

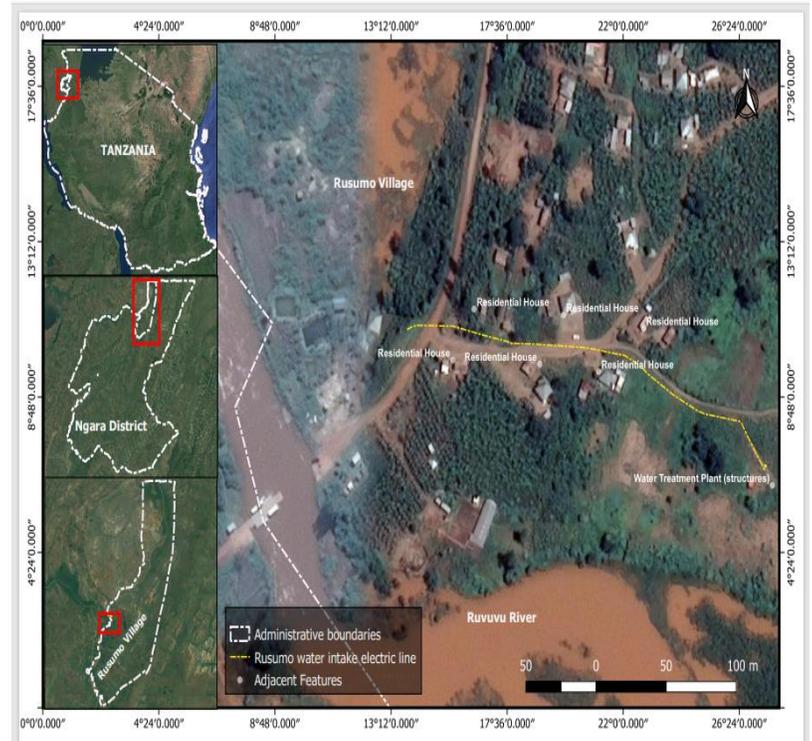
ENVIRONMENTAL IMPACT ASSESSMENT (ESIA) REPORT FOR THE PROPOSED CONSTRUCTION OF MEDIUM VOLTAGE (11KV) ELECTRICAL DISTRIBUTION LINE FROM THE TAPPING POINT TO RUSUMO WATER TREATMENT PLANT LOCATED AT NYAKAHANGA HAMLET, RUSUMO VILLAGE, RUSUMO WARD, NGARA DISTRICT IN KAGERA REGION.

ESIA REPORT-Final Version



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EXECUTIVE SUMMARY

ES-1: Background

This ESIA report describes the proposed Construction of Medium Voltage (500kVA, 11/0.4KV) electrical distribution line from the tapping point through the road reserve (Right-of-Way) to Rusumo Water Treatment Plant located at Nyakahanga Hamlet, Rusumo Village, Rusumo Ward, Ngara District in Kagera Region. All the construction activities will be carried out in Ngara District under Local Area Development Program (LADP II) funded with World Bank through NELSAP. LADP is a benefit sharing program designed to enhance regional economic and social development in the project areas in Rwanda, Burundi and Tanzania

The LADP Phase II projects include Construction of Medium Voltage (500kVA, 11/0.4KV) electrical distribution line from the tapping point through the road reserve to Rusumo Water Treatment Plant with the distance of 0.32km. The land use in the proposed project site (Right-of-Way) has been approved by Tanzania Rural and Urban Roads Agency (TARURA) as the major regulatory body and solely owner of the existing Rusumo Water Treatment Plant access road as per road Act No. 13 of 2007 Road Management regulations 2009 No. 27 and 29. The study reveals that, neither the individual land owner nor crops who/which will be affected during the project commencement (*See appendix III*). Generally; the proposed project is a subproject of the main project of Rusumo Water Supply scheme which constructed during the LADP Phase 1 (2019-2020). The establishment of Medium Voltage electrical distribution line has been detailed in this report and social economic surveys of the area have been also explained. Construction of the proposed project may require 29 personnel both skilled and unskilled among them 5 technical personnel will be involved in professional works. The project investment cost is USD 23,867.82

Before undertaking the construction works it has been found necessary to carry out Environmental and Social Impact Assessment (ESIA) of the proposed Construction of Medium Voltage (500kVA, 11/0.4KV) electrical distribution line from the tapping point at the T-Intersection (Junction) of Nyakiziba and Nyakahanga roads to Rusumo Water Treatment Plant. The distance from the tapping point (Junction) to Rusumo Water Treatment Plant is approximately 0.32Kilometer whilst the proposed Right-of-Way is within Nyakahanga road reserve. The objective of this ESIA was to exhaustively predict and forestall potential environmental and social impacts and propose mitigation measures to lessen any impacts to the environment and indigenous people in project's area of influence that may arise from construction of electrical distribution line. This is to ensure that the project delivers minimum disruption to the environment. The ESIA study was commissioned to Gabriel Gibson (Team Leader and Registered Environmental Expert with Registration Number: EIA-0460) by Ngara District Council.

Principally, the ESIA study was conducted in accordance with the requirements of the Tanzania Environment Management Act Cap 191 (2004) and Environmental Impact Assessment and Audit Regulations No. 349 of 2005, as well as, (Environmental Impact Assessment and Audit) (Amendment) Regulations (G.N. No. 474) of 2018. Nevertheless; The World Bank Safeguard

Policy applicable to this proposed project is *Environmental Assessment Policy (OP 4.01) coupled with World Bank Group Industry Sector Guidelines for Electric Power Transmission and Distribution, 2007 and The World Bank Group General EHS Guidelines, 2007.*

The proposed Construction of Medium Voltage of 11KV (500kVA, 11/0.4KV) electrical distribution line from the tapping point at the T-Intersection of Nyakiziba and Nyakahanga road to Rusumo Water Treatment Plant falls into Type B1 Mandatory projects that require full Environmental Impact Assessment hence preparation of Scoping report, Terms of References for registration with NEMC and approval process, undertaking of full ESIA and preparing the ESMP. From the World Bank perspective, the proposed project is classified as Category “B” because the proposed electrical line is passing along the existing road reserve with less vegetation covers hence its potential adverse environmental impacts on human populations or environmentally important areas—including wetlands, forests, grasslands, and other natural habitats—are less adverse.

Measures have been proposed to strengthen implementation of the ESMP presented in this report for the overall construction activities and operations phases. The ESMP has taken into account all the design and other changes that might occur upon construction activities that are to be implemented. Therefore, this report has taken into account the implementation of the mitigation measures proposed in which the overall social adverse impacts of the project will be very minimal while opening up significant opportunity for local communities to secure clean and safe water efficiently.

General Layout for the proposed Medium Voltage of (500kVA, 11/0.4KV) distribution line-Rusumo Water Treatment Plant.

Project Impact assessment: The checklist method was used to identify the impacts and to recommend mitigation measures and using the matrix method to identify significant impacts. The impact assessment entailed collection of baseline data, review of Policies, Legal and Institutional Framework for Environmental and Social Management, Identifying Environmental and Social Impacts, Predicting Environmental and Social Impacts, Determining the Significance of Impacts, and Identifying Mitigation and Management Options

ES-3: Policy and Legal Guidance

The study has consulted a number of policies and laws relevant to the project for guidance in order to ensure sustainability of the project in the area. Thus, the project during its entire course of the implementation shall refer to these cited documents. The chapter also captures the relevant MEAs, international safeguards and guidelines requirements for such kind of the project in the area. Thus, the project during its entire course of the implementation shall refer to these cited documents. Among others; National Environmental Policy (1997), National Land Policy (1997), National Economic Empowerment Policy (2004), National Gender Policy (2000), Occupational Safety and Health Policy, 2012, The National Employment Policy (1997), National Policy on HIV/AIDS (2001), National Child Development Policy 2008, Community Development Policy 2005, National Health Policy (URT, 2003), The Energy Policy of Tanzania (URT, 2015)

Legal framework describes the Acts and regulations which are related to the intended project are Environmental Management Act (No.20. of 2004), The Constitution of Tanzania (1977), Occupation health and safety Act (No.5,2003), HIV and AIDS (Prevention and Control) act (no.28,2008), Standards Act, 2009, Employment and Labour Relations Act (2004), The Child Act 2009, The Contractors Registration Act, 1997, Environmental Management Act (Air Quality Standards) Regulations, 2007, The Environmental Management (Water Quality Standards) Regulations, 2007, Environmental Management (Hazardous Waste Management) Regulations, 2019, Environmental Management (Fees and charges) (Amended) Regulations, 2021, Environmental management (Standards for Control of Noise and Vibration) Regulations, 2015, The Occupational Safety and Health (First Aid and Welfare Facilities) Rules 2015, Land Acquisition Act R.E 2002, Penal Code 1981 including Sexual Offences Special Provisions Act 1998 (SOSPA), The Electricity Act No. 10/08 of 2008, The Road Act, 2007

Nevertheless; The World Bank Safeguard Policy applicable to this proposed project is Environmental Assessment Policy (OP 4.01) coupled with World Bank Group Industry Sector Guidelines for Electric Power Transmission and Distribution, 2007 and The World Bank Group General EHS Guidelines, 2007.

ES-4: Brief Description of the Proposed Development

Generally; this is a subproject with the purpose of completing the major project of Rusumo Water Supply Scheme which constructed during the implementation of LADP Phase I in 2019/2020. The proposed construction of Medium Voltage (500kVA, 11/0.4KV) electrical distribution line for Rusumo water treatment plant will consist of;

- Transformer/substation with the capacity of 500kVA

- Installation of Electrical conductors; ACSR 100M²
- Plumbing of four (4) utility poles with two angle Points both with 90⁰
- Installation of other supporting facilities

ES-5: Description of Project Environment

The electrical tapping point is located at the T-Intersection (Junction) of Nyakiziba and Nyakahanga road. The tapping point founds approximately 100meters Southern side of Ruvuvu River. The electrical Transformer /substation will be installed about 70meters North-East of Ruvuvu river. At the tapping point, Right-of-Way and the substation/transformer land is mainly dominated by short grasses which will be affected during the project commencement. The proposed Right-of-Way is characterised with gentle slope towards Southern side, sandy clay loam soil type dominated with short grasses which will be cleared prior to construction activities. The dominant vegetation species is Scutch grass (*Elymus repens*) throughout the project site. Generally; the proposed project site is located in urban setting environment whereby residential-Commercial blocks with backyard farming plots are dominated adjacent to the Right-of-Way while the indigenous vegetation have long been cleared-off to pave way for human developments/activities.

Based on the state of the whole site there is no pristine environment that can promote thriving and existence of the species of conservation concern as per IUCN and CITES standards. Furthermore, there is River Ruvuvu in the vicinity of the project site as a sensitive lotic ecosystem that needs special attention throughout the project lifespan. Also, there were no cultural or archaeological objects that were noticed or observed during the study or reported earlier during the consultation stage with local community

ES-6: Major Adjacent Developments

South-East Side of the proposed Right-of-Way there are Residential Houses and River Ruvuvu respectively whilst Northern side is demarcated by residential houses. The electrical tapping point is demarcated by River Ruvuvu on Western side while the Substation/Transformer is demarcated by Water Treatment Plant and River Ruvuvu respectively on South-East side.

