earn income hence use the money to satisfy some of their needs

6.4 Negative Impacts – Construction / Renovation / expansion Phase

i. Impacts associated with solid waste generation

Considerable volumes of solid waste will be generated during renovation of the factory lines and construction of additional buildings as proposed. This waste will impact the aesthetic value of the site and surrounding environments if not properly managed.

ii. Impacts associated with noise and vibration

The extension activities would generate noise and vibration in the factory area. Such noise emissions should be minimized as much as possible from the source point through appropriate measures.

iii. HIV/AIDs, STDs and other diseases (i.e. COVID – 19)

The project currently employs a number of 17 people in the factory including seasonal workers (some are locals and some are foreigners). The proposed expansion of the project may entail additional workers. The concentration of too many people in a project site with relatively temporary social facilities is likely to cause increased levels of communicable diseases. With the onset of HIV/AIDS in Tanzania, any concentration of people is likely to be the source of the spread of HIV/AIDS, Sexually Transmitted Diseases (STDs) and the risk of spreading COVID -19. Although for short term only, may complicate the already fragile situation.

iv. Incidences of risks, hazards and accidents

Risk is the possibility that something negative will occur; expressed in terms of probability while hazards can cause injury, disease, economic loss or Environmental damage. The use of machines and equipments, working at height, confined spaces, equipment accidents, non-usage of PPEs, welding during this phase may cause Occupation and health risks if not properly managed. The impact is considered to be low, short term and insignificant if properly managed.

v. Impacts associated with disposal of sewage

Lack or inadequate provision of toilets for use by workers thus creating unsanitary conditions and sources of fly infestation. This can threaten the health of neighbors and workers themselves. Management of sewage disposal presents an opportunity to protect underground water resources.

With appropriate mitigation the impact is considered to be indirect, short term and insignificant.

vi. Labour influx

Labor influx for renovation works can lead to a variety of adverse social and environmental risks and impacts. Accommodating workers in construction areas can have positive and negative effects, for the workers, the host community, and the environment. The social risk associated with labor influx are such as Risk of social conflict, Increased risk of illicit behavior and crime, Influx of additional population, Impacts on community dynamics

vii. Child Labour

Increased opportunities for the host community to sell goods and services to the incoming workers can lead to child labor to produce and deliver these goods and services, which in turn can lead to enhanced school dropout.

viii. GBV/SEA/SH impacts

Large component of workers will be from local area. Some Workforce, largely composed of younger males, may experience a shift in their social dynamics as they navigate new environments and interactions while being away from home. This situation highlights the importance of understanding the complexities of community relationships, particularly regarding the well-being of women and girls. The influx of male labor can lead to various social challenges.

ix. Crime

The influx of workers and service providers into communities may increase the rate of crimes and/or a perception of insecurity by the local community. Such illicit behavior or crimes can include theft, physical assaults, substance abuse and exploitation.

x. Cultural resources impacts

Renovation activities of the tea estate may have impact on cultural resources through peoples interactions. A cultural resource is defined as a site, location or feature of cultural importance to an Indigenous Group and identified as such by an Indigenous Group. Cultural resources may include, but are not limited to; Prayer flags, Trails, Camps, including sites for cultural gatherings, Habitation

sites, Spiritual sites, burials.

xi. Community health and safety impacts

Delivery of supplies for construction workers and the transportation of workers can lead to an increase in traffic as well as additional burden on the transportation infrastructure.

xii. Security (private) personnel and interaction with communities including use of force.

Risks to and potential impacts on human security due to the engagement of security personnel can be mitigated through measures set out in procurement documents and other forms of written agreements, as well as in specific management plans.

6.5 Positive Impacts – Operational Phase

i. Increase in revenue to the National and District Government

The operation of the proposed Project will result in positive gains for numerous Authorities- The local government, Tanzania Revenue Authority (TRA), Tea Board etc. through payment of relevant taxes, rates and fees to respective institutions.

ii. Income generation to local communities/ villagers

There would be secondary benefit as money would move into the local communities through selling tea to the Proponent for production, provision of food supplies, fuelwood. This will increase the income of local communities as well as improving their living standard.

iii. Corporate Social responsibility benefits from the factory

Corporate Social Responsibility (CSR) is essential towards the success of companies. Its essence is in making companies part of the community in assisting its development through establishing projects, as a way of sharing part of their success to the marginalized communities. It is the proponent's duty to attend such responsibilities and to be socially accountable to itself, its stakeholders, and the public.

iv. Employment opportunities

The Project will directly and indirectly create employment for a number of workers, especially casual workers within Dindira and other location. Though the employment terms will be temporary or permanent, those who will be employed will earn income hence use the money to satisfy some of their needs.

6.6 Negatives Impacts –Operational Phase

i. Increased pressure on social services and utilities

The presence of the proposed will increase pressure on social services and utilities such as water, electricity, waste water and solid waste collection facilities, etc. The demands will strain the service delivery system in one way or the other.

ii. HIV/AIDs, STDs and other diseases (i.e. COVID – 19)

The concentration of many people during the project operation with relatively temporary social facilities is likely to cause increased levels of communicable diseases. Currently there about 250 workers (skilled and unskilled), more workers will be employed after expansion depending on the season hence with the onset of HIV/AIDS in Tanzania, any concentration of people is likely to be the source of the spread of HIV/AIDS, Sexually Transmitted Diseases (STDs) and the risk of spreading COVID - 19. Although for short term only, may complicate the already fragile situation.

iii. Risks of fire hazards:

Fire outbreak is fast propagative and may cause magnitude economic losses to buildings, installation, flora and fauna. If not contained in time fire outbreak may result in injuries, loss of human life and air pollution beyond the boundary of the project area. During operation phase of the factory there some activities which may lead to fire outbreak such as smoking, fuel leaking, improper storage of chemicals etc

iv. Soil contamination from materials for agrochemicals;

Tea plants are often treated with pesticides to protect them from pests and diseases. However, the use of these chemicals can have environmental impacts such as soil contamination and harm to non-target organisms.

v. Impacts associated with Solid waste generation

Considerable volumes of solid waste will be generated during operation of the factory and farming activities. There will be solid wastes such as garbage waste like papers, food remains, packaging materials for agrochemicals, and plastics, also fire wood bulks and ash from boiler. The

biodegradable waste will be decomposed and used as manure for the farms while the plastic wastes will be collected and given to the plastic recyclers. This waste will impact the aesthetic value of the site and surrounding environments if not properly managed.

vi. Ground water and surface water pollution

Water used in tea production can lead to water pollution. Pesticides and fertilizers used on tea plants require careful management to prevent runoff into nearby waterways. Furthermore, chemicals used in processing and cleaning must be handled and disposed of properly to avoid contaminating the water supply.

vii. Workers health and safety.

Tea plants are often treated with pesticides to protect them from pests and diseases. Meanwhile due to strict adherence to standards set via producer/ consumer certification regarding safeguarding the consumers from harmful chemicals with long-term health implications, pesticide use has been limited to a very insignificant and rare incidence.

viii. Child Labour

Increased opportunities for the host community to sell goods and services to the incoming workers can lead to child labor to produce and deliver these goods and services, which in turn can lead to enhanced school dropout.

ix. GBV/SEA/SH impacts

Large component of workers will be from local area. Some Workforce, largely composed of younger males, may experience a shift in their social dynamics as they navigate new environments and interactions while being away from home. This situation highlights the importance of understanding the complexities of community relationships, particularly regarding the well-being of women and girls. The influx of male labor can lead to various social challenges.

x. Crime

During operation phase, the influx of workers and service providers into communities may increase the rate of crimes and/or a perception of insecurity by the local community. Such illicit behavior or crimes can include theft, physical assaults, substance abuse and exploitation,

xi. Cultural resources impacts

Operations of the tea estate may have impact on cultural resources through people's interactions. A cultural resource is defined as a site, location or feature of cultural importance to an Indigenous Group and identified as such by an Indigenous Group. Cultural resources may include, but are not limited to; Prayer flags, Trails, Camps, including sites for cultural gatherings, Habitation sites, Spiritual sites, burials.

xii. Community health and safety impacts e.g., traffic hazards, site access hazards

Delivery of supplies to the factory and farms workers and the transportation of workers can lead to an increase in traffic as well as additional burden on the transportation infrastructure.

xiii. Security (private) personnel and interaction with communities including use of force.