ES-7: Brief Description of the Proposed Project Activities

The following activities will be implemented during different phases of the proposed construction of the Rusumo Water Treatment Plant electrical distribution line;

- i. *Mobilization or Pre-construction Phase:* This phase entails seeking of all legal permits required by the law, mobilization of labour force, equipment. Other activities during this pre-construction phase include installation of signboards and site clearance only at the designated areas.
- ii. *Construction Phase:* The major activities include site clearance throughout the Right-of-way, excavation of utility poles' holes, plumbing of Utility poles, covering/backfilling

- the excavated holes, installation of electrical overhead conductors, construction of transformer/substation, etc. The contractor will use the existing storage rooms established at Rusumo Water Treatment Plant for storage of construction materials mainly electrical poles and other working tools/equipment. Heavy duty equipments such as motor grader and Winch machine will be used for clearance and erecting utility poles respectively while 4WD Pick up will be used for collecting employees to the site. Testing for quality control of the supplied materials will be given high priority.
- iii. *Demobilization Phase:* Major activities during this phase comprise decommissioning of temporary facilities and construction equipments that will be done and has to be contained in the works contract i.e. proper restoration of the site (e.g. removing of excess construction materials and reinstating the excavated areas to the required standards). These will also involve clearance of all sorts of wastes including solid wastes (organic waste, plastics, wood, metal, etc), disposal of all wastes to the designated dumpsite and termination of temporary employments. Last activity is handover the completed project to the Proponent for commencement of operation phase.
 - iv. *Operation phase:* Major activities during this phase including routine repair and maintenance of the constructed Medium Voltage electrical line route and its ancillary equipment. Among others; safety awareness campaign to local communities including safety/warning signs will be given priority.
 - v. *Decommissioning Phase:* This is the final demise of the Medium Voltage electrical line due to any causative factors such as an increase in power demand due to increase in a number of customers hence the existing line need to be replaced or upgraded in order to supply sufficiently electrical power. Closure Plan must be abided.

ES-8: Stakeholders and their Involvement in the EIA Process

The main aim of the stakeholder consultation was to inform the stakeholders about the proposed project and incorporate their views in the design of the mitigation measures and Environmental and Social Management Plan (ESMP). The specific aims of the consultation process were to; reduce problems of institutional coordination; provide precise information about the project to the communities; obtained the main concerns and perceptions of the stakeholders regarding the project; and obtain opinions and suggestions directly from the affected communities on their preferred mitigation measures.

The public stakeholder consultation meetings were conducted and intended to collect information regarding sources of livelihood, living standards, and views and perceptions of the communities regarding the proposed project. Stakeholders visited include Residents, Chair Person (Hamlet), Village Chairperson, Village Executive (VE) and Ward Executive (WE). Other stakeholders included District Executive Director (DED), District Manager-TANESCO, District Manager-Tanzania Rural and Urban Roads Agency (TARURA), District Manager - Rural Water Supply and Sanitation Agency (RUWASA), District Environmental Management Officer, District

Land and Natural Resources Officer (DLNSO), District Livestock Officer (DLO), Fire and Rescue Force-District Office and all other related Departments at district level.

The study applied different participatory methods, namely interviews, one-to-one discussion and focused group discussions. The consultation was first conducted with the Ngara District Council (Proponent) to get the details of the proposed activities. Stakeholders consulted were informed on the proposed project and asked to raise their concern to the consultant.

ES-8.1: Result of Public Consultation

Generally, views from various stakeholders support the development of the proposed project in Rusumo Ward in view that;

S/No	Major issue/concern	Description
1	Compliance to National laws	Prior to project commencement, the Proponent must acquire all legal permits
2	Early pregnancies	Construction activities will increase unplanned and early pregnancy cases, especially to School girls because their lusts they tend to date project workers. The contractor is advised to take precaution and strictly enforcement to his employees.
3	Economic gains and Creation of employment	The project is expected to boost Village/Ward economy in construction phase by employing local dwellers, improving small business to local vendors.
4	Improved Water supply in the Village	Connection of electricity at Rusumo Water Treatment Plant will improve plant's capacity to treat and supply water in the required volume hence to meet the intended demand of (230m ³). The Government via TANESCO should insure the consistency of electrical flow all the time to the treatment plant
5	Negative Impacts such as Management of hazardous wastes, air and noise pollution; health hazards to workers and nearby community, Water pollution at Ruvuvu River	The proponent/Contractor is advised to prepare comprehensive and exhaustively mitigation measures to eliminate or reduce the anticipated detrimental impacts

Status of Stakeholders' participation

Date	Venue	Stakeholders	Participants
09.11. 2021	Ngara District Council Conference Room	Ngara District Council Departmental Staffs	24
09.11. 2021	Ngara LADP Office	Ag. Environmental Officers & LADP Coordinator	4

Date	Venue	Stakeholders	Participants
09.11. 2021	Ngara District TANESCO Office,	Ngara District TANESCO Manager, TARURA Manager	7
07.11. 2021	Rusumo Ward/Village	Direct and indirect project beneficiaries, and Village leaders.	90
Total			125

ES-9: ESIA Study Findings

Positive Impacts

Several positive and negative impacts are associated with the proposed project. Significant positive impacts include the following:

- Creation of temporary employment during construction phase.
- Increasing income for local community, especially women by selling foods and other consumable goods to construction workforce.
- Reduced running cost since the current diesel powered generator will be replaced by Electricity
- Improved water supply coverage to the majority rural population
- Protection of public health as the cases for water born and water related diseases will be significantly reduced due to adequate supply of clean and safe water for domestic consumption
- Promotion of public health as adequate supply of water will change hygienic behavior of people, such as regular bathing and hand washing after person defecation
- Increased production efficiency as villagers will reduce time spent for fetching water, which would alternatively use for economic and income generating activities for instance farming, livestock keeping, trading, etc

Negative Impacts and Mitigation Measures

The identified significant negative impacts and their proposed mitigation measures are outlined in the following tabulation:

IDENTIFIED NEGATIVE IMPACTS	MITIGATION MEASURES
A. MOBILIZATION PHASE	
<p>A1. Land Acquisition for Right-of-Way</p>	<ul style="list-style-type: none"> ▪ Ngara District Council shall obtain written agreement/consent from Tanzania Rural and Urban Roads Agency (TARURA) to determine if it has been approved to adopt electrical poles to the road reserve (Right-of-Way) ▪ The contractor shall confine construction activities within the designated areas to avoid unnecessary conflicts with local community
<p>A2. Vegetation clearance</p> <ul style="list-style-type: none"> ▪ Site preparatory works for construction materials stockpiling area 	<p>The selected electrical route (Right of Way) adopted within the road reserve which dominated with short grasses only. However; the contractor must take the following measures to avoid any possible detrimental impacts;-</p> <ul style="list-style-type: none"> ▪ The problem could be minimized by confining the construction activities within the specific project site ▪ The Contractor shall avoid unnecessary clearing of vegetation beyond the project site construction area. ▪ The contractor should use the existing designated areas at Rusumo Water Treatment Plant for stockpiling and preparation of all construction materials to avoid unnecessary vegetation clearing beyond the project site
B. CONSTRUCTION PHASE	
<p>B1. Vegetation clearance</p>	<p>The selected electrical route (Right of Way) adopted within the road reserve which dominated with short grasses only. However; the contractor must take the following measures to avoid any possible detrimental impacts;-</p> <ul style="list-style-type: none"> ▪ The problem could be minimized by confining the construction activities within the specific project site ▪ The Contractor shall avoid unnecessary clearing of vegetation beyond the project site construction area. ▪ The contractor should use the existing designated areas at Rusumo Water Treatment Plant for stockpiling and preparation of all construction materials to avoid unnecessary vegetation clearing beyond the project site
<p>B2. Soil Erosion and Modification of Landscape</p>	<ul style="list-style-type: none"> ▪ Proper backfilling of the excavated holes ▪ Confining the construction activities within the proposed project site could minimize the problem. ▪ The Contractor shall always ensure that the excavated areas are reinstated whenever possible
<p>B3. Air Pollutions (Fugitive Dust and</p>	<p>Although air pollution is less anticipated due to the scope of the project being smaller; then the following mitigation</p>

IDENTIFIED NEGATIVE IMPACTS	MITIGATION MEASURES
Exhaust Emissions)	<p>measures must be undertaken by the Contractor;</p> <ul style="list-style-type: none"> ▪ The Contractor shall regularly apply water sprinkling on created dusty areas especially during undertaking clearance to minimize dust emission. ▪ The Contractor shall provide dust protection masks to construction workers. ▪ The Contractor shall ensure that appropriate construction equipment that do not emit fumes and smokes are used for construction works
B4. Population Influx (Labor Influx)	<ul style="list-style-type: none"> ▪ Establish transparent recruitment procedures to avoid site followers in form of job-seekers ▪ Establish a recruitment policy that gives priority to local residents for less specialized services ▪ Recruitment procedures to be shared with the local authorities for further dissemination ▪ Opportunities for sub-suppliers and sub-contractors (If any) should be awarded to local firms which in turn employ local labour ▪ Conduct public health campaigns addressing issues of behavioral change, water and sanitation, malaria, HIV/AIDS, etc
B5. Generation of solid waste	<ul style="list-style-type: none"> ▪ Waste management on site shall be strictly controlled and monitored. Only approved waste disposal methods shall be allowed. ▪ Ensure that site personnel are instructed in the proper disposal of all waste. ▪ Ensure that all facilities are maintained in a neat and tidy condition and the site shall be kept free of litter. Measures shall be taken to reduce the potential for litter and negligent behavior with regard to the disposal of all refuse. ▪ At all places of work provide litterbins, containers and refuse collection facilities for later disposal. ▪ Solid waste may be temporarily stored on site in a designated area prior to collection and disposal. Waste storage facility shall be covered, tip-proof, weatherproof and scavenger proof. The waste storage area shall be fenced off to prevent wind-blown litter. ▪ No burning, on-site burying or dumping of waste shall occur. ▪ All solid waste shall be disposed of offsite at an approved landfill site. ▪ The non-reusable and non-recyclable wastes shall be collected and transported to the dumpsite for final disposal
B6. Generation of Human Sanitary Wastes	<ul style="list-style-type: none"> ▪ Contractor may use the existing toilets at Rusumo Water Treatment Plant during the construction period ▪ Pit latrines and/or septic tanks/soak-away pits at the site

IDENTIFIED NEGATIVE IMPACTS	MITIGATION MEASURES
	for liquid waste collection; regular emptying.
B7. Soil and Water Quality Contamination	<ul style="list-style-type: none"> ▪ Proper handling of generated solid and liquid waste. ▪ Construction equipments should be serviced in a designated area with concrete surface ▪ All generated hazardous waste during construction of activities shall be temporarily stored at designated area comprised with primary and secondary containments prior to final disposal by the Authorized Contracted contractor ▪ No waste shall be disposed into waterways or streams
B8. Generation of hazardous waste	<ul style="list-style-type: none"> ▪ Separate all hazardous wastes from domestic waste during collection and transportation ▪ Equipments' mechanical repair activities shall be conducted on proper designated space within the Construction site ▪ All generated hazardous during construction activities shall be temporarily stored at designated area at the site and then to be removed from site by a registered hazardous waste dealer. ▪ Replaced oil and brake fluid to be properly handled in a designated area with primary and secondary containments prior to be disposed by an authorized dealer
B9. Generation of Noise and Vibrations	<p>Despite that only motor grader and Winch machinery will be used for site clearance and erection of utility poles respectively hence the Contractor should use the following mitigation measures;-</p> <ul style="list-style-type: none"> ▪ The Contractor shall avoid use of construction equipment that generates loud noise due to poorly tuned engines or damaged exhaust pipes. The construction machinery must be properly tuned and exhaust pipes fitted with mufflers. ▪ Adhere to Section 62 of Occupational Health and safety Act (2003) and Section 126 of Factories (Building Operations and Works of Engineering Construction) Rules, 1985, by ensuring that workers exposed to noise level above the limit of 85dB are equipped with ear plugs to protect them against excessive noise level ▪ The Contractor shall avoid prolonging construction works that produce high pitch noise within the residential areas during the dusk hours (18:00 – 06:00 hours)
B10. Creation of occupational health and safety risks to workers	<p>Mitigation measures to workers as the results of being exposed to Transformer/Insulating Oil for a prolonged time;-</p> <ul style="list-style-type: none"> ▪ Use barrier creams to prevent skin contact ▪ Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit ▪ Eyewear complying with an approved standard should be worn if a risk assessment indicates

IDENTIFIED NEGATIVE IMPACTS	MITIGATION MEASURES
	<p>eye contact is possible</p> <ul style="list-style-type: none"> ▪ The most suitable glove should be chosen in consideration to MSDS ▪ Use engineering controls to reduce air contamination to permissible exposure level hence wash promptly with soap and water if skin becomes contaminated ▪ Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit ▪ Avoid spilling Always remove oil with soap and water or skin cleaning agent, never use organic solvents. Do not use oil-contaminated clothing or shoes, and do not put rags moistened with oil into pockets <p>Other mitigation measures include;-</p> <ul style="list-style-type: none"> ▪ The use of proper lifting equipment to erect the utility pole and not manually. ▪ Ensure the electric current is turned off throughout the construction work ▪ Newly recruited linesman with little knowledge and experience should not be allowed to carry out other works apart from hole excavation, conductor carrying (only at ground level), pole loading/off-loading on truck and pole erection using ropes under strict personal supervision. ▪ Engaging only those workers that are trained to operate specific machines and equipment. ▪ Provide safe scaffolding and railings at heights ▪ All the workers on site shall be provided with on-site with training in site specific safety procedures and in hazards they may encounter at the site ▪ The Contractor shall be caused to conduct daily tool box meetings with specific occupational health and/or safety topic ▪ The Contractor shall enforce mandatory use of Personal Protective Equipment (PPE) to all workforces. ▪ Provide 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. ▪ The Contractor shall strictly follow occupational health and safety procedures as required in Occupational Health and Safety Act No. 5 of 2003
<p>B11. Creation of Public Health and safety risks</p>	<ul style="list-style-type: none"> ▪ The contractor shall regularly conduct community communication and engagement meetings with villagers so as to raise safety awareness to the people ▪ Barricade non-workers to enter the working environment without permission. ▪ The Contractor shall entirely barricade with visible warning nets or tapes the excavated utility holes

IDENTIFIED NEGATIVE IMPACTS	MITIGATION MEASURES
	<ul style="list-style-type: none"> ▪ Proper management of all hazardous and non-hazardous waste not to be disposed haphazardly ▪ Sign boards: <ul style="list-style-type: none"> -To warn the public on potential dangers that might be caused due to erection of Utility poles -Road signs should be displayed to warn motorists - Danger sign to be placed in each pylon after construction
B12. Child labour, forced labour and human trafficking	<ul style="list-style-type: none"> ▪ Employment must consider labor act (18+ Years and above) ▪ Spread awareness among parents and surrounding communities ▪ Strict laws in place to prevent child, forced labors and human trafficking ▪ The Consultant Engineer with Proponent shall strictly make sure the Contractor adheres to Employment and Labour Relations Act No. 6 (2004)
B13. Disruption of traffic flow	<ul style="list-style-type: none"> ▪ During site clearance at road reserve only qualified operator with appropriate operating license shall be engaged ▪ Flagman should be onsite to guide motorists and other road users ▪ Promoting safe drive with specified hours for long drive to avoid fatigue ▪ Provision of road and safety signs shall be done on site and surrounding areas that are to be followed by public drivers in collaboration with local authority
B14 Teenage Pregnancies	<ul style="list-style-type: none"> ▪ Strictly enforcing labors to avoid sexual abstinence with teenagers ▪ Developing a community based approach which utilizes school sex education integrated with parent, church, and community groups ▪ Increasing teenage knowledge of contraception ▪ Providing counseling and medical and psychological health and education ▪ There should be close collaboration between parents, teachers, and village governments to reduce truancy of school children. ▪ The Contractor shall not employ people under the age of 18 years.
B15. Risk of Construction Materials vandalism	<ul style="list-style-type: none"> ▪ Installation of lights in strategic areas to illuminate especially at the materials' storage area and nearby areas. ▪ Regular Community awareness campaign to create sense of ownership ▪ Materials to be stored in the existing storage facilities at Rusumo water treatment plant ▪ Employment of sufficient number of security guards
B16. Possible Spread of HIV/AIDS,	<ul style="list-style-type: none"> ▪ Workers will be sensitized on the issue of HIV/AIDS and STDs and on the usage condoms etc.

IDENTIFIED NEGATIVE IMPACTS	MITIGATION MEASURES
<p>COVID-19 and Other Infectious Diseases</p>	<ul style="list-style-type: none"> ▪ Establishment and implementation of HIV/AIDS awareness and prevention programs. ▪ HIV/AIDS testing will be conducted and counseling services will be done ▪ Providing protection gears where needed such as condoms ▪ Workers and the nearby community will be sanitized on the issues of COVID-19 and protection measures ▪ The contractor shall provide employment priority to local unskilled laborers to minimize number of new comers ▪ The Contractor shall develop and implement HIV/AIDS and STIs prevention and control programme ▪ The Contractor shall put in place the COVID-19 contingency plan developed by Ngara District Council
<p>B17. Increased Risk of GBV, SEA and Harassment</p>	<ul style="list-style-type: none"> ▪ Training for workers on required lawful conducts in the project communities. ▪ Creation of partnership with local offices of the Ministry of Women Affairs and Youth Development, NGOs and community women groups to report workers' misconduct and complaints/reports on gender-based violence ▪ Provision of opportunities for workers to regularly return to their families or take advantage of entertainment opportunities away from rural host communities. ▪ Gender based equal opportunities in all project phases ▪ Create opportunities for employment of women in both management and casual placements ▪ All gender based employment must consider labor act (18+ Years and above) ▪ Formulation of proper GRM to report any GBV and SEA activities observed in working area or around community done by project workers
<p>B18. Risks of Leakage of Hazardous Materials</p>	<ul style="list-style-type: none"> ▪ Regarding the project scope and short time of project implementation Transformer oil/ insulating oil will be transported and filled directly to transformer while the motor grader will be filled from the nearby petrol station. However; there will be no fuel storage on site. ▪ In case of any motor grade repair hence it should be done in a designated area at Rusumo water treatment plant's premise ▪ In the event of spill or leak of hydraulic fluid, insulating oil, oil and other petroleum products, they will immediately be cleaned up to prevent discharge of these fluids into the ground or storm water runoff. Absorbent materials such as polypropylene boom and pads saw dust will be kept on hand for clean-up of spilled liquids on pavement, water, and soil. In the event that there is oil spill on the soil, the soil shall be excavated and treated by incineration.
<p>C. DEMOBILIZATION PHASE</p>	

IDENTIFIED NEGATIVE IMPACTS	MITIGATION MEASURES
C1. Loss of Employment and Economic Activities at the End of the Project	<ul style="list-style-type: none"> ▪ The impact due to loss of employment at the closure of the project will be a residual impact as cannot be mitigated at the project level. To manage the impact, while recruiting workers the Contractors shall inform the expected duration of their employment. In addition, Employment and Labour Relations Act No. 6 (2004) of United Republic of Tanzania shall be adhered to by the Contractor during termination of redundant workers
C2. Generation of Solid Wastes	<p>The impact shall be mitigated as follows:</p> <ul style="list-style-type: none"> ▪ Despite that limited solid waste will be generated on site but prior to demobilization, the Contractor shall submit to the Engineer for review and approval a closure plan for the site restoration. The plan shall outline steps that the Contractors shall adopt to reinstate the facilities, including disposal of all facilities that were used in the site which would no longer be needed and are likely to be of environmental and health hazard.
C3. Restored clean site	<ul style="list-style-type: none"> ▪ Collection and transportation of unwanted materials to the disposal site while the wanted materials will be collected to Contractors' compound for future use.
D. OPERATION AND MAINTENANCE PHASE POSITIVE IMPACTS	
D1. Improved Clean and safe water supply	<ul style="list-style-type: none"> ▪ The impact due to clean and safe water supply shall be enhanced by ensuring that repair and maintenance of the electrical line with ancillary equipment are done properly and on timely ▪ Installation of standby diesel powered generator as power backup. ▪ Water supply depends on continuous, uninterrupted electricity to run the plant.
D. OPERATION AND MAINTENANCE PHASE NEGATIVE IMPACTS	
D1. Impact on Vegetation	<ul style="list-style-type: none"> ▪ Ensuring that off-site vegetation covers are encouraged and should not be disturbed during the periodic maintenance. ▪ Allow low height vegetation along the MV corridor as long as they are not overgrown to jeopardize the safety of people and the line. This will allow regeneration of vegetative cover thereby conserving flora and fauna of the area ▪ Proponent will ensure that pesticides and chemicals are not used within the way-leave corridor for retaining the

IDENTIFIED NEGATIVE IMPACTS	MITIGATION MEASURES
	<p>ecological status</p> <ul style="list-style-type: none"> ▪ Vegetation clearance during operation phase should be done manually instead of using heavy machinery. This will reduce unnecessary large scale trampling of vegetation as well as soil compaction and will give some people a periodic job. ▪ Vegetation management should not eradicate all vegetation, but aim to maintain trees and plant growth that may negatively affect infrastructure at a level that is under an economically-damaging threshold.
<p>D2. Avian and Bat Collisions and Electrocutions</p>	<ul style="list-style-type: none"> ▪ Monitoring of bird collision and electrocution and taking appropriate steps to prevent possibility of birds' electrocution in the future. ▪ Ensuring overhead lines have a minimum separation distance between phases which is greater than the wingspan of most of the birds. ▪ Design of the Utility Poles that will discourage birds resting or nesting on critical parts of the poles. ▪ Proper and regular maintenance of distribution lines
<p>D3. Aesthetics and Visual Impact</p>	<ul style="list-style-type: none"> ▪ Avoiding cutting or pruning of trees beyond the way-leave corridor ▪ During design phase, it is recommended design of MV distribution line should be subjected to an aesthetic view by an Ecologist and Architect or an expert specializing in Landscape /Aesthetic views ▪ Location of the utility poles should be carefully selected during design stage to minimise impact on landscape aesthetics.
<p>D4. Impacts of Electromagnetic Waves on Human Health</p>	<p>Mitigation against EMFs exposure (as per TANESCO) has been undertaken through the establishment and complete acquisition of the distribution line way leave. This means that there will be no residential properties or other buildings within and nearby the electrical route. In addition to this, Proponent can undertake the following mitigation:</p> <ul style="list-style-type: none"> ▪ The recommended safety distance from power line (way leaves) regarding the resettlement of the population along the servitude of the distribution line should be observed. Ensure that the distribution line is constructed with the minimum required height clearance to ground level which is 7m-8m while the way-leave corridor not less than 2.5m ▪ Proponent in collaboration with local authorities should alert people on potential health risk of setting up residences under and nearby the Medium Voltage line or Row ▪ Periodic monitoring should be carried out to ensure that no one is establishing a residence in the right of way and under the power line. ▪ In case the fault is based to the TANESCO Authority then the affected persons shall be compensated as per related

IDENTIFIED NEGATIVE IMPACTS	MITIGATION MEASURES
	regulations and guidelines.
D5. Accidents and Hazards	<ul style="list-style-type: none"> ▪ Proper signs like DANGER (HATARI) will be posted at site particularly on every utility Pole and substation/Transformer enclosures to warn the public over the potential danger of medium voltage line. ▪ The maintain the height between the ground and electrical wires (clearance) as per standards ▪ Continue with periodic safety awareness campaign to the project vicinity about the potential dangers of medium voltage electricity ▪ Setting up local emergency reporting channels to report on any potential dangers resulting from falling of the utility poles or broken (cut) conductors so that the respective office to eliminate the danger in shortest time possible.
D6. Generation of Hazardous Waste	<ul style="list-style-type: none"> ▪ Proper use and response to SF6 gas pressure or density alarms that are furnished with SF6 equipment. ▪ Permanent installation and use of SF6 gas monitoring alarms, located where SF6 gas could accumulate. ▪ Strategy for evacuating SF6 gas from accumulation locations including use of SF6 warning signage. ▪ Adequacy and availability of PPE, including protective clothing and respiratory devices to responsible persons ▪ Construct and use oil resistant sealing of all surfaces in the substation where hydrocarbons (fuels and lubricants) are permanently handled and stored; these areas have to be sheltered and protected against storm water. ▪ Use well-maintained equipment and good environmental practices during operation in order to reduce the risk of hydrocarbon pollution; this will be mandatory to stymie ground water sources used for drinking water. ▪ Provision of second containments for transformer. ▪ Ensure that the transformer and other electrical equipment are free from PCBs. ▪ Proponent will develop and implement a spill prevention control and counter measures plan and a waste management plan for the proposed substation.
D7. Occupational Health and Safety Risks to Workers	<ul style="list-style-type: none"> ▪ Newly engaged engineers and technicians undergo mandatory rotational training to increase their knowledge and competence on safety issues during maintenance of electrical distribution system <p>Mitigation measures to workers as the results of being exposed to Transformer/Insulating Oil for a prolonged time during maintenances of substation/transformer;-</p> <ul style="list-style-type: none"> ▪ Use barrier creams to prevent skin contact ▪ Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit ▪ Eyewear complying with an approved standard should be