Risks to and potential impacts on human security due to the engagement of security personnel can be mitigated through measures set out in procurement documents and other forms of written agreements, as well as in specific management plans.

xiv. Visual and aesthetics impacts

Operation activities of the factory are carried out at both day and night. Lighting at night can result in visual impact on local communities and sensitive fauna species. Lighting should be kept to the minimum requirement for safety at nighttime.

xv. Impacts due to heat emission from the boiler to workers and environment

The project operation activities use boiler to produce steam used for various factory functions like withering and drying tea. Prolonged exposure to heat may result in effects such as disorientation, impaired judgement, loss of concentration, reduced vigilance, carelessness and fatigue, and thereby increase the accident risk.

6.7 Positive Impacts - Decommissioning Phase

i. Employment Opportunities

For demolition and estate farms restoration (to almost similar or better environmental condition) to take place properly and in good time, some people of a variety of background (including locals) will

be involved. As a result, short term employment opportunities will be created for the purpose. Though short term. The significance level is considered to be high.

However, this stage will end the original long and short-term jobs, which are factored in detail under Negative Impacts – Decommissioning Phase.

ii. Rehabilitation

Upon decommissioning, rehabilitation of the project site will be carried out to restore the site to its original status. This will include replacement of topsoil and revegetation that will lead to improved visual quality of the area.

6.8 Negative Impacts - Decommissioning Phase

i.Impacts associated with Noise and vibration

The demolition works will lead to significant deterioration of the acoustic environment within the project site and the surrounding areas. This will be as a result of the noise and vibration that will be experienced as a result of demolishing the project.

ii. Potential increase of Soil contamination

The cumulative amount of waste from the decommissioning will impact either the locality, or the destined location where the waste will be relocated to for safe handling. If this waste is mishandled, the destined disposal/holding/treatment location may become contaminated. Note that some of the waste may be metals, others inert chemicals, or even oils, etc.

iii. Potential Crime

During decommissioning phase, the workers and service providers into communities may increase the rate of crimes and/or a perception of insecurity by the local community. Such illicit behavior or crimes can include theft, physical assaults, substance abuse and exploitation. Another form of crime may involve the neighboring community taking advantage to vandalize or steal items from the farm estate.

iv. Potential Child Labour/Forced Labour

Increased opportunities for the host community to sell goods and services to the incoming workers

can lead to child labor to produce and deliver these goods and services, which in turn can lead to enhanced school dropout. There may also be a risk of including children into the process directly.

v. Potential GBV/SEA/SH impacts

This is noted as a potential impact during operation phase of the project. The same also exists at Decommissioning phase of the project could be an advantage to as this potential impact.

vi. Loss of employment

Decommissioning will result in the loss of employment for the workers such as farmers, cleaners, guards, specialists, engineers, and managers who were employed. This loss will be significant at individual level and at the national level, especially as national policies seek to create more jobs

vii. Dust emission

Dust will be generated during demolition works that have effect to the health of the workers and impact the visual of the area. Also, various machinery to be used for demolition and trucks to carry the debris out of the site which will emit exhausts gases including carbon monoxide, carbon dioxide, sulphur and nitrogen gases which have a direct effect to the health of people, in addition to that plants are also affected by some of these gases. The impact is direct of short term and significant.

viii. Impacts associated with Solid Waste Generation

Demolition of the proposed development will result in considerable quantities of solid waste. The waste will contain the materials used in construction including concrete, metal, drywall, glass, paints etc. Such waste may lead to release of certain chemicals into the environment. In addition, even the generally non-toxic chemicals such as chloride, sodium, sulphate and ammonia which may be released as a result of leaching of demolition waste, are known to lead to degradation of ground and surface water quality. Hence the impact is considered to be direct and short-term impact.

CHAPTER SEVEN

7.0 Mitigation and Enhancement Measures

7.1 Overview

This chapter is devoted to describing measures or actions that shall be implemented so as to minimize any of the potential impacts identified. Many of the mitigation measures put forward are nothing more than good engineering practice that shall be adhered to during the design and construction phases. The developer is committed to the implementation of mitigation measures contained in this report.

In order these mitigation measures to be implemented, the safeguards mandatory tools which shall also form part of the tender and bid documents and the contract shall be prepared by the Contractor. These safeguards tools include: ESMP, Contractor's ESMP (C-ESMP); Health and Safety Management Plan (HSMP); Waste Management Plan (WMP); Emergence Preparedness Plan (EPP).

Table 16; Impacts Mitigation / Enhancement measures

Positive Impacts – Construction /Renovation Phase		
No	**Impacts**	**Enhancement Measures**
1.	Employment opportunities	The first priority will be given for qualified Tanzanians in Korogwe District, Tewe village and the rest of Tanzania.
Negative Impacts – Construction /Renovation Phase		
No	**Impacts**	**Mitigation Measures**
1.	Impacts associated with solid waste generation	• Use of an integrated solid waste management system i.e. through a hierarchy of options: source reduction, Recycling, Reuse before disposal of waste at the designated District dumpsite. • Transportation of wastes from the site to be done by a registered solid waste handler who will use appropriate vehicles for conveyance of wastes from site to designated

		District Council dumpsite
2.	Impacts associated with noise and vibration	• Restriction of noisy construction activities to normal working hours (7am - 6pm). • Local residents will be informed via notices and advisories, of pending noisy periods and solicit their tolerance well before the commencement of piling works. • Workers operating equipment that generates noise will be equipped with noise protection gear including ear muffs and plugs. • Workers operating equipment generating noise levels greater than 80 dBA continuously for 8 hours or more should use earmuffs whereas those experiencing prolonged noise levels of 70 - 80 dBA should wear earplugs.
3.	Impacts associated with disposal of sewage	• The management uses septic tanks and soak away pits for the management of waste water
4.	Incidences of risks, hazards and accidents	- Contractor should establish contractual clauses (signed code of conduct) to be embedded in the contracts of the workers and sub-contractors that require adherence to law and international standards to be upheld related to worker. - Contractor should prohibit the use of alcohol or drugs, which could adversely affect the ability the employee to perform the work safely or adversely affect the health and safety of other employees, community members or the environment. - Contractor and self-employed contractors should assess the H&S risks related with the tasks to be performed during the construction phase.

		- Pre-employment medical assessments should be put in place - as a workforce risk management tool to screen individuals for risk factors that may limit their ability to perform a job safely and effectively. Expected benefits of conducting pre-employment medical assessments include a safer working environment, reduction in workplace injuries, minimized downtime, matching the capacity of the employee with the role, and overall recruitment cost and risk reduction. - Contractor should ensure that training on health and safety measures is provided to all construction workers prior to starting to work on the Project and that supervisors have adequate experience to deliver on their responsibilities. - Contractor should implement regular health and safety checks and audits of workers, and subcontractors and implementing sanctions in case of breaches of national standards and the Project's specific standards. Such audits to include workplace H&S; worker contracts, working hours, pay and conditions; housing and food standards. - Contractor should develop and implement a Workers Grievance Mechanism for the Project workforce including workers and subcontractors. - Contractor should establish a procedure for the recording and analysis of incidents and lessons learned such that additional actions can be implemented to avoid or minimize occupational health and safety risks. - Contractor should ensure that facilities and work sites are designed and maintained such that robust barriers are in place to prevent accidents.

		- Contractor should ensure that its Code of Conduct is followed to regulate the performance and behavior of all workers, including provision for disciplinary action for anti- - social behavior and non-compliance with health and safety regulations such as lack of use of PPE. - Contractor should ensure that World Bank Health and Safety guidelines regarding the construction and management of worker accommodation and the provisions of medical facilities at worker accommodation are followed. - Contractor should ensure that adequate clean water, adequate food and access to medical care is provided to all workers on the worksite and at accommodation. - Contractor should develop and implement a Traffic Management Plan covering aspects such as vehicle safety, driver and passenger behavior, use of drugs and alcohol, operating hours, rest periods, community education on traffic safety and accident reporting and investigations. • Contractor should develop a Waste Management Plan for the construction phase with clear guidelines for the safe storage and disposal of hazardous waste and handling of hazardous materials.
5.	HIV/AIDs, STDs and other diseases (i.e. COVID – 19)	• Contractor should establish HIV/AIDS programmes to raise awareness • Put posters with various messages such as ‘‘HIV/AIDS kills’’, ‘‘be faithful’’. • Preventive measures against the spread of COVID – 19 shall be practiced at the project site.