IDENTIFIED NEGATIVE IMPACTS	MITIGATION MEASURES
	<p>worn if a risk assessment indicates eye contact is possible</p> <ul style="list-style-type: none"> ▪ The most suitable glove should be chosen in consideration to MSDS ▪ Use engineering controls to reduce air contamination to permissible exposure level hence wash promptly with soap and water if skin becomes contaminated ▪ Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit ▪ Avoid spilling Always remove oil with soap and water or skin cleaning agent, never use organic solvents. Do not use oil-contaminated clothing or shoes, and do not put rags moistened with oil into pockets
<p>D8. Impacts due to regular power Interruption</p>	<ul style="list-style-type: none"> ▪ Lightning arrester (LA) should be selected and installed properly as the primary protection for distribution transformer. ▪ Periodic harmonic distortion evaluation to determine harmonic currents produced by nonlinear loads which can interact adversely with the utility system. ▪ Setup of standby diesel powered generator with sufficient voltage to run water treatment plant's operations during the power outage ▪ To limit both voltage and current harmonic distortion, several standards should be proposed to limit harmonic current injection from end users so that harmonic voltage levels on overall power system will be acceptable if the power system does not inordinately accentuate the harmonic currents. This approach requires participation from end user/ Rusumo Water Treatment Plant and respective authority ▪ Rusumo water treatment plant needs to be protected from other customers producing excessive distortion on the supply and damaging equipment or causing inconvenient malfunctions.
<p>D9. Increased Pressure on Natural Resources due to population increase</p>	<p>The impact cannot be mitigated at project level. However, although the impact cannot be easily mitigated at project level, respective local authorities can initiate environmental management measures. This may include proper land management, promotion of tree planting campaigns, proper enforcement of economic instruments charging fees or tax on forest products like charcoal, fuel wood, timber, etc.</p>

ES-10: Environmental and Social Management Plan (ESMP)

A number of mitigation and enhancement measures have been proposed to address the identified potential negative and positive impacts. These have been used to develop an Environmental and Social Management Plan (ESMP) for construction and operation phases of

the project. Programs for both internal and periodic external environmental monitoring have been proposed with an overall objective of ensuring that mitigation measures are implemented effectively. Environmental monitoring will be carried out to ensure that all construction and operation activities comply and adhere to environmental provisions and standard specifications. The activities and indicators that have been recommended for monitoring are presented in Environmental Monitoring Plan (EMP). Also, the EMP has roles for each and every partner involved in different phases of the project (NELSAP PIU, Project Proponent, Contractors, supervising engineers etc). The total amount to be allocated for an ESMP is Tshs. 12,250,000 with the development stage costs included in the works contract

ES-11: Environmental and Social Monitoring Plan (ESMP)

The systems for implementation of ESMP has been developed in chapter 9 of this report which is to be implemented as complimentary to the Environmental and Social Management Plan to monitor the impacts of the proposed project and the mitigation measures and to provide a permanent record of such monitoring. Nonetheless, an Environmental and Social Monitoring Plan has been developed to monitor the effectiveness of the environmental protection measures and socio-economic initiatives specified in the ESMP. It supports the ESMP by maintaining a record of environmental performance and enabling adjustments to be made to mitigate environmental and socio-economic impacts during the lifetime of the project. Cost estimates for monitoring have been included and it has been estimated to be TSH 7,400,000

Unit / Personnel	Responsibilities
National Environment Management Council (NEMC)	<ul style="list-style-type: none"> • Conduct environmental compliance monitoring and enforcement to ensure that project proponent is efficiently implement approved ESMP • Undertake screening of the project to determine level of ESIA study • Reviewing and approval of the project ESIA reports submitted by Ngara DC
Ngara District Council	<ul style="list-style-type: none"> • Holds final responsibility for the environmental and social performance of the project • The Client will be represented by Consultant who will be in charge of the supervision works, and overseeing the contract from initiation stage to completion of construction activities at various proposed sites; • The Client has to procure a contractor who will be responsible for the implementation of the entire project activities; • Responsible for ensuring the site development is implemented according to the requirements as stipulated in ESMP; • Ensure that sufficient resources are available to the other role players to efficiently perform their tasks as indicated in ESMP; • Overall management of all project activities; • Receive and supervise the implementation of the recommendations of the environmental report from the Consultant; • Cooperate with Consultant to periodically supervise contractors' activities • Ensure availability of key staffs for social, environmental, health and safety monitoring during project phases
NELSAP PIU	<ul style="list-style-type: none"> • To provide support to the District where required to facilitate the implementation of LADP activities. • Ensure timely availability and reliability of funding for agreed and approved LADP activities and related interventions. • Ensure timely processing of the direct payments to contractors and consultants on behalf of the district.

	<ul style="list-style-type: none"> Monitoring and evaluation of the progress of LADP activities implemented by the district. Liaise closely with Ngara DC in preparing a coordinated response on environmental and social management aspects of the project; Carrying out safeguards due diligence; and Preparation of weekly environmental and social performance reports for the project.
World Bank	<ul style="list-style-type: none"> Financing the entire project activities Overall ESMP supervision and monitoring Provision of technical support and guidance to Ngara DC, NELSAP PIU, Contractor and Supervising Engineer Recommending on additional measures to strengthening the ESMP implementation performance
Consultant (Supervision Engineer)	<ul style="list-style-type: none"> Monitoring and supervision of the construction works including overseeing implementation of ESMP Administer all construction works, progress review and monitor the works undertaken by the Contractor and implementation of ESMP to ensure compliance with contract specification and contractual requirements Cooperate with Ngara DC to periodically supervise contractors' activities. Scheduled meetings held between the contractor, Ngara DC representative and Consultant. Include, among its staff, an environmental officer who will oversee the implementation of the ESMP and report to Ngara DC and NELSAP PIU.
Contractor	<ul style="list-style-type: none"> responsible for implementation of construction works and ensure compliance with environmental requirements; Contractor shall prepare/update a Contractor's ESMP (C-ESMP), and ensure that the measures related to environmental and social safeguards are fully carried out as stipulated; Preparing/Updating the project's Environmental Health and Safety Management Plan; Conduct general training on occupational health, safety and environment to the construction workforce Reporting arising works that are detected by Environmental Officer to Consultant and Ngara DC representative for further actions. Prepare and implement covid-19 contingency plan, prepare and implement emergence preparedness plan, prepare and implement traffic management plan, Provision of appropriate Personal Protective Equipment (PPEs) to employees Provision of HIV/AIDS, STIs and COVID-19 awareness campaign to workers and local community

ES-12: Project Alternatives

The choice of site has been dictated by a number of factors listed below:

- Availability of alternative site. The electrical distribution poles plumbed through the existing road reserve heading to Rusumo Water Treatment Plant.
- The proposed project is for construction of electrical distribution line to carte for Rusumo Water Treatment Plant to improve water quality (clean and safe water supply) and supply to local communities at Rusumo Village and its hamlets

- c) Land ownership is under Tanzania Rural and Urban Roads Agency (TARURA), neither compensation nor economic displacement will be commenced hence making the project economically viable
- d) No-Project alternative is considered as not a plausible alternative.

ES-13: Conclusion and Recommendations

ES-13.1: Conclusion

During the implementation of LAPD Phase I projects, Rusumo Village and Ngara District Council collectively agreed to construct water supply scheme to supply clean and safe water in Rusumo village and its hamlets. Also the project aimed at reducing potential public health threat due to poor water supply condition to over 70% of local dwellers. The constructed water supply scheme has been affected by insufficient power supply to run the existing water treatment plant with ancillary operating machineries. Based on the above reason, Ngara District Council collectively with Rusumo Village contracted the designer to examine convenient and feasible energy or power source among three sources which are National Grid Electricity, Solar Panels, and Diesel Engines. The designer recommended that; the use of electricity from National grid proved convenient for the proposed Rusumo water treatment plant. The decision made on the basis of cost, environment, safety and durability. Based on the above recommendation, the Proponent has proposed to construct Medium Voltage (500kVA/11/0.4KV) electrical distribution line during the commencement of LADP Phase II in the year 2022/2023.

The identified significant negative impacts associated with the proposed project are related to the proposed construction works and operation phases and observed to be of limited scope. Nevertheless, the identified negative impacts could be minimized or prevented through implementation of recommended mitigation measures. In this regards the project proponent will ensure that the recommended mitigation measures are fully implemented during construction and operation phases. It can therefore be concluded that the proposed project does not pose severe environmental threat to the community, endangered species and natural habitats; hence it is socially acceptable, economically viable, and environmentally sustainable.

While a number of environmental impacts have been identified and assessed accordingly, none of them are considered to be too severe to make their amelioration impossible. Given the nature and location of the development, the conclusion is that the potential impacts associated with the proposed development are of a nature and extent that can be reduced, limited and eliminated by the application of appropriate mitigation measures. Further, the consultant is of the opinion that implementation of the proposed ESMP and EMP will safeguard the integrity of the environment and welfare of the people in the project area.

ES-13.2: Recommendations

It is evident that the proposed project is associated with both positive and negative impacts during construction and operation phases of the project. The following recommendations are

made to enhance the viability of the project. The project shall be continued as planned as it is economically and socially viable, Ngara District Council, TARURA and TANESCO shall oversee activities of the Contractor in implementation the developed impact mitigation measures described in the ESIA report. The proposed mitigation and enhancement measures (the ESMP) should be implemented in order to minimize and/or avoid the identified adverse environmental and social impacts of the proposed project. The ESMP should be provided as part of the Contractor's contract, The EMP should also be implemented to track the effectiveness of mitigation and enhancement measures and hence further improvement of the mitigation plan

SIGNED DECLARATION OF EXPERTS

This Environmental and Social Impact Assessment (ESIA) report has been prepared by team of competent and registered Environmental Experts who are dully certified and registered by the National Environment Management Council (NEMC) of United Republic of Tanzania as an Environmental and Social Impact Assessment (ESIA) and Environmental Auditing (EA) Assessors. We are hereby certifying that the particulars given to this report are correct and true to the best of our knowledge and abide with the Environmental Management Act, 2004 Cap 191 and Environment Impact Assessment and Audit Regulations, 2005 - G.N. No. 349.

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ACRONYMS AND ABBREVIATIONS

AMSL	Above Mean Sea Level
AAC	All Aluminum Conductor
ABC	Aerial Bundled Conductor
ACSR	Aluminum Conductor Steel Reinforced
CRB	Contractors Registration Board
dBA	Decibel
DED	District Executive Director
DIZ	Direct Impact Zone
EA	Environmental Audit
EMA	Environmental Management Act
EPRP	Emergency Preparedness and Response Plan
ESIA	Environmental & Social Impact Assessment
EIAAR	Environmental Impact Assessment and Audit Regulation
EIS	Environmental Impact Statement
EMF	Electromagnetic Field
EMP	Environmental Monitoring Plan
ERB	Engineers Registration Board
ESMP	Environmental and Social Management Plan
GBV	Gender Based Violence
GN	Government Notice
GRM	Grievance Redress Mechanism
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HSMP	Health and Safety Management Plan
IUCN	Union for Conservation of Nature
IUCN	International Union for Conservation of Nature
kVA	kilo Volt Ampere
KPH	Kilometer per Hour
kV	Kilo Volt
kW	Kilo Watt
LA	Lightning Arrester
LADP	Local Area Development Program
NBS	National Bureau of Statistics
NPH	National Population and Housing Census
NEMC	National Environmental Management Council
NELSAP	Nile Equatorial Lakes Subsidiary Action Program
NGOs	Non-Government Organizations
NSGRP	The National Strategy for Growth and reduction of Poverty
MV	Medium Voltage
OHS	Occupational Health and Safety
OSHA	Occupational Safety and Health Authority
OP	Operational Policy
PAPs	Project Affected Persons
PPE	Personnel Protective Equipment
PLHAS	People Living with HIV/AIDS
ROW	Right of Way
RRHP	Regional Rusumo Falls Hydroelectric Project
RUWASA	Rural Water Supply Authority
SEA	Sexual Exploitation and Abuse
STD/STI	Sexual transmitted Diseases/Sexual Transmitted Infections
TANESCO	Tanzania Electric Supply Company

TARURA	Tanzania Rural and Urban Road Agency
TMP	Traffic Management Plan
TBS	Tanzania Bureau of Standards
ToR	Terms of Reference
URT	United Republic of Tanzania
VE	Village Executive
WBG	World Bank Group
WE	Ward Executive

ACKNOWLEDGMENT

Environmental Consultant is very grateful to the Ngara District Council, World Bank as well as NELSP/LADP for their full cooperation and inputs towards compilation of the report and development of this project. Special thanks are expressed to all stakeholders of the proposed project including among others Rusumo Village and Rusumo Ward for their vital contributions and their assistance during various project's consultations. For invaluable recognition and their willingness, their names, designations were recorded and appended to this ESIA report.

CHAPTER ONE: INTRODUCTION

1.1 Background and Nature of the Project

The proposed Local Area Development Program (LADP) is a benefit-sharing program designed to enhance regional economic and social development in the project areas in Rwanda, Burundi and Tanzania. This has been resulted from the Regional Rusumo Falls Hydroelectric Project (RRHP) as one of the priority regional projects in the Nile countries and aims at development of low-cost power generation and regional electricity trade as a means to improving productivity and to promoting economic growth in the region. The LADP project area is located in Ngara District in Tanzania, Kirehe and Ngoma Districts in Rwanda and in communes of Giteranyi (Muyinga Province) and Busoni (Kirundo Province) in Burundi.

The proposed RRHP consists of the construction of: (i) a run-of-river hydropower facility with envisaged installed capacity of 80 MW to be equally shared between the three countries. The power station and associated hydraulic infrastructure is currently under construction and is situated at the Rusumo Falls, where the Kagera River forms the boundary between Tanzania and Rwanda, and (ii) transmission facilities connecting the power plant to the national grids of Rwanda, Burundi and Tanzania. The RRHP project is financed by World Bank (WB) together with African Development Bank (AfDB) with the estimated cost of US\$340 million for the Power plant and US\$ 120 million for the Transmission lines.

In Tanzania, Ngara District is one of the seven districts of Kagera Region in the very west of mainland Tanzania. The district is bordering the Republics of Rwanda and Burundi and the distance from Ngara to Dar es Salaam is 1,600 km and 350 km to the regional headquarters (Bukoba). The district remains remote and development actors are not many. Ngara District covers an area of approximately 3,744Km²; it is divided into four divisions, 22 Wards and 75 villages. About 90% of the Ngara households depend on agriculture and livestock production for their livelihoods. The LADP is seen by the district authorities and the population as an opportunity to address key community development challenges. The district has identified several/various most critical socio-economic areas for the Local Area Development Program (LADP Phase II) support including Construction of Medium Voltage (500kVA/11/0.4KV) electrical distribution line from the tapping point at the T-Intersection (Junction) of Nyakiziba and Nyakahanga roads to Rusumo Water treatment plant with the distance of 0.32km.

Therefore, this ESIA report is focused in carrying out an Environmental and Social Impact Assessment for the proposed Construction of Medium Voltage (500kVA/11/0.4KV) electrical distribution line from the tapping point at the T-Intersection (Junction) of Nyakiziba and Nyakahanga roads through road reserve to Rusumo Water Treatment Plant located at Nyakahanga Hamlet, Rusumo Village, Rusumo Ward, Ngara District in Kagera Region. The Project is part of an overall Kagera Basin Integrated Development Framework, which is part of the Nile Basin Initiative.



Figure 1: KML Map shows Medium Voltage distribution line–Nyakahanga Hamlet

Source: GIS Expert/2021

1.2 Project Rationale

During the implementation of LAPD Phase I projects, Rusumo Village and Ngara District Council collectively agreed to construct water supply scheme to supply clean and safe water in Rusumo village and its hamlets. Also the project aimed at reducing potential public health threat due to poor water supply condition to over 70% of local dwellers. The constructed water supply scheme has been affected by insufficient power supply to run the existing water treatment plant with ancillary operating facilities since it was connected with Single-phase power supply.

Based on the above reason, Ngara District Council collectively with Rusumo Village contracted the designer to examine convenient and feasible energy or power source among three sources which are National Grid Electricity, Solar Panels, and Diesel Engines. The designer recommended that; the use of three-phase power supply from National grid proved convenient for the existing Rusumo water treatment plant. The decision made on the basis of cost, environment, safety and durability. Based on the above recommendation, the Proponent has proposed to construct Medium Voltage (500kVA/11/0.4KV) electrical distribution line during the commencement of LADP Phase II in the year 2022/2023.

Reliable electrical power will significantly spearhead the main objective of the constructed Rusumo Water Supply scheme.

1.3 EIA Requirements

The First Schedule of the Environmental Impact Assessment (EIA) and Audit Regulations, 2005, made under Regulation 6 (a), categorizes this project as a Type B1 (borderline project) - Project requiring a mandatory EIA; that is, the project is likely to have significant adverse environmental impacts and that in-depth study is required to determine the scale, extent and significance of the impacts and to identify appropriate mitigation measures. According to the “List of Projects Requiring EIA (Mandatory List)” in the First Schedule, Item 14 (iii) titled

Building and Civil Engineering Industries, particularly no. (iii) is the most relevant to this undertaking: (iii) Distribution of Electricity projects; harbours, ship yards, fishing harbours, air fields, and ports, railways and pipelines.

Furthermore; World Bank (WB) requires Environmental and Social Impact Assessment (ESIA) to be conducted to assess whether is likely to cause significant potential harm (if any) to the surrounding environment before any actual activity is started in the proposed Medium Voltage electrical distribution line to Rusumo Water Treatment Plant. The proposed project is categorized as Category B in the Environmental and Social Screening Procedures (ESSP) used by World Bank to categorize initiative based on environmental opportunity/risk and determines depth of environmental analysis needed. The World Bank Safeguard Policy applicable to this proposed project is *Environmental Assessment Policy (OP 4.01) coupled with World Bank Group Industry Sector Guidelines for Electric Power Transmission and Distribution, 2007 and The World Bank Group General EHS Guidelines, 2007*

In order to meet the requirements of WB and NELSAP/LADP, the ESIA process has also been carried out in compliance with the applicable WB Safeguard Policy on Environmental Sustainability. This report fulfills both requirements of the WB, environmental legislations of the United Republic of Tanzania and other international environmental requirements.

1.4 Objectives of ESIA

The purpose of this ESIA study was to systematically assess the potential environmental impacts of proposed project activities through a comprehensive Environmental Impact Assessment (EIA), in compliance with relevant laws and policies of the Government of Tanzania. In additional this ESIA process was carried out in order to provide a monitoring guideline for the project management to act upon during construction activities.

The main objectives of this ESIA study were to;

- i. Establish a detailed documentation prevailing baseline conditions before project construction commences;
- ii. Identify the anticipated environmental impacts of the project and the scale of the impacts;
- iii. Propose mitigation measures to be taken during and after the implementation of the project;
- iv. Document the consultation process undertaken to inform potential project stakeholders as well as the attitude of the stakeholders towards the project;
- v. Consider stakeholders' views and suggestions on project's design;
- vi. Consider different alternatives to the project to meet the intended objectives and discuss alternative methods for developing the project to ensure that the project is justified from a broader environmental and social perspective, and
- vii. Develop an Environmental and Social Management Plan (ESMP) with mechanisms for monitoring and evaluating the compliance and environmental performance that shall include the cost of mitigation measures and the time frame of implementing the measures.

1.5 Approach and Methodology

1.5.1 Approach

This ESIA Report has been prepared in line with NEMC and WB Environmental and Social Assessment Guidelines, Tanzania's Environmental Management Act (2004), EIA and Audit Regulations (2005), its subsequent regulations of 2018(G.N. No. 474 of 2018).

The approach applied by environmental experts was to divide project area into Direct Impact Zone (DIZ) and the Area of Influence (AI). The Direct Impact Zone is the area that will be immediately and directly affected by the actions undertaken during the upgrading of roads, operations phases and post-operation phase of the project. This area includes the site itself and marginal zones up to 500 meters on all sides from the project's boundaries.

The DIZ was determined on the basis of the following factors:

- The distance of travel of noise, dust, vibrations and exhaust fumes from operating machineries, trucks from the site boundary; and
- Marginal zones and developments from the site within 60m as it is within this distance that impacts are likely to be felt.

The AI is the area beyond the DIZ where most of the environmental impacts will be induced or influenced by the project activities. It is not subject to direct contact with the site, but is directly or indirectly affected by the presence of the proposed project site. Areas for borrow pits, waste dump, wastewater receptors are also considered as Areas of Influence.

1.5.2 Methodology

1.5.2.1 Study Team

The ESIA study team included an EIA expert, Sociologist, Environmental Scientist, Biodiversity Expert, Electrical Engineer, High way engineer, Safety and Health expert and AutoCAD Technician. The environmentalist who is also an EIA expert led the team.

1.5.2.2 Documents Review and Study

Information and data were collected by direct observation, through consultations and secondary data sources. Information and data collected include water supply situation, sanitation situation, land use, demography, and other indicators related to environmental and socio- economic trends of the project area.

The consultant reviewed various relevant documents to be familiar with relevant issues pertaining to the study. The review of documents included: The Environmental Impact Assessment and Audit Regulations, 2005, The Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018, Ngara District Socio-Economic Profile 2018; National Bureau of Statistics, Population Distribution by age and sex, 2012; and National Bureau of Statistics, Other documents included ESIA for the proposed construction of Rusumo Village Health Center, Geographical info, and maps of project areas, Summary report for LADP activities (June 2018 to August, 2020), Environmental and Social Impact Assessment (ESIA) for the proposed Rusumo Falls Hydroelectric Project - Dam & Power Plant Component Report July, 2013, and Feasibility Report for Local Area Development Projects in Ngara District, October 2019.

1.5.2.3 Field Visit

The main objective of the field visit was to gather information relevant for the study. Field studies involved walking on the project site for assessing the existing situation of the proposed site and the nearby surroundings. The ESIA study team visited and did the physical assessment on the proposed site and their core impact areas.

The fieldwork was carried out from in 05th/November – 09th/November/ 2021. Activities carried out during field studies included:

- Interviews and consultation with stakeholders,
- Indoor village consultation meetings,
- Appraisal of environmental conditions of the project site and areas that might be impacted by the project – hydrology, flora, fauna, and
- Appraisal of land use and assessment of other relevant socio-economic parameters.

During the field visits, consultation with relevant stakeholders was also conducted. Particular attention was paid to the impact on the livelihood of the people living within or in the immediate vicinity of the proposed project.

1.5.2.4 Stakeholders Consultation

The main aim of the stakeholder consultation was to inform the stakeholders about the proposed project and incorporate their views in the design of the mitigation measures and Environmental and Social Management Plan (ESMP). The specific aims of the consultation process were to; reduce problems of institutional coordination; provide precise information about the project to the communities; obtained the main concerns and perceptions of the stakeholders regarding the projects; and obtain opinions and suggestions directly from the affected communities on their preferred mitigation measures.

- **Meetings with Community:** The public stakeholder village consultation meetings were conducted and intended to collect information regarding sources of livelihood, living standards, and views and perceptions of the communities regarding the proposed projects. Stakeholders visited include villagers, Village Chairperson and Village Executive Officer (VEO). The minutes for community meetings undertaken during village consultative meeting are attached in **APPENDIX I**.
- **Official Consultation:** The ESIA team met government officials who include District Commissioner, District Executive Director with the Heads of Department and NELSAP representative. Other stakeholders from various agencies who work within Ngara included District Manager – TANESCO and District Manager – TARURA. The names and signatures of the consulted stakeholders are as attached in **APPENDIX II**. The visited stakeholders had opportunities to express their views/concerns regarding the project.