6.	Child Labour	• Conduct Selection and Qualification of Subcontractors • Awareness-Raising and Training of Internal Inspectors and Local Authorities • Promoting Access to Education
7.	GBV/SEA/SH impacts	• Appoint senior focal points in both clients and contractors with responsibility for ensuring that commitments and policies to prevent GBVH are implemented. • Increase women's representation, including at senior and decision-making levels in engineering, procurement and construction • Put in place monitoring systems at the highest levels for regular reporting on GBVH. • Include requirements around GBVH in codes of conduct, policies and protocols for contractors, including training on policies and procedures once developed. • Ensure codes of conduct are publicly disclosed in local languages and are widely accessible to all workers and all groups of people in project areas. • Build GBVH risk assessments into key processes, including environmental and social impact assessments (ESIAs) and environmental and social management plans (ESMPs).

8.	Crime	• The contractor or construction management company should designate an employee as the company crime prevention coordinator. • All assets on a construction site should be identified (marked), inventoried (records), and tracked as closely as practical. A company identification numbering system should be developed. • The company crime prevention coordinator should contact neighbors around the job site residents, businesses, even children and solicit their support and help in maintaining a safe and secure job site • Electronic alarm systems can be an effective means of providing security on the job site, particularly for office and storage trailers or for material storage areas.
9.	Cultural resources impacts	• Preparing Environmental Protection Plans which describe the cultural management requirements applicable to their scope of work and work areas; • Compliance with cultural obligations applicable to their scope of work and work areas as set out in the applicable Environmental Protection Plans, including site specific measures; • Compliance with Chance Find Procedures

10.	Community health and safety impacts e.g., traffic hazards, site access hazards	• Identify emergency scenarios and develop emergency preparedness and response plans with allocation of responsibilities to local communities and authorities, (where appropriate). • Develop specific stakeholder engagement plan based on consultation and participation with government and communities regarding the nature and potential consequences of the risks • Define protocol for community reporting of observed incidents • Maintain community grievance process • Continue safety awareness and education programs for impacted communities, including school programs.
11.	Visual and aesthetics impacts	• Ensure outdoor lighting is unobtrusive and turn off when not required
12.	Security (private) personnel and Interaction with communities including use of force.	• For projects with high security risks, a stand-alone Security Management Plan contains all the procedures and protocols related to security for the project. • While the Security Management Plan should be an actionable and practical document, it is unlikely to be able to address every possible scenario in detail
Negative Impacts – Operation Phase		
No	**Impacts**	**Mitigation Measures**

1.	Increased pressure on social services and utilities	• Alternative measures such as the use of modern technology equipment that saves energy. • Also the Proponent will try to reduce amount of waste generation at the source so as to ease the solid waste collection facility. • Proponent should consider installation of solar lighting systems complement electricity supply from the national grid. • The project design includes ventilation systems at the factory that allow for sufficient air circulation and lighting to lower the energy demand for the facility.
2.	Introduction of new species	• Tea agroecosystems can align with conservation outside. • Protected areas through traditional practices or incorporating organic farming, native shade trees, and maintaining habitat diversity within monocultures.
3.	HIV/AIDs, STDs and other diseases (i.e. COVID – 19)	• Contractor should establish HIV/AIDS programmes to raise awareness • Put posters with various messages such as ‘‘HIV/AIDS kills’’, ‘‘be faithful’’. • Preventive measures against the spread of COVID – 19 shall be practiced at the project site. • Workers Code of Conduct

4.	Impacts due to heat emission from the boiler to Workers and environment,	• The management should put preventive measures such as permits to work, PPE, controls, and creating awareness about how to shield themselves from the heat and identify symptoms become important. • Manage Room Temperature: Temperature control of the work site is important where possible. In indoor locations, this is possible and thermal comfort should be ensured. • supervisors and managers must also be trained to monitor alert reports, plan work based on hot weather advisories, respond to workers with signs or symptoms of heat-related illness, ensure hydration, and provide rest breaks.
5.	Impacts due to mismanagement of hazardous waste like packaging materials for agrochemicals;	• Decontamination at the source: Development of a protocol for rinsing and decontaminating (Agrochemical Plastic Packaging Waste Management) APPW upon preparation of the spray, in order to characterize them as non-hazardous waste. • Development of a secure mechanism to assure the effectiveness of the decontamination method. • Sorting at the source: Sorting of decontaminated, clean APPW to categories of homogenous materials to facilitate their recycling.
6.	Soil erosion due land clearance during farm preparation;	• The contractor to confine the activities within the project core impact area and re-vegetation of the cleared area after planting of tea.

7.	Risks of fire hazards:	• There shall be a well- designed and properly laid fire hydrant system effectively fighting fires of various proportions and of all classes of fire risks. • The management will have to ensure high level training for fire unit personnel and ensures periodical grilling of workers to cope with fire emergencies. • Consider using of fire breaks • Development of Emergency Response Plan
8.	Workers health and safety	• It is essential for tea producers and consumers to prioritize sustainable practices such as using Organic Farming. • Management needs to be more cautious in the application of pesticides and every pesticide handler should get proper training from experts. • The maximum use of organic pesticides could be an effective alternative in tea plantation.
9.	Ground water and surface water and soil pollution	• To reduce the environmental impact of tea production on water usage, sustainable farming practices can be introduced, such as utilizing rainwater harvesting techniques. • Tea manufacturers may also invest in technologies that can reduce water usage, such as using vacuum dehydrators that extract moisture from tea leaves without the use of water. • Proper sanitary facility should be available at all time throughout the phases. • Advice to people on the importance of using sanitary facility at all-time throughout the phases.

10.	Soil contamination from materials for agrochemicals;	• It is essential for tea producers and consumers to prioritize sustainable practices to reduce the environmental impact of tea cultivation and production. • Some sustainable practices that can be adopted include organic farming.
11.	Impacts associated with Solid waste generation	• Provide each section of the facility with sufficient trash bins that promote sorting at source. • Encourage staff to handle waste through the hierarchy of options that including reduction at source, separation of waste to make it easier to undertaking recycling or reuse • Development and implementation of Waste Management Plan • Waste will be transported to the authorized waste disposal facilities and is not dumped in the unauthorized locations.
12.	Soil contamination	• It is essential for tea producers and consumers to prioritize sustainable practices to reduce the environmental impact of tea cultivation and production. • Some sustainable practices that can be adopted include organic farming.
13.	Child Labour	• Conduct Selection and Qualification of Subcontractors • Awareness-Raising and Training of Internal Inspectors and Local Authorities • Promoting Access to Education

14.	GBV/SEA/SH impacts	• Appoint senior focal points in both clients and contractors with responsibility for ensuring that commitments and policies to prevent GBVH are implemented. • Increase women's representation, including at senior and decision-making levels in engineering, procurement and construction • Put in place monitoring systems at the highest levels for regular reporting on GBVH. • Include requirements around GBVH in codes of conduct, policies and protocols for contractors, including training on policies and procedures once developed. • Ensure codes of conduct are publicly disclosed in local languages and are widely accessible to all workers and all groups of people in project areas. • Build GBVH risk assessments into key processes, including environmental and social impact assessments (ESIAs) and environmental and social management plans (ESMPs).
15.	Crime	• The contractor or construction management company should designate an employee as the company crime prevention coordinator. • All assets on a construction site should be identified (marked), inventoried (records), and tracked as closely as practical. A company identification numbering system should be developed. • The company crime prevention coordinator should contact neighbors around the job site residents, businesses, even children and solicit their support and help in maintaining a

		safe and secure job site • Electronic alarm systems can be an effective means of providing security on the job site, particularly for office and storage trailers or for material storage areas.
16.	Cultural resources impacts	• Preparing Environmental Protection Plans which describe the cultural management requirements applicable to their scope of work and work areas; • Compliance with cultural obligations applicable to the scope of work and work areas as set out in the applicable Environmental Protection Plans, including site specific measures; • Compliance with Chance Find Procedures
17.	Community health and safety impacts e.g., traffic hazards, site access hazards	- Identify emergency scenarios and develop emergency preparedness and response plans with allocation of responsibilities to local communities and authorities, (where appropriate). - Develop specific stakeholder engagement plan based on consultation and participation with government and communities regarding the nature and potential consequences of the risks - Define protocol for community reporting of observed incidents - Maintain community grievance process - Continue safety awareness and education programs for impacted communities, including school programs.
18.	Visual and aesthetics impacts	• Ensure outdoor lighting is unobtrusive and turn off when not required