1.6 Project Impact Assessment

Superimposing project elements onto the existing social and environmental conditions in the project area did impact assessment. The checklist method was used to identify the impacts and to recommend mitigation measures. Using the matrix method identified significant impacts. A key guiding assumption in this study is that the project will be designed, constructed, operated and maintained with due care for safety and environmental matters using current and practical engineering practice and/or Best Available Technology Not Entailing Excess Cost (BATNEEC). The implementation schedule of the mitigation measures is summarized in the Environmental and Social Management Plan (ESMP).

During environmental assessment the environmental impacts have been evaluated for various alternatives. The impact assessment entailed the following:

(a) Collection of Baseline Data

The collection of baseline data was conducted in parallel subsequent to defining the scope of the ESIA. These data allows the study team to determine whether more detailed information on environmental and social conditions in the project area and surroundings are needed and where such information can be obtained.

Both primary and secondary data were collected. Primary data were collected by direct measurement, observations and using semi-structured interviews with respective and targeted parties. Secondary data were obtained from various relevant sources of information such as Ngora District profile, drawings and many other official and non-official documents.

(b) Review of Policies, Legal and Institutional Framework for Environmental and Social Management

This allowed the study team to update and enhance their understanding of national policies, legislation and institutional arrangements for environmental and social management in Tanzania and relevant international procedures to ascertain the optimal management of impacts.

(c) Identifying Environmental and Social Impacts

Compiling a contender list of key impacts such as loss of flora and fauna, settlement patterns, social and cultural systems, water resources and land tenure systems undertook this.

(d) Predicting Environmental and Social Impacts

The environmental and social impacts were identified and their potential size and nature were predicted. The prediction of impacts specified the impact's causes and effects and its consequences for the environment and the social aspects.

(e) Determining the Significance of Impacts

The key activity was to evaluate the significance of impacts, engineering judgments were made about which impacts found in the study area were considered important and therefore need to be mitigated. Criteria like *likelihood*, *reversibility* and *severity* of the impact were used. Also the *scale of the impact* in terms of *spatial* and *temporal* was also taken into account.

(f) Identifying Mitigation and Management Options

The options for dealing with identified and predicted impacts were considered. This enabled the study team to analyze proposed mitigation measures. A wide range of measures has been proposed to prevent, reduce, remedy or compensate for each of the adverse impacts evaluated as being significant. Analysis of the implications of adopting different alternatives was done to assist in clear decision-making.

1.7 Report Organization

Chapter One - Introduction: Provides the introduction on the background information of the proposed project, its development objectives and scope, project rationale and the methodology used to conduct ESIA.

Chapter Two - Project Description: Describes the general project description, in which there is a description of the location and relevant components of the project and their activities.

Chapter Three – Legislative Framework and International Guidelines: Illustrates policies including World Bank safeguard policies, and legal framework, which are relevant to Tanzania environment and legislation applicable to the project.

Chapter Four – Description of Baseline Situation: Gives the baseline information relevant to the project. It also gives information on Environmental characteristics, which details the physical and socio-economic environment and general environmental condition of the project area.

Chapter Five - Stakeholders Participation, Issues and Concerns: Express the consultation exercise at the project area detailing the list of stakeholders consulted and issues raised.

Chapter Six - Identification and Assessment of Impacts and analysis of project alternative: Describes the positive and negative environmental impacts of the project that are likely to be generated from different phases of the project (pre-construction, construction, operation and decommissioning phases), and their level of significance and describes the project alternatives in terms of sites location, technological choices.

Chapter Seven - Mitigation and Enhancement Measures: Gives the enhancement and mitigation measures for the positive and negative impacts of the project. The chapter also summarizes the grievance procedure and mechanism to be followed.

Chapter Eight – Environmental and Social Management Plan: Presents the proposed environmental and social management plan designed to evaluate the implementation and performance of the mitigation measures. The chapter also explains the environmental; health and safety practices and procedures including the management plan especially during construction phase.

Chapter Nine – Monitoring Plan: Contains the proposed institutions to carry out the monitoring activities, the monitoring indicators, time frame and the proposed budget for monitoring.

Chapter Ten – Decommissioning Plan: The chapter gives activities to be performed after completion of proposed construction works so as to restore site at least to original condition.

Chapter Eleven - Conclusion and Recommendations: Gives the conclusion and recommendations of the study, presenting the environmental and social acceptability of the project, taking into account the impacts, measures and recommendations identified during the assessment process.

References: Presents a list of the references used during the preparation of the ESIA Study.

Appendices: Presents attachments supporting the essence of the project.

1.7.1 Review and Approval of the Report

ESIA report will be submitted to the Proponent who also will share it with the WB/NELSAP, the donor with keen interest in environmental and social acceptability and sustainability of all the development projects it funds, for joint review and comments. The comments will be incorporated and finalized the ESIA report which will be disseminated to relevant stakeholders in Tanzania for public access

CHAPTER TWO: PROJECT LOCATION AND DESCRIPTION

2.1 Project Location

Ngara District is one of the seven districts of Kagera Region of Tanzania. The district is considered to be in the highlands of Tanzania. The total area for Ngara district is 3,744 Km². The district lies on the West of mainland Tanzania between latitudes 2°45" South and longitudes 300 64" East. It is bordered to the North by Karagwe District, to the East by Biharamulo District, to the South by the Kigoma Region, to the Northeast by Muleba District and to the West by the countries of Rwanda and Burundi

The site for the proposed project is located at Nyakahanga Hamlet, Rusumo Village, Rusumo Ward, Ngara District in Kagera Region. (As shown in Figure 2 below).



Figure 2: KML Map shows Proposed MV electrical distribution line –Nyakahanga Hamlet, Rusumo Village

Source: GIS Expert/2021

2.1.1 Accessibility of the project Site

The site is about 1km Southern side of Rusumo Village Centre and 100meters North-West of the River Ruvuvu Ferry. The project site is mainly accessed by Nyakahanga Earth road which is also connected with Nyakiziba earth road that connects Ngara CBD and Rusumo Village. (See Figure 2, KML Map and Figure 3)



Figure 3: T-Intersection (Junction) formed by Nyakiziba and Nyakahanga Earth roads.

Source: Site Survey, November/2021

2.2 Project Site Description

The electrical tapping point is located at the T-Intersection (Junction) of Nyakiziba and Nyakahanga road. The tapping point founds approximately 100meters Southern side of Ruvuvu River. The electrical Transformer /substation will be installed about 70meters North-East of Ruvuvu river. At the tapping point, Right-of-Way and the substation/transformer land is mainly dominated by short grasses which will be affected during the project commencement. However; no crops or farming plots which will be cleared/destroyed during the project implementation. The proposed Right-of-Way is characterised with gentle slope towards Southern side, sandy clay loam soil type dominated with short grasses which will be cleared prior to construction activities. The dominant vegetation species is Scutch grass (*Elymus repens*) throughout the project site. Generally; the proposed project site is located in urban setting environment whereby residential-Commercial blocks with backyard farming plots are dominated adjacent to the Right-of-Way while the indigenous vegetation have long been cleared-off to pave way for human developments/activities.

Based on the state of the whole site there is no pristine environment that can promote thriving and existence of the species of conservation concern as per IUCN and CITES standards.

Furthermore, there is River Ruvuvu in the vicinity of the project site as a sensitive lotic ecosystem that needs special attention throughout the project lifespan. Also, there were no cultural or archaeological objects that were noticed or observed during the study or reported earlier during the consultation stage with local community



Figure 4: General Overview of the proposed site-Rusumo water treatment plant

Source: Site survey, November/ 2021

2.3 Land Ownership

Tanzania Rural and Urban Roads Agency (TARURA) is an Executive Agency of the President's Office, Regional Administration and Local Government (PO-RALG), established under Section 3 (1) of the Executive Agencies Act. (Cap 245) by Order Published in Government Gazette No. GN 211 of 12 May 2017. The TARURA establishment order gives functions and responsibilities of TARURA which among other things will be to develop and maintain rural and urban roads network, which coincide with Part three of the Road Act on road classification, restrictions and declaration (Roads Act No. 13 of 2007 and its Regulations of 2009).

Tanzania Rural and Urban Roads Agency (TARURA) owns the existing road of which is going to accommodate Medium Voltage electrical distribution line through road reserve (Right-of-Way) to Rusumo Water Treatment Plant with the total distance of 0.32kilometer. According to the road Act No. 13 of 2007 Road Management regulations 2009 No. 27 and 29 this is categorised as community road with the width of 20meters, meaning 10meters on each side from the centre line. During the study it was noted that about 10meters where the substation will be constructed is out of road reserve and it is owned by the project Proponent, meaning it is a part of WTP premise. (See Appendix III)

Roads Act No. 13 of 2007 and its Regulations of 2009 Part IV, No. 29 (2) describes that road Authority may in writing permit any person or Authority to use the road reserve temporarily under its jurisdiction for utilities such as placing of public utilities, telegraph, electric supplies, drains, sewers, e.t.c.

TARURA has provided a writing permit for the use of its road reserve as appended in appendix III with the condition that; the Proponent shall leave 3.5meters ahead of the road shoulder/carriage way for safety and other road uses. However; the Way-Leave corridor of about 2.5meters will be taken from the remained road reserve as described in paragraph two above. The proponent shall strictly supervise the contractor not to affect nearby land or any private property during the project implementation

2.4 Major Adjacent Developments

South-East Side of the proposed Right-of-Way there are Residential Houses and River Ruvuvu respectively whilst Northern side is demarcated by residential houses. The electrical tapping point is demarcated by River Ruvuvu on Western side while the Substation/Transformer is demarcated by Water Treatment Plant and River Ruvuvu respectively on South-East side.

Table 1: Distance to the Closest Land Uses

S/N	Side	Existing Feature	Estimated Distance from Project site (M)
1.	South-East	Residential Houses and River Ruvuvu respectively	15 to 100 respectively
2.	North	Residential houses	20
3.	West (Tapping point)	River Ruvuvu	100
4.	South-East(Substation/Transformer)	Water Treatment Plant and River Ruvuvu respectively	70

Source: Consultant's Field visit, November/2021



Figure 5: Adjacent features alongside the tapping point, Right-of-Way and Substation - Nyakahanga Hamlet

Source: Consultant's Field visit, November/2021

2.5 Other Amenities

2.5.1 Power Supply

During construction, the proposed project site shall be relied on existing electrical power since the site is connected with Electricity from TANESCO (Single-phase power). However; the proponent/Ngara DC expects to install the backup diesel powered generator with a capacity of 100kVA. The proposed generator will be used during operation phase as a standby generator in case of power outage from TANESCO. The genset to be installed will be designed to comply with the EC directive for machinery safety and Noise Emissions, fully enclosed in an acoustic canopy. The Genset will have the following specifications: Prime Power for 30Hz will be 100kVA, Voltage range for 30Hz is 280-315 Volts AC; will have a length of 2.0m, width of 1.0m, height of 2.00m; weight (without fuel) will be 3270kg, fuel consumption will be 6 /hr for 100% prime power, emissions of 100% load for NO_x (Oxide of Nitrogen) will be 6.4g/kWh, PM (Particulate matter) 0.2 (g/kwh) while CO (Carbon Monoxide) will be 3.5g/kWh; Noise will be 78dBA at 1m away from Genset and 70dBA at 7M away from genset. During operation phase the Developer/respective facility will use solar power lights as streetlights on strategic areas for security purpose.

2.5.2 Manpower

Construction of the proposed project and ancillary structures may require 29 personnel both skilled and unskilled among them 5 technical personnel will be involved in professional works and during operation a hired contractor shall do the routine maintenance and the number of workforce will be determined with the scope of technical problem.

2.5.3 Water Supply

The proposed project does not demand water since it is 100% dry process in all project phases. Water usage is mainly for sanitary services for the employees during construction phase. The contractor will use the existing water storage tanks found at Rusumo Water Treatment Plant. The existing water storage tank has the capacity of 3,000Litters whilst 500-1000Litters/day will be used by the workforce. Water will be supplied by local supplier from the authorized water sources.

2.6 Project Design and Components

2.6.1 Design

The proposed project is for construction of Medium Voltage (500kVA, 11/0.4KV) electrical distribution line from the tapping point at the T-Intersection (Junction) of Nyakiziba and Nyakahanga roads through the road reserve to Rusumo Water Treatment Plant located at Nyakahanga Hamlet, Rusumo Village, Rusumo Ward, Ngara District in Kagera Region. The

total route distance for medium voltage electrical line from tapping point to Water treatment Plant is approximately 0.32kilometer whilst the way-leave corridor is 2.5meters from the Centre line of the road reserve. The design includes installing a 500kVA transformer (Three-Phase Power) to reduce electrical power to safe the facility-usable level. Nevertheless; the design incorporates electrical conductors with Aluminum Conductor Steel Reinforced (ACSR) 100mm², and utility poles with the height of 13meters meanwhile four (4) wooden utility poles are expected to be plumbed including two angle points with 90° (See figure 6)

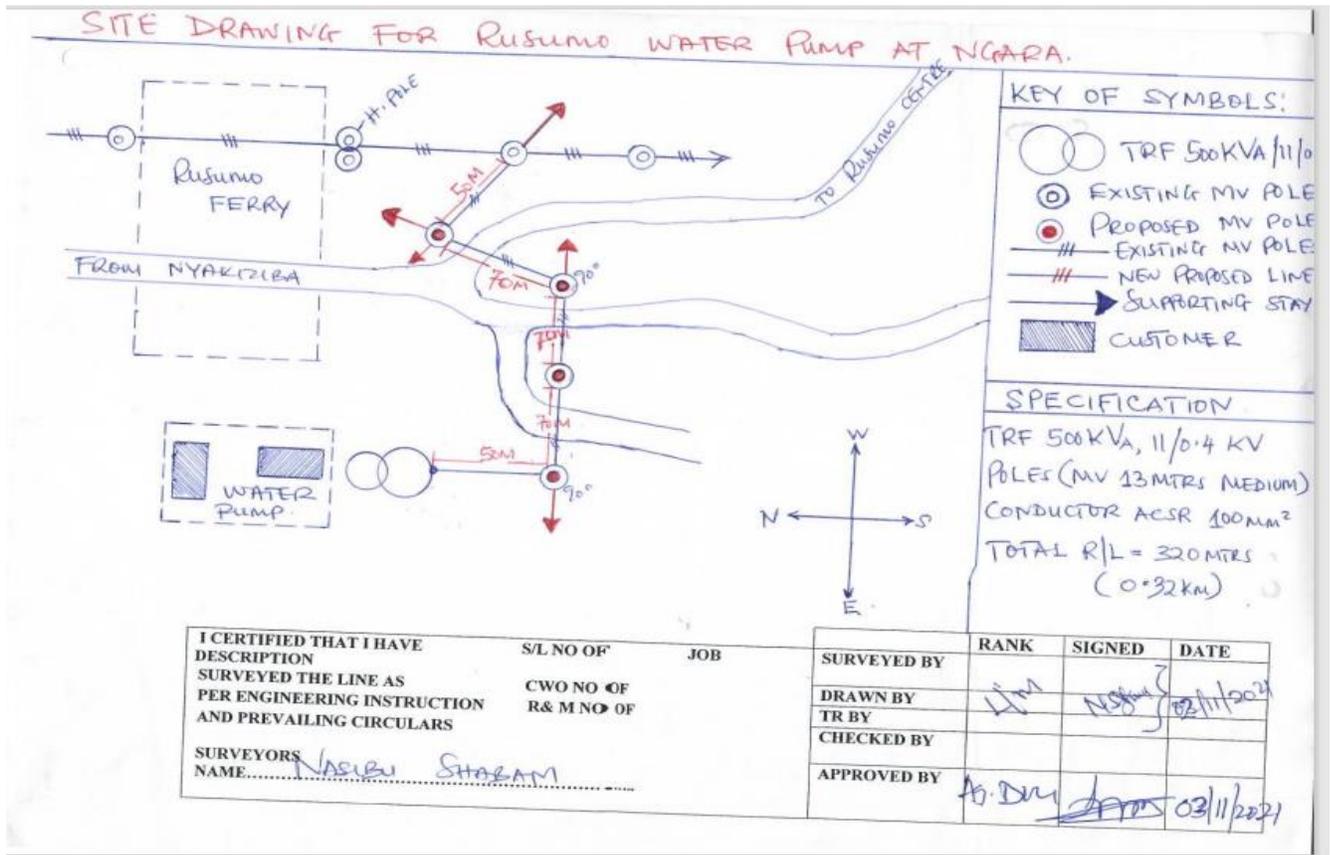


Figure 6: MV Electrical Distribution Line Design

Source: engineering Design/2021

2.6.2 Components

The proposed construction of Medium Voltage (500kVA, 11/0.4KV) electrical distribution line from the tapping point at the T-Intersection (Junction) of Nyakiziba and Nyakahanga roads through the road reserve to Rusumo Water Treatment Plant will have the following major components and facilities;

Table 2: Major Project Components

S/N	COMPONENT	QUANTITY	FUNCTION
1.	Medium Voltage Electrical Transformer with 500kVA, 11/0.4KV	1	Provides the final voltage transformation in the electric power distribution system, stepping down the voltage used in the distribution lines to the level used by the customer
2.	Wooden Utility Poles	4	Used to support overhead power lines/ electrical conductors and the Pole Mounted Transformer
3	Aluminum Conductor Steel Reinforced (ACSR) 100mm ²	3-Electrical cables 1.Earth cable	The overhead aluminium conductor is used as power distribution lines. Enabling the transfer of electrical signals or power/current from tapping point to substation/transformer

Source: Engineering Design, November/2021

2.7 Project Activities

The undertaking involves various phases from planning phase all the way to the construction, demobilization and operation phase. Decommissioning of the electrical distribution line is not anticipated except for the routine maintenance and improvement in the later future due to an increase in demand. The following activities are expected during mobilization, construction and operations.

2.7.1 Mobilization Phase

This phase entails Topographical Survey, Materials Investigation, design and engineering drawings, land acquisition and various legal permits as required by the law. Mobilization of labor force, equipment as well as identification of material storage, materials preparation and sources of other construction materials.

2.7.1.1 Materials to be used, source and quantities

The bulk materials likely to be stored on site include: utility poles and water for domestic usage meanwhile light materials will be delivered daily onsite for direct usage. Due to the project scope it might be difficult to obtain construction materials in Ngara District; hence the contractor will be supplied by local and licensed suppliers from Kagera region or Kahama District. No construction materials and machinery/equipment are expected to be imported from outside the Country. Quantities and qualities of materials are well explained in the BoQ.

Consideration will be given to the working area and material storage requirements to ensure there is no conflict with the movement of the workers. Construction equipment's include: Motor grader, Water bowser and trucks for carrying site materials, etc.

Duration

The duration of this phase is estimated to be Ten (10) Days

2.7.2 Construction Phase

The project will require various standard construction materials and equipment's including: Wooden Utility Poles, conductors, water etc. Equipment's include Motor grader, mobile cranes workers cars, stringing machines, Mobile generator etc.

2.7.2.1 Activities during Construction Phase

2.7.2.1.1 Site clearance

It should be noted that, the proposed Medium Voltage electrical distribution line route passes through the existing road reserve area. The area that will be cleared is approximately 0.32Kilometer from tapping point to the Water treatment plant. The road reserve area that will be cleared to pave way for the proposed route is approximately 2.5meters. The existing earth road has been used for a couple of years hence site clearance will be very limited. The project site is devoid of large trees hence clearance is basically for short grasses. Site clearance will be confined to the specific areas not to distort vegetation covers beyond the project site.

2.7.2.1.2 Excavation of Utility Poles' Holes

Foundation/holes excavation is mainly determined by engineering design. According to the engineering design the width for the hole is approximately 60cm while length is approximately 150cm.Total height for each utility pole is 13meters meanwhile 16% equal to 2.2meters will sink in the ground. Holes' excavation shall be made with right depth in accordance to the pole height. Excavated soil shall be compacted around the pole and no soil will be left lumped around the pole.

2.7.2.1.3 Erection of Utility Poles

Following foundation works as described above, utility poles shall be erected and Hoisting equipment such as mobile crane, safety ropes and scaffolds will be used to lift the poles, its parts and conductors' structures and pre-assembled parts. Maximum number of poles on the distribution mains shall depend on the size of conductor, its power handling capacity, thermal capacity, power losses and voltage drop on the last pole along the distribution mains all these parameters are calculated during line design exercise. The angle point is found at 2nd pole and 4th pole prior to substation/transformer. Stay work shall be designed, all mechanical forces calculated and pole top stay make off and stay block properly positioned and tensioned. Poles shall not be erected in the middle of the hole.

2.7.2.1.4 Stringing of conductors

The process of attaching conductor wire to the insulators attached to the poles is called conductor stringing. It involves pulling the conductor off a truck-mounted spool until it reaches the desired tension. Tension meters shall be used while stringing conductors to retain minimum safe working clearance of 7-10meters from the ground. Engineering design has proposed Aluminum Conductor Steel Reinforced (ACSR) 100mm² to transport electric current from a tapping point to the substation and from a substation to the water treatment plant/End user. In

order to minimize voltage sags, voltage swells and internal overvoltage caused by loose connections along the stringed conductors and at transformer/substation the Medium Voltage connections of the jumper joints, midspan joints (overhead tension joints), joints at substations shall be solidly connected by applying proper termination preferably using crimping tools.

2.7.2.1.5 Civil works for Substation/Transformer

The proposed electrical substation has the Transformer with the capacity of 500kVA S/S11/0.4. The main function of this transformer is to alter the high voltage to the normal voltage to use in electric power distribution. The transformer is designed with the capacity of indicating Voltage drop profile cumulatively from the transformer substation. Moreover; the proposed MV distribution substation includes the following equipment;

- Power Transformer
- Tap Changing Equipment.
- Circuit Breakers
- Bus Bar, Bays and Steel Structures.
- Lightning Arrester
- Circuit Switcher
- Disconnect Switch / Isolator.
- Earth Switcher

Nevertheless; Safety measures have been given priority in the design by considering the transformer bed height from the ground level, safe distance from HV jumpers to LV feeders emanating from transformer substation as well as neat wiring of LV cables. Furthermore; the drainage system should be established with general graveling to stymie any leakage/spills and direct contact with the soil while fencing and placing safety signs in all strategic locations to the substation is crucial to prevent entrance of unauthorized personnel.

Duration

The duration of this phase will be Six (6) days

Types, Amounts and Sources of Project Requirements

Materials for construction mainly electrical equipments like transformer, utility poles, conductors etc will be sourced from a licensed Supplier from Kagera region or Kahama district while gravels and water will be sourced from local suppliers at Mshikamano and Rusumo Villages respectively. Types and sources of project requirements during the construction phase are shown in Table 3 whilst the quantities of materials will be indicated in the Bill of Quantities (BOQ).

Table 3: Types and sources of project requirements during the construction phase

Requirements	Type	Source
Raw Materials	Electrical Transformer	▪ Kagera/Kahama
	Utility Poles	▪ Kagera/Kahama
	Conductors	▪ Kagera/Kahama
	Gravels	• Ngara (Mshikamano Village)

Requirements	Type	Source
	Water	▪ Ngara (Subcontract to local suppliers)
Energy	Electricity	▪ Mobile Generator
	Fuel	▪ Ngara Oil fuel stations
Manpower	Skilled	▪ Contractor
	Unskilled	▪ Local People
Equipment's	Motor grader	▪ Contractor
	Water Bowser	▪ Contractor
	4WD Pick up	▪ Contractor
	Winch with Ropes	▪ Contractor

Transportation

Materials such as gravels will be transported by medium sized truck from borrow site to the construction site. A very small amount of gravels will be required while water will be supplied by water browser. Truck will transport other materials like Utility Poles, electrical Transformer, conductors, etc to the construction site from authorized local suppliers.

Storage

Some of the materials will be used directly after delivery and as such no need of stockpiling of materials is expected. Other materials like utility poles will be stored at the specific designated area within Rusumo Water Treatment Plant premise with all safety hazards pre-cautions prior to be used.