19.	Security (private) personnel and interaction with communities including use of force.	• For projects with high security risks, a stand-alone Security Management Plan contains all the procedures and protocols related to security for the project. • While the Security Management Plan should be an actionable and practical document, it is unlikely to be able to address every possible scenario in detail
20.	Impacts from heat emissions from the boilers on workers	• The management should put preventive measures such as permits to work, PPE, controls, and creating awareness about how to shield themselves from the heat and identify symptoms become important. • Manage Room Temperature: Temperature control of the work site is important where possible. In indoor locations, this is possible and thermal comfort should be ensured. • supervisors and managers must also be trained to monitor alert reports, plan work based on hot weather advisories, respond to workers with signs or symptoms of heat-related illness, ensure hydration, and provide rest breaks.
Positive Impacts – Operational Phase		
No	**Impacts**	**Enhancement Measures**
1.	Increase in revenue to the National and District Government	• In order to ensure that the benefits are sustained, the Government has to improve the collecting authority for taxes (Tanzania Revenue Authority) and strengthen collection mechanisms.

2.	Income generation to local communities/ villagers	- In order to ensure that the benefits are sustained, the Proponent is advised to continue procuring goods from the local communities. - Also there are should be significant prices of the tea (green leaf) produced by the out growers.
3.	Corporate Social responsibility benefits from the factory	- The proponent should adhere to Corporate Social responsibility law
4.	Employment opportunities	- The first priority in employment will be given for qualified Tanzanians in Korogwe District, Tewe village and the rest of Tanzania.
Positive Impacts – Decommissioning Phase		
No	**Impacts**	**Enhancement Measures**
1.	Employment opportunities	- The first priority in employment will be given for qualified Tanzanians in Korogwe District, Tewe village and the rest of Tanzania.
2.	Rehabilitation	- Upon decommissioning, rehabilitation of the project site will be carried out to restore the site to its original status. This will include replacement of topsoil and revegetation that will lead to improved visual quality of the area.
Negative Impacts – Decommissioning Phase		
No	**Impacts**	**Mitigation Measures**

1.	Impacts associated with Noise and vibration	• Restriction of noisy demolition activities during normal working hours (8am - 5pm). • Local residents will be informed via notices and advisories, of pending noisy periods and solicit their tolerance well before the commencement of piling works. • Workers operating equipment that generate noise will be equipped with noise protection gear including ear muffs and plugs. Workers operating equipment generating noise levels greater than 80 dBA continuously for 8 hours or more should use earmuffs whereas those experiencing prolonged noise levels of 70 - 80 dBA should wear earplugs.
2.	Potential increase of Soil contamination	• Trash and waste shall be well collected and removed from the site to designated dumpsite; • Making arrangements for the daily collection of litter and demolition debris from the site by a licensed solid waste transporter for dumping at approved site. • All machinery must be keenly observed not to leak oils on the ground through regular maintenance; • All machinery maintenance must be carried out in a designed area (protected service bay) and where oils are completely restrained from reaching the ground, such areas should be covered to avoid storm from carrying away oils into the soil or water systems. Waste water/wash water from these areas should be properly disposed out of the park boundary; and • All oil products and materials should be stored on site stores and should be handled appropriately to avoid spills and

		leaks
3.	Potential Crime	• The contractor or management company should designate personnel as crime prevention coordinator. • All assets on a decommissioning site should be identified (marked), inventoried (records), and tracked as closely as practical. A company identification numbering system should be developed.
4.	Potential Child Labour	• Conduct Selection and Qualification of Subcontractors
5.	Potential GBV/SEA/SH impacts reduced	• Appoint senior focal points in both clients and contractors with responsibility for ensuring that commitments and policies to prevent GBVH are implemented. • Put in place monitoring systems at the highest levels for regular reporting on GBVH. • Include requirements around GBVH in codes of conduct, policies and protocols for contractors, including training on policies and procedures once developed.
6.	Dust emission	• Covering of all haulage vehicles carrying debris for dumping at approved sites; • Stockpiles of fine materials will be wetted or covered with tarpaulin during windy conditions; • Workers are going to be issued with proper protective equipment;

7.	Impacts associated with Solid Waste Generation	• Development and implementation of Waste Management Plan. This will include designation of appropriate waste storage areas, collection and removal schedule, identification of approved disposal site, and a system for supervision and monitoring. • Encourage staff to handle waste through the hierarchy of options that including reduction at source, separation of waste to make it easier to undertaking recycling or reuse • Waste from the decommissioning activities will be transported to the authorized waste disposal facilities and is not dumped in the unauthorized locations.

CHAPTER EIGHT

8.0 Project Alternatives

8.1 Overview

Consideration of project alternatives is crucial in ensuring that the Proponent and decision– makers have a wider base from which they can choose the most appropriate option. In this study, the following alternatives are considered and will be examined in detail during the EIA process.

8.2 No Project Alternative

This involves maintaining the current status quo without Expansion of Tea Plantation, Tea Factory. Accepting this option would mean avoiding most of the negative effects associated with the project and missing all the positive benefits that would occur.

Advantages

- Air pollution from dust as a result of the renovation will not occur.
- There would not be cutting down trees
- There would be no soil or water contamination. Disadvantages
- There will be no creation of new employment
- There will be no secondary development as a result of the project
- The factory will not be renovated

8.3 Project Alternative

Before the decision of the renovation and expansion, the study was specially made with the aims of analyzing the prevailing cost and benefits of various alternatives. The study was hinged on the following criteria for suitable facility. The project option for the proposed project development is very strategic and will open up other avenues of economy for the community around and in the Region at large. The do the project option is in order to comply and conform to future development as; a new economic regime will emerge. This approach will increase revenue collection for the Korogwe District Council. This option implies that the project will be implemented and once implemented there will be a number of losses and gains that will be realized. We strongly

recommend these options as the benefits far outweigh the negative impacts.

Advantages

- There will be creation of employment.
- There will be secondary development as a result of the project.
- The expected income in the form of profits to the Proponent and in the form of taxes to The government will be realized.

Disadvantages

- Air pollution from dust as a result of the renovation will occur
- There will be noise pollution due to renovation activities

8.4 Different Site Selection/ Location.

This option involves using another area from the proposed site location.

Selected alternative

Under the proposed development alternatives, the proposed development would create employment; improve people's welfare and so on. Thus, the proposed site provides the optimum alternative for implementing and operating the proposed project subject to the effective implementation of the proposed ESMP and EMP.

8.5 Alternative Source of Water

Alternative one: Korogwe Urban Water Supply Authority - KUWASA This is the main source of clean and portable water in Korogwe.

Alternative two: Natural spring water from the Usambara mountain

Water will be extracted from the natural spring water sources to run factory activities.

Alternative three; Design of rainwater harvesting and storage system. The proponent might use this water for sanitary purposes.

Selected Alternative.

From the findings of this study, Natural spring water from the Usambara mountain and rain

water harvesting will be used so as to maintain availability of water supply at the site.

8.6 Alternative Source of Power

Alternative one: TANESCO

Currently, the proposed site is supplied with electricity from TANESCO and there are high tension lines passing near the proposed site.

Alternative two: Standby Generator

Standby generators will be used as source of energy during power cut.

Alternative three: fuel wood

Fuel wood will be the major source of fuel for the facility, the proponent has already planted enough trees to provide fuel for the facility, and local farmers have been encouraged to plant trees as the facility will provide a ready market for trees. The estate has a total land area of; 231 ha (10%) are under fuel wood plantation; The estate has set aside 34 ha (1%) for additional fuel wood plantation.

Alternative four; Solar Energy

This will be another source of Energy in the tea estate supplying clean solar electricity during the daytime to meet most of the tea processing factory's energy demand.

Selected alternative

The proposed site will use the alternatives from both TANESCO, Solar energy and standby generator.

8.7 Solid Waste Management Alternatives

Alternative one: Source reduction

The proponent will give priority to reduction at source of the materials. This option will demand solid waste management awareness programme.

Alternative two: Reuse and Recycling

Reuse and recycling of the waste will be the second alternative in priority. This will call for a source separation programme to be put in place. The recyclables will be solid to waste buyers within the surrounding areas.

Alternative three: Disposal of waste

The waste will be stored in sealed units in order to minimize litter contaminating the surrounding area. The proponent will have to liaise with the District Council to contract a waste handler to dispose the waste into a designated dumpsite.

Selected solid waste management alternative

The proposed project will implement all alternative for effective solid waste management. The management of the project will implement reduction of solid waste at the source, reuse and recycle and lastly will dispose waste at the designated dump site.

8.8 Waste Water Management Alternatives

Alternative one: Waste water treatment plant

This can be constructed for the purpose of using chemicals or natural bacteria to treat effluent water to acceptable levels before discharging the water into the open environment. This process is expensive and requires vigilant attention and use of substantial amount of space.

Alternative two: Use of septic tank and soak away pit

This involves the renovation of underground concrete-made tanks to store the sludge with soak pits. Septic tanks and soak pits demand little space compared to other options.

Selected waste water management alternative

Septic tank and soak away pit will be used to manage waste water for the project. Waste water will be disposed by the service providers of the area to the district designated sites.

8.9 Alternative for use of firewood

There are more solid fuel alternatives to firewood, some of these alternative solid fuels are made from recycled materials, and are also designed to be smokeless. These are as follows;

Alternative one: Smokeless coal – also sometimes referred to generically as smokeless fuel – is a type of solid fuel which is designed to emit zero (or a minimal amount) of smoke during combustion.

Alternative two; Wood bricks are manufactured by first drying out bark-free wood fibres. These wood fibres are then compacted into dense 'bricks' or briquettes. Because wood bricks have such a

low level of moisture, and don't contain any other elements like bark, they burn very cleanly with little to no smoke.

Alternative three; coffee logs help to reduce greenhouse gas emissions by more than 130% (compared to coffee grounds sent to landfill)

Wood pellets are typically made from sawdust, which is a by-product of the milling of lumber.

Alternative four; Peat briquettes offer an interesting alternative to firewood and other solid fuels. Made from shredded peat, which is then powerfully compacted into briquettes, peat briquettes are renowned for their very slow and stable burn. In fact, peat briquettes can burn for up to five times longer than firewood.

Selected alternative

The proposed will use smokeless coal as alternative to fuel wood.

8.10 Alternative pesticides

Chemical pesticides are used widely in agriculture. They play a significant role in many different types of farming, including tea production. However, due to the potential environmental and health risks associated with their use, pesticides are beginning to alarm both consumers and producers alike.

Selected alternative; Integrated Pest Management (IPM) - means considering all available pest control techniques and other measures that discourage the development of pest populations, while minimizing risks to human health and the environment. IPM is the best combination of cultural, biological and chemical measures to manage diseases, insects, weeds and other pests. It takes into account all relevant control tactics and methods that are locally available, evaluating their potential cost-effectiveness. IPM does not, however, consist of any absolute or rigid criteria. It is a flexible system that makes good use of local resources and the latest research, technology, knowledge and experience.

Benefits of IPM

- IPM provides multiple benefits for society and the environment. It is vital for the long-term future of the plant science industry.
- Improved crop profitability due to better pest control measures and appropriate use of

crop protection products

- Stable, reliable and quality crop yields
- Decreased severity of pest infestations
- Reduced potential for problems of pest resistance or resurgence
- Increased consumer confidence in the safety and quality of food and fiber products
- Sustained market shares and access
- Less risk of restrictions or deregistration
- New opportunities for established and novel products, techniques and services
- Longer product lifecycles
- Decreased resistance of pests to crop protection products and biotech plants
- Increased public confidence in, and credibility of, the crop protection industry

CHAPTER NINE

9.0 Environmental and Social Management Plans

9.1 Overview

Environmental and Social Management Plan (ESMP) for developing projects usually provides a logical framework within which identified negative environmental impacts can be mitigated and monitored. In addition, the ESMP assigns responsibilities of action to various actors and provides a time frame within which mitigation measures and monitoring can be done. The ESMP is a vital output of a proposed project as it provides a checklist for project monitoring and evaluation. The ESMP outlined has addressed the identified potential negative impact and mitigation measures of the proposed project based on the section of Environment Impact and Mitigation Measures of the Negative Impacts.

9.2 Institutional roles and responsibilities

9.2.1 Financing agency

Mohammed Enterprises Tanzania Limited (METL) is the financing agency for this project. They are responsible for providing funds for implementation of mitigation measures and compliance monitoring.

9.2.2 Implementing agency

The implementing agency for this project is the Mohammed Enterprises Tanzania Limited (METL). The organization holds final responsibility for the environmental performance of the project. The Project will have an Environmental and Social Management Team that oversee environmental and social performance and compliance with legal and policy requirements including the African Development Bank's Guidelines and Policies. The Team will include an Environmental Compliance Officer and a Community Liaison Officer. The Team will be responsible for implementation of the Environmental and Social Mitigation and Management measures as well as oversee performance of contractors as prescribed in the Project's Environmental and Social Management Plan. The implementation steps will involve the proponent, including the local government offices, Contractor, NEMC, OSHA, FIRE and rescue force and some utilities provider, and the local communities at large.

9.2.3 Mohammed Enterprises Tanzania Limited ESHS

METL will allocate sufficient management, human and financial resources on an ongoing basis to ensure that all ESHS policies, commitments and plans are met.

The ESHS (EHS Department) is a sub-section under Compliance and Sustainability Section, operating under the HR Department. There are three HSE Managers in charge of

(1). Food Industries

(2). Non-Food Industries, and

(3). Agriculture projects.

The management office is based at Dar-es-Salaam. The field units are spread over the country, and are managed by Field HSE Officers.

The HSE Officers play advisory roles to the Unit Heads, but also inspect/monitor activities. They report to the Unit Heads on ESHS needs, and to the EHS Managers/Head of Compliance Unit on relative key issues affecting ESHS on ground. They also document and database field-based data, simplify communication on regulatory requirements for Unit use and follow-ups.

The EHS Managers make a close follow-up on the progress of EHS Officers, capacity build the officers, and communicate with the Compliance Manager on key issues affecting the respective clusters as they cascade advises to the Unit EHS Officers. The EHS Mnagers make periodic strategic field visits. Each of the units have internal EHS Committee, chaired by the Unit head, and with the HSE Officer acting as the Secretary.

Some of the field units are in clusters represented by a Field HSE Officer who coordinates with the Unit Head and EHS Committee. Their distribution is as follows:

METL Region	**Specific Units**
Moshi/Kilimanjaro Units:	A-One Moshi, Hussein at Mwanga and Hassani near Same
Tanga Units:	Mazinde, Mjesani, Dindira and Arc Mountain with the regional office at Tanga
Pwani/Morogoro Units	Alavi and Fatemi

Mbeya Units	Chivanjee Tea Estate and A-One

Before making recent changes, HSE Officers were only two for all units, and were based at Tanga and Morogoro. The changes have seen additional two HSE Officers being absorbed for Moshi and Mbeya. Additionally, three qualified HSE Managers were incorporated to develop the management system and to guide the HSE Development process. The existing HSE Officers will be capacity built for competency in dealing with the projected expansions. Additional HSEs shall be considered depending on the progressive challenges.

9.2.4 Supervision Consultant

The Supervision Consultant is appointed by the implementing agency and is responsible for monitoring and supervision of the renovation works including implementation of ESMP. The Consultant shall appoint a Resident Engineer to oversee the renovation works and monitor the works undertaken by the Contractor and implementation of ESMP to ensure compliance with contract specification and contractual requirements. However, for supervision and monitoring of the implementation of ESMP throughout the renovation phase the implementing agency can engage an Independent Environmental Consultant. The Environmental Consultant (including Environmental Scientists, Sociologists and Environmental Engineers) shall be responsible for environmental compliance monitoring. This includes checking, verifying and validating the overall environmental performance of the project through regular audits, inspection and review of project submissions.

9.2.5 Contractor

The Contractor shall be responsible for implementation of construction works and ensure compliance with environmental requirements. The Contractor shall appoint a Site Engineer who shall be responsible for implementation and management of the ESMP programme and the required environmental monitoring works. The contractor shall be obligated to include a EHS trained personnel among his staff, and that the same personnel shall take charge of EHS related site management, including Tool Box Talks, inspections, monitoring compliance to the ESMP and reporting to the site office management on key issues.

METL will require the Contractor to allocate sufficient management, human and financial resources

on an ongoing basis to implement all ESHS policies, commitments and plans. METL will require the Contractor to ensure that all personnel including skilled and unskilled labour, foreign and local employees, supervisory and supporting staff, site engineers, foremen, office staff, and managers, are aware and capable of their responsibilities in relation to ESHS management.

9.2.6 Local government authorities and local NGOs / CBOs

The involvement of local authorities is crucial for successful implementation of ESMP because some of the mitigation measures are better undertaken by local communities with the support of the Local Government Authorities and NGOs. It is therefore important that the Korogwe District Council be involved in the implementation of ESMP. The respective Local Government Authorities and local NGOs should be well informed and invited to comment on the ESIA report at the design stage rather than when all major decisions have been made. One copy of this report should be sent to Korogwe District Council to ensure that, the Council through its Environmental Management Officer will be involved in monitoring compliance with mitigation measures.

9.2.7 Local communities

In general, the local communities do support the project because they know it is going to benefit them and the nation at large. However, the project can obtain maximum benefit if it involves the local communities and spends some amount of funds for the benefit of the local communities. Table below outlines the environmental and social management plan for the proposed development. The plan considers the development activity, predicted environmental impact, proposed mitigations, actors, timeframe and costs for implementation.

9.3 Health and Safety Management plan

Health Safety Management Plan (HSMP) helps in implementation, maintaining and continually improve Health and Safety management system in accordance with the requirements of Occupational Health and Safety Assessment Series (OHSAS) standards. It is therefore important that this is reflected in the project operations and responsibilities of every level of management within an organization. This plan shall help to implement the Safety and Health direction of project phases. It clearly states the requirements of donors, legislations, suppliers, management and employees in

Safety and Health management.

9.3.1 Responsibilities

i. METL Management: The management is committed to the principle of safe working and desires that on no account should any person ever be exposed to risk.
ii. Supervisors: It is the responsibility of the Supervisors to review and ensure awareness of emergency procedures among all the personnel.
iii. Employees: It is also the responsibility of all employees to continually familiarize themselves with the assembly procedures for their relevant areas of work.
iv. General: Any information being relayed about an emergency shall be clear and precise giving the exact location, the nature of the emergency and the seriousness of the emergency and contact numbers and names.

9.3.2 Training

Suitable training will be provided to all personnel during various stages of the project and when new work force is added.

9.3.3 Awareness

Necessary posters and boards announcing action in case of an emergency will be put up at prominent places, and at all assembly areas.

9.3.4 Emergency plan

All actions will be coordinated with the overall emergency plan operated by the Supervisor. The General Manager is overall responsible to coordinate all emergency procedures along with the Health & Safety Manager. All emergency telephone numbers and contact names shall be posted at strategic points on site.

Subsequent actions as listed below will be taken either as in instruction from the Supervisor.

- Stop all work and report to the nearest evacuation area/ assembly area and await further instructions.
- Stop all equipment and vehicles.
- Contact the Health & Safety Manager and relay message to the Supervisor and General

Manager.

9.3.5 Ensure all personnel are aware of the emergency Assembly Point

In an emergency all personnel are to proceed in an orderly manner to the nearest safe assembly point.

9.3.6 Head Count

The Supervisor shall take a head count and check all employee's area at the assembly point. He/She shall also inform the General Manager of the result of the head count.

9.3.7 Rescue Team

For missing personnel, a rescue team will be formed in consultation with the Engineer and depending upon the type and status of emergency, all efforts will be made to rescue the missing personnel.

9.3.8 Fire Fighting

In case of a fire, after the alarm has been sounded, all efforts will be made to put off the fire by use of fire extinguishers, fire hydrants, hoses etc. until more professional help come. Fire extinguishers will be available on site at strategic locations near stores, laydown area, and electrical distribution cabinets.

9.3.9 All Clear

Normal work will be resumed only after all clear signal is received from the Supervisor. As such the supervisors shall make all arrangements to meet the concerned authorities.

Table 17: Shows Environmental and Social Management Plan

A	MANAGEMENT PLAN FOR POTENTIAL IMPACTS DURING CONSTRUCTION PHASE					
SN	Impact	Mitigation Measures	Responsible Parties	Time Frame	Target/ Standards	Cost Estimates (Tshs)
1.	Solid waste generation	Use of an integrated solid waste management system i.e. through a hierarchy of options: source reduction, Recycling, Reuse before disposal of waste at the designated District dumpsite. Transportation of wastes from the site to be done by a registered solid waste handler who will use appropriate vehicles for conveyance of wastes from site to designated District Council dumpsite.	Mohammed Enterprises Tanzania Limited (METL)	Throughout project construction phase	0.5 to 0.92 kg/cap/day. Litter free environment	5,000,000
2.	Noise and vibration	Restriction of noisy construction activities to normal working hours (7am - 6pm).	Mohammed Enterprises	`Throughout project	80db during the day	5,000,000

		Local residents will be informed via notices and advisories, of pending noisy periods and solicit their tolerance well before the commencement of piling works. Workers operating equipment that generate noise will be equipped with noise protection gear including ear muffs and plugs. Workers operating equipment generating noise levels greater than 80 dBA continuously for 8 hours or more should use earmuffs whereas those experiencing prolonged noise levels of 70 - 80 dBA should wear earplugs.	Tanzania Limited (METL)	construction phase	70db during night hours	
3.	Spillage of hazardous materials	Refueling and maintenance of vehicles will not take place at the	Mohammed Enterprises	Throughout project	There should be zero spillage at all.	6,000,000

		construction site All hazardous materials to be stored in appropriately bonded containers and placed on concrete floor Maintaining spill response kits at the site office On site spill response procedures will be prepared Training of workers on spill response and management	Tanzania Limited (METL)	construction phase		
4.	Liquid waste generation	Providing adequate sanitary facilities for workers with appropriate sanitary arrangement to prevent runoff. Sensitize workers on the rationale of using the sanitary facilities	Mohammed Enterprises Tanzania Limited (METL)	Throughout project construction phase	TBS Standards 6.5-8.5, 100mg/L, 30mg/L, 60mg/L, 100mg/L	6000,000

5.	Incidences of risks, hazards and accidents	Engaging only those workers that are trained to operate specific machines and equipment Proper signs on site to warn workers of safety requirements as regards machines with moving parts and other equipment at site. Provision of First Aid box and have a trained person to handle site emergencies and incidences. Display in the site telephone numbers of ambulances or provide a site vehicle to specifically transport the injured to hospital. Provision of fire-fighting mechanism at site. Display	Mohammed Enterprises Tanzania Limited (METL)	Throughout project construction phase	Hazards and accidents free environment	4,000,000

		emergency call numbers that can be used in case of a site fire. Provide safe scaffoldings and railings at heights. Provision of washing (enclosed bathroom) and toilet facilities at site with both drinking and washing water. The number of workers engaged determines the number of the toilets and bathrooms provided. Providing safety helmets, safety masks (welders), safety shoes (loaders), uniforms and hand gloves to the workers. Using well-maintained equipment by qualified personnel.				
6.	Soil disturbance	New plantation should be limited to project area only	Mohammed Enterprises	Throughout project	Clean channels No gullies	6,000,000

			Tanzania Limited (METL)	construction phase	Rills Normal overland flow	
B	MANAGEMENT PLAN FOR POTENTIAL IMPACTS DURING OPERATION PHASE					
S/N.	Impacts	Mitigation Measures	Responsible Parties	Time Frame	Target/ Standards	Cost Estimates (Tshs)
1.	Occupational health and safety	Workers hired will be trained on how to undertake factory operations. All machines will be maintained in good working order, and will have instruction manuals. The management will formulate reasonable working schedules for employees. Appropriate PPE will be provided to the workers. All work stations will have adequate light and ventilation.	Mohammed Enterprises Tanzania Limited (METL)	Throughout operation phase	Safe environment for workers and surroundings.	5,000,000

		Appropriate warning signs will be put up including emergency exit routes.				
2.	Risks of fire hazards:	There shall be a well- designed and properly laid fire hydrant system effectively fighting fires of various proportions and of all classes of fire risks. The management will have to ensure high level training for fire unit personnel and ensures periodical grilling of workers to cope with fire emergencies.	Mohammed Enterprises Tanzania Limited (METL)	Throughout operational phase	No new cases of fire	7,000,000
3.	Solid waste	Provide each section of the facility with sufficient trash bins that promote sorting at source. Encourage staff to handle waste through the hierarchy of options that including reduction at source, separation of waste to	Mohammed Enterprises Tanzania Limited (METL)	Throughout operational phase	0.5 to 0.92 kg/cap/day. Litter free environment	5,000,000

		make it easier to undertaking recycling or reuse.				
4.	Increased pressure on social services and utilities	The project design includes ventilation systems at the factory that allow for sufficient air circulation and lighting to lower the energy demand for the facility. Proponent should consider installation of solar lighting systems complement electricity supply from the national grid.	Mohammed Enterprises Tanzania Limited (METL)	Throughout operational phase	Availability of energy alternatives such electricity from TANESCO, solar power and generator	5,000,000
5.	HIV/AIDs, STDs and other diseases (i.e. COVID – 19)	Contractor should establish HIV/AIDS programmes to raise awareness Put posters with various messages such as ‘‘HIV/AIDS kills’’, ‘‘be faithful’’. Preventive measures against the spread of COVID – 19 shall be practiced at the project site.	Mohammed Enterprises Tanzania Limited (METL)	Throughout operational phase	Prevent further transmissions	5,000,000

C.	MANAGEMENT PLAN FOR POTENTIAL IMPACTS DURING DECOMMISSIONING PHASE					
S/N	Impact	Mitigation measures	Responsible part	Time Frame		Cost Estimates (Tsh)
1.	Noise & Air pollution during demolition	Demolition works to be carried out only during daytime. Workers working in noisy section to wear ear muffs Workers should be provided with dust masks Spraying water in dusty areas Install dust trappers around the site	Mohammed Enterprises Tanzania Limited (METL)	Demolition stage	Particulate matters i.e. $PM_{2.5}$, PM_{10} and PM_5 0_3< 120µg/Nm^3 for 8hours. NOx 150 µg/Nm^3 daily and 120µg/Nm^3 for 8hours. CO 100mg/Nm^3 for < 15minute and 10mg/kg daily. SO_2< 0.1mg/kg daily and 0.5mg/Nm^3 for 10minutes. (According to TBS Tanzanian	5,000,000

					Standards given on page 33 of National Environmental Standards Compendium). Dust free environment. 80db during the day 70db during night hours	
2.	Disturbed Physical environment	Undertake a complete environmental restoration programmed. Landscaping and introducing appropriate vegetation	Mohammed Enterprises Tanzania Limited (METL)	Demolition stage	Landscaped environment Vegetated land	8,000,000
3.	Solid waste generation	A site waste management plan will be prepared by the contractor prior to commencement of demolition activities.	Mohammed Enterprises Tanzania Limited (METL)	Decommissioning phase	0.5 to 0.92 kg/cap/day. Litter free environment	5,000,000

		This will include designation of appropriate waste storage areas, collection and removal schedule, identification of approved disposal site, and a system for supervision and monitoring.				
4.	Occupational health and safety	Provide Personal Protective Equipment to workers Train workers on personal safety and how to handle equipment and machines A well-stocked first aid kit shall be maintained by qualified personnel Demarcate area under demolition with Danger	Mohammed Enterprises Tanzania Limited (METL)	Decommissioning phase	No complaints from workers on ergonomic hazards.	5,000,000
5.	Loss of employment	Workers will be provided with skills for self-employment and	Mohammed Enterprises	Decommissioning phase	Improved living standard	5,000,000

		others with special skills will be availed jobs to other places.	Tanzania Limited (METL)			

CHAPTER TEN

10.0 Environmental Monitoring Plan

10.1 General Overview

Monitoring is a long-term process, which should start from the beginning of the project and should continue throughout the life of the project. Monitoring involves the continuous or periodic review of Renovation/Upgrading, operation and maintenance activities to determine the effectiveness of recommended mitigation measures. Consequently, trends in environmental degradation or improvement can be established and previously unforeseen impacts can be identified or pre-emptied.

The outcomes of the monitoring will be recorded and assessed by Mohammed Enterprises Tanzania Limited (METL)and their contractual representatives during renovation and operations of the Factory so as to either conforms or otherwise with the ESMP. Where non-compliance is observed the necessary corrective actions will be implemented as soon as possible such that the environmental or social impact is addressed and returned to acceptable levels. Corrective actions may include changes to work methods type/condition of plant and equipment and personnel and may also include changes to the frequency and type of monitoring.

There are four types of monitoring that are also relevant to this project. These are:

- Baseline monitoring – The measurement of environmental parameters during a pre- project period and operation period to determine the nature and ranges of natural variations and where possible establish the process of change.
- Impact/effect monitoring*:* Involves the measurement of parameters (performance indicators) during renovation, operation and decommissioning phase in order to detect and quantify environmental and social change, which may have occurred as a result of the project.
- Compliance monitoring: Takes the form of periodic sampling and continuous measurement of levels of compliance with standards and thresholds – e.g. for waste discharge and diseases.
- Mitigation monitoring: Aims to determine the suitability and effectiveness of mitigation measures and programs, designed to diminish or compensate for effects of the project.

10.2 Implementation of monitoring plan

The environmental monitoring during renovation phase will be comprised of two activities:

Review of Contractor's plans, methods statement, and temporary works design and arrangements to ensure that environmental protection measures specified in the contract documents are adopted and Contractor's proposals provide acceptable levels of impact control.

Systematic observation of all site activities and the Contractor's offsite facilities, including borrow pits and quarry sites areas. To ensure that the contract requirements relating to environmental matters are being complied with, and that no impact foreseen and unforeseen are occurring.

The monitoring activities will be comprised of visual observation during site inspection and will be carried out at the same time as the engineering monitoring activities. Site inspections will take place with emphasis on early identification of any environmental problem and the initiation of suitable remedial action. Where remedial actions have been required on the part of the Contractor, further checks will need to be made to ensure that these are actually being implemented to the agreed schedule and in the required form. All sites where renovation is taking place will be formally inspected from an environmental view point on a regular basis.

The monitoring plan will also be integrated with other renovation supervision and carried out by the Implementing Agency's Engineer. The Engineer will decide on the appropriate course of action to be taken in cases where unsatisfactory reports are received from the field staff regarding environmental matters. In case of relatively minor matters, advice to the Contractor on the need for remedial action may suffice, but in all serious cases, Implementing Agency's Engineer should issue a formal instruction to the Contractor to take remedial action, depending on the extent of delegated powers. Table below provides a variety of tools and methods to be used in the monitoring exercise.

Table 18; Monitoring plan for the proposed project

Monitoring tool	Comments
Visual inspection/witness	Inspection of work methods, temporary works site cleanliness, drainage and flooding
Professional certification	Skilled personnel to provide

Method statements	Contractor of renovation will provide overall method statement as well as task specific method statement as instructed.
Work schedules	Updates of work schedules showing main activities, planned progress and actual critical path allocation of resources.
ESMP, H & S Plan	The contractor shall take the responsibility of preparing a detailed ESMP and a health and safety plan. These will provide guidelines concerning procedures and documentation and will be used to monitor compliance.
Periodic meetings	Includes project progress meetings, technical coordination meetings.
External audits	Organized by Mohammed Enterprises Tanzania Limited (METL)
Approvals and permits from jurisdictional authorities/agencies	At various points in time it may be necessary to obtain approvals
Miscellaneous documentation	Various documentations may be requested from time to time to ensure performance and/or compliance such as delivery notes of materials, labour and insurances, equipment performance.
Technical specification and drawings	The contracts documents, including the technical specifications and drawings will provide clear guideline concerning procedures and documentation and will be used to monitor compliance.

Table 19; Environmental Monitoring Plan

Potential Impact	Parameter to be monitored	Time	Standards	Responsible	Cost
CONSTRUCTION PHASE					
Accumulation of solid waste	Remaining of solid waste	Every week during construction Phase	Proper management of solid waste	Contractor/ site engineer and workers	5,000,000
Air pollution	Particulate matters i.e. $PM_{2.5}$, PM_{10} and PM_5 0_3< 120µg/Nm^3 for 8hours. NOx 150 µg/Nm^3 daily and 120µg/Nm^3 for 8hours. CO 100mg/Nm^3 for < 15minute and 10mg/kg daily. SO_2< 0.1mg/kg daily and 0.5mg/Nm^3 for 10minutes. (according to	Construction Period	TBS, Minimizing air emission to 0.20µg/Nm^3 hourly	Contractor and workers	5,000,000

	TBS Tanzanian Standards given on page 33 of National Environmental Standards Compendium)				
Gaseous emission	Exhaust emissions consisting of carbon monoxide (CO), Carbon dioxide (CO_2), Volatile Organic Compound.	Construction Period	TBS standards of 10mg for 8hrs	Contractor /site engineer and workers	8,000,000
Hazardous waste	Presence of hazardous materials	Construction period	TBS, proper management of waste.	Contractor	6,000,000
Occupational Health and safety	Health and safety heath status of workers	Routine inspection	OSHA standard/ all workers use protective gears	Contractor, district and local authorities	5,000,000

Potential Impact	Parameter to be monitored	Time	Standards	Responsible	Cost
OPERATION PHASE					

Waste water	Ph, DO and BOD	Once a month	TBS Standards 6.5 - 8.5, 100 mg/L, 30 mg/L, 60 mg/L, 100 mg/L	Contractor, site engineer and workers	6,000,000
Solid waste	Remaining of metals, plastics	Once a week	Proper management of solid waste	Contractor	7,000,000
Increase pressure of infrastructure	Water and electricity month record	Operation period	DAWASCO, TANESCO, Proper management of infrastructure	Contractor	5,000,000
Increase traffic flow	Traffic jam	Operation Period	Proper management of traffic	Proponent/contract	6,000,000
Fire preparedness	Proof of inspection on Firefighting equipment. Fire Signs put up in strategic places. Availability of fire Fighting	Operation Period	Proper management of fire	Mohammed Enterprises Tanzania Limited (METL)	7,000,000

	equipment.				
Occupational health and safety	Washrooms (gents & ladies) Copies of Annual Audit Reports	Operation Period	OSHA	Mohammed Enterprises Tanzania Limited (METL)	5,000,000

Potential Impact	Parameter to be monitored	Time	Standards	Responsible	Cost
DECOMMISSINING PHASE					
Noise and Vibration - Audible nuisances	Noise level db(A)	Decommissioning Period	Noise limit below 60BA	Proponent	5,000,000
Waste accumulation and disposal	Abandoned structures and decommissioning activities	Once during decommissioning	All hydroelectric plant machinery, equipment, structure and tools are removed	Contractor/ proponent	5,000,000
Workers accidents and hazards during demolition	Health and safety heath status of workers	Routine Inspection	OSHA standard/ all workers use protective	Proponent	4,000,000

			gears		
Dust emission	Particulate matters i.e. $PM_{2.5}$, PM_{10} and PM_5	Decommissioning period.	TBS, Minimizing air emission to 0.20µg/Nm^3 hourly	Contractor/ site engineer and workers	6,000,000

10.3 Monitoring Frequency and Reporting

Monitoring frequency varies for each parameter depending on the likelihood and level of change over time. Some parameters take longer time to show changes while others would change in very short time. For example, liquid effluents outflows should be monitored frequently for compliance with environmental standards in Tanzania for Biological Oxygen Demand (BOD_5 mg/l), pH, Suspended Solids (SS mg/l), for parameters that long take time to manifest; monitoring should at least be on quarterly basis. Other parameters such as income, revenue, employment, changes in livelihoods and use of resources (water, energy) will be monitored on annual basis – so as to allow for significant change to take place.

Monitoring data should be analyzed and reviewed at regular intervals and compared with the existing permissible level standards so that any necessary corrective actions are timely taken. Developer is required to maintain records of liquid effluents and any hazardous materials or wastes (if any) and is being disposed at remote area. Other parameters to include such as water usage, fires, accidents, and ill health that may impact on the environment or workers

Records of monitoring results should be kept in an acceptable format an easily accessible, and information reviewed and evaluated to improve the effectiveness of the environmental protection plan. The results should be reported to the responsible authorities and relevant

authorities as required and be readily available for review and checks by regulatory authorities. The Developer will have to find out any other existing reporting requirement with the district and national environmental regulatory authorities (e.g. NEMC) and comply.

CHAPTER ELEVEN

11.0 Conclusion and Recommendations

11.1 Conclusion

From the environmental assessment conducted for the project, it is clear that the project potentially has some negative impacts which relate to the surrounding environment. The impacts relate to issues pertaining to risk of pollution of the environment in case of improper solid and liquid waste disposal; traffic congestion and general nuisance during renovation. Sanitation has to be appropriately considered with adequate safety measures in case of bursting of sewage pipes which may pollute the immediate environment. It should be noted, however, that despite the above potential impacts, it is possible with adequate design and implementation measures advanced in this report to mitigate the environmental effects and reduce them to acceptable levels. It is recommended that strict monitoring measures will be instituted both from an engineering and environmental point considering the sensitivity of the site. This will ensure that the project adheres to acceptable practices and standards.

11.2 Recommendations

It is the consultant's view that the project be allowed to proceed on condition that the measures proposed in this ESIA Report and in particular in the ESMP are fully implemented. Recommendations for the prevention and mitigation of impacts are as follows:

i. All solid waste materials and debris resulting from Renovation activities must be disposed of at Waste management dumping site
ii. Renovation activities must be undertaken only during the day i.e., between 7:30 am – 6:00 pm to minimize disturbance to the general public within the proximity of the site/project;
iii. Traffic along the access/connecting roads should be controlled during renovation and especially when heavy trucks are turning in and out of the site to ensure that no accidents are caused by the site's activities;
iv. Ensure proper water usage during construction/ renovation and occupational phases. Contractor can import water using bowsers and tankers with the approval

of relevant water authority. Provide water saving valves and install rainwater harvesting systems (gutters, down pipes and storage facilities);

v. Drains will be properly designed, installed and regularly maintained to prevent storm water (run-off) from accumulating within the site and spreading to the neighborhood. These must effectively drain the storm from the premise in to the existing public drainage system along the road

vi. Proper and regular maintenance of construction machinery and equipment will reduce emission of hazardous fumes and noise resulting from friction of rubbing metal bodies. Maintenance should be conducted in a designated area and in a manner not to interfere with the environment;

vii. Maintenance activities must be carried out in service bay to reduce chances of oils or grease or other maintenance materials, from coming into contact with environment (water or soil). Waste water from such areas must be refrained from coming into contact with soil mass or water bodies as it contains oil/grease spills;

viii. Used and new oils must be handled and stored appropriately to avoid oil leaks and spills on the site;

ix. Sewerage system must be properly designed within the site /house and effectively connected to the existing sewer line. Design specifications must be followed during installation. Standard cleanliness of sanitary and waste disposal facilities at construction site must be maintained;

x. Workers must be provided with complete protective and safety gear. They must have working boots, complete overalls, helmets, gloves, earmuffs, nose-masks, goggles etc.

xi. Fully equipped first aid kit must be provided within the site. Workers should get food that is hygienically prepared; the source of such food must be legalized or closely controlled;

xii. The contractor must provide adequate security during the construction period and especially during the night when there are no construction activities.