Types, Amounts and treatment/disposal of Wastes

Types, amounts and treatment/disposal of wastes during the construction phase are shown in Table 4:

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

Waste	Types	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Vegetation (Grasses)	About 0.5m ³ of biomass (Clearance road reserve for electrical route)	Disposed in a designated area.
	Food remains	1.1kg/day (based on generation rate of 26g/day/person for 29 people)	Sorted properly and Temporarily stored in a designated collection cage/point before collected by Authorized dealer
Solid Waste (Non-Degradable)	Cut Soil	1m ³	Soil will be utilized in general backfilling in the utility holes and leveling.
	Scrap metals, drums, used tiles	Minimum	Sold to Recyclers

Waste	Types	Amount	Treatment/ Disposal
	Tins, glasses and plastics	Zero or Minimum	Taken to the dumpsite at Ngara by Authorized Dealer
Liquid waste	Sewage	0.3m ³ /day (Based on 19 people, 15l/capita/day mainly domestic/sanitary usage)	Septic tank –Soak away system
	Oils and greases	Zero or Minimum (trucks and equipment's maintenance will be done at proper garages or designated area)	Sold to Authorized recyclers

2.7.2.2 Demobilization Phase

Having finished the construction works the line will be tested and commissioned to ensure that all parameters are working to agreed and designed specifications. Any errors will be eliminated before the line is put into operation. Other activities

- Prior to demobilization, the Contractor shall submit to the Engineer for review and approval a closure plan for the project site
- Site restoration should be done properly as per closure plan
- Transporting remained construction materials (if any) such as utility poles, steel structures, insulators, conductors away from the site;
- Remove working equipment such as motor grader, winch and other working tools form the site
- Retrenchment of workers who are not needed during operation phase; and

After the demobilization, the contractor will hand over the works to the project Proponent for the operation and maintenance phase.

Duration

Demobilization stage will last for a period of Three (3) days.

Table 5: Types and sources of project requirements during the demobilization phase

Requirements	Type	Source
Energy	Electricity	Mobile Generator
	Fuel	Ngara vending stations
Manpower	Skilled	Contractor
	Unskilled	Local People
	Motor grader	Contractor
	4WD Pick up	Contractor

Types and treatment/disposal of Wastes

The demobilization phase is mainly based on the removal of the remained construction materials and equipment such as utility poles, conductors and probably few metal scraps while there will be no demolition of temporary structures since storage facilities will be used those established in Rusumo Water Treatment Plant premise.

2.7.2.3 Operation Phase

The actual usage of the electricity is expected to commence after the completion of construction works. The project will be handled to the respective authority ie. TANESCO Office at Ngara District. The consistency of electricity supply will be enhanced by regular maintenances of electrical line.

Activities during Operation Phase

During the operations the project activities will include;

- Periodic Maintenance of 11KV distribution line and its associated substation/transformer (500kVA) at Rusumo Water Treatment Plant to stymie electrical sags and swells as well as other technical errors.
- Regular inspection for electrical line Safety signs and replacing the dilapidated signs with new ones
- Regular site clearance and safeguard of the Right-of-Way to avoid fire burning electrical poles and ancillary equipment.
- Regular inspection to retain the safe height between the ground and conductors as well as mounted electrical transformer.

Duration

The duration of this phase will be twenty (20) years.

Types and sources of project requirements during the operational phase are shown in Table 6:

Table 6: Types and sources of project requirements during the operational phase

Requirements	Type	Source
Material	Water	Local Suppliers
	Maintenance equipment's	Contracted contractor
Manpower	Skilled	TANESCO/ Ngara District Council
	Unskilled	Local People
HSE Monitoring	Periodic maintenance, reinstallation of electrical safety signs, accidents cases, etc.	Contracted expert

Transportation

Types and quantities of materials for maintenance will be determined by nature of the problem at the site. Utility poles, conductors, transformer will be supplied by the licensed agent from Tanzania particularly nearby project area. These materials will be transported by trucks from the source to the project site. Water will be moved by water bowser or supplied by local suppliers depending on the volume required for maintenances especially for domestic/sanitary usage.

Storage

In this operation phase, few materials will be required for rehabilitation/maintenance works. Some of the materials will be used directly after delivery while the remained will be stored to the existing storage room at Rusumo Water Treatment Plant premise

Types, Amounts and treatment/disposal of Wastes

Types, amounts and treatment/disposal of wastes during the construction phase are shown in Table 7

Table 7: Types, amounts and treatment/disposal of wastes during the operation phase

Waste	Types/Source	Amount	Treatment/ Disposal
Solid Waste (Degradable)	Vegetation especially Grasses cleared from road reserve/Right-of-Way	About 1m ³ / month	Collected and disposed by the contracted dealer
	Food leftovers	Depend with No. of labors	Collected and disposed by the contracted dealer
Solid Waste (Non-Degradable)	Scrap metals, drums	Less or Minimum	Sold to Recyclers
	Empty oil cans, filters, tires, water bottles	Zero or Minimum	Service of the trucks shall be done outside the site during electrical routine maintenance
Liquid waste	Oils and greases	Zero or Minimum	Service of the trucks shall be done outside the site with sufficient distance from Ruvuvu river during electrical routine maintenance
	Liquid waste from sanitary facilities and Domestic wastewater	Minimum	During routine electrical line maintenance workers shall use sanitary facility at the Rusumo Water Treatment Plant's premise
Gaseous Waste	Gaseous emission mainly ethylene (C ₂ H ₄), hydrogen(H ₂)	Number of trucks used	Gas emissions shall be monitored continuously

2.7.2.4 Decommissioning Phase

This is the final demise of the proposed project use value. The decommissioning entails further improving of the electrical line due to an increase in demand or completely demise of the existing structures due to any causative. This will involve construction and installation of the advanced structures and other appurtenances through removing of the old ones

2.7.2.4.1 Activities during decommissioning phase

- Removal of any remaining construction materials;
- Reinstating the excavated area;
- Transportation of equipment and machinery away from the site;
- Rehabilitation or restoration of the area; and
- Re-vegetation using indigenous vegetation species in the project area

2.8 Project Budget and Life Span

The proponent will invest a total of 23,867.82 USD to this particular project. The expected lifespan of the project is 20 years to come which will be enhanced by regular maintenance.

CHAPTER THREE: LEGISLATIVE FRAMEWORK AND INTERNATIONAL GUIDELINES

3.1 Introduction

Environmental Regulations in Tanzania are vested in two main Institutions namely; The National Environmental Management Council (NEMC) and Division of Environment (DoE) under the office of the vice president. The NEMC to its capacity is undertaking enforcement, compliance, and review and monitoring of Environmental Impact Assessment (EIA) and Environmental Auditing (EA). The DoE provides policy and technical backup and executes the overall mandate of the Ministry as required. Thus, in Tanzania project development and implementation normally requires consideration of Environmental concerns as outlined in the National Environmental Policy.

The Environmental compliance and guidelines are entailed in the EIA and Audit regulations of 2005, as well as (Environmental Impact Assessment and Audit) (Amendment) Regulations of 2018. The Environmental Impact Assessment Guidelines prescribe the process, procedures and practices for conducting an EIA and preparing the EIA reports.

3.2 Policy and Legal Framework

A number of policies, instruments, and laws support environment and social management and the environmental and social impact assessment processes in Tanzania. The Environmental Management Act (EMA) No. 20 of 2004, The National Environmental Policy (1997) and the National Environmental Action plan (1994) are the key instruments that cover environmental and social management in all the sectors of development.

Apart from the National Environmental Policy, there are a number of sectoral policies that consider Environmental Impact Assessment as one of the planning tools for facilitating and promoting sustainable development. These policies envisage that by integrating environmental and social considerations in the decision making process it is possible to avoid or minimize impacts associated with project implementation and that may have negative effects to the Environment. They also provide directives on the management of the project in order to ensure minimum impacts on the concerned natural resources and welfare of the society.

In addition, there are a number of legal and regulatory frameworks that the construction project must comply with. The Environmental Management Act, (No.20) 2004 is the principal legislation governing all environmental management issues in the country. Within each sector, there are sectoral legislations that deal with specific issues pertaining to the environment.

3.2.1 Policy Framework

Policy	Purposes
National Environmental Policy (1997)	<p>The National Environment Policy provides a framework for environmental protection in Tanzania. The policy requires that project development be done in a way that does not compromise the environmental integrity. It stipulates that the chosen technologies should be environmentally sound, socially acceptable and economically viable. Relevant provisions of this policy to the Stone quarry and aggregates project operations are:</p> <ul style="list-style-type: none"> ▪ Sections 28 and 29, which state that in all projects, environmentally sound technologies (i.e. those that generate no or low waste or protect environment) should be used). ▪ Section 48 I, which advocate for technologies that use water efficiently and provide wastewater treatment. ▪ Section 56 (f), which states that workers' health should be adequately protected from environmental health hazards. <p>Since the project expects to use minimum water in all phases hence small generated wastewater, therefore the project design considered the use of existing temporary septic tanks at Rusumo Water Treatment Plant during construction phase</p>
National Land Policy (1997)	<p>The National Land Policy advocates for the protection of land resources from degradation for sustainable development. Among other things, the policy requires that project development take due consideration of land capability, ensures proper management of the land to prevent erosion, contamination and other forms of degradation. Important sections of the policy relevant to the proponent are 2.4 (on use of land to promote social economic development) and section 2.8 (on protection of land resources).</p> <p>The proposed project is going to use available land resources such as wooden poles and very small amount of gravels for construction of a project which will in-turn promote socio-economic development of rural communities</p>
National Community Development Policy (1996)	<p>Policy recognizes the need to improve community livelihoods through involvement of communities towards attaining government aim of self-reliance. The policy emphasizes among other issues on poverty eradication (through households training and group production activities), provision of basic needs of the community (food, nutrition, education, health, sanitation, water, etc.)</p> <p>Implementation of the proposed project is part of government efforts to improving clean and safe water supply, improving lifespan and livelihood of local households as well as eradication of poverty by ensuring income generation to the local community due to their wellbeing.</p>
National Policy on HIV/AIDS (2001)	<p>This policy provides a framework for leadership and coordination of the National multi-sectoral response to the HIV/AIDS epidemic. One of the major objectives of the policy is to strengthen the role of all sectors, public, private, NGOs, faith groups, CBOs and other specific groups to ensure that all stakeholders are actively involved in HIV/AIDS work and to provide a framework for coordination and collaboration. The policy recognizes that HIV infection shall not be grounds for discrimination in relation to education, employment, health and any other social services. Pre-employment HIV screening shall not be required. For persons already employed, HIV/AIDS screening will be done voluntarily and no employee shall be forced to check</p>

Policy	Purposes
	<p>his/her health regarding to HIV/AIDS. HIV infection alone does not limit fitness to work or provide grounds for termination. HIV/AIDS patients shall be entitled to the social welfare benefits like other patients among the employees. HIV/AIDS information and education targeting the behaviour and attitudes of employees and employers alike shall be part of HIV/AIDS intervention in the workplace. The project proponent shall adhere to the policy by not entertaining any form of discrimination to People Living with HIV</p>
<p>National Gender Policy (2000)</p>	<p>The policy provides guidelines to ensure gender sensitive plans and programs and strategies are available in all sectors and institutions. It is emphasizing on gender equality, and 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.</p> <p>The project proponent will ensure that women and men are given equal employment opportunities during project implementation, whenever possible.</p>
<p>Occupational Safety and Health Policy, 2012</p>	<p>The main objective of the Policy is to promote the right of workers to a safe and healthy working environment, in order to contribute to the improvement of workers well-being and national productivity. The policy provides general direction for the occupational health and safety of stakeholders to adopt a management system that is effective in reducing the incidence of work related injury and disease.</p>
<p>The National Employment Policy (1997)</p>	<p>The major aim of this policy is to promote employment mainly of Tanzania Nationals. Relevant sections of this policy are (i) 10, which lays down strategies for promoting employment and section 10.1 is particularly focusing on industry and trade sectors (ii) 10.6 which deals with employment of special groups i.e. women, youth, persons with disabilities and (iii) 10.8 which deals with the tendencies of private sectors to employ expatriates even where there are equally competent nationals.</p> <p>The proponent shall promote this policy by employing many Tanzania especially the indigenous surrounding the project area with equal gender based opportunities.</p>
<p>The Energy Policy of Tanzania (URT, 2015)</p>	<p>The main objective of this policy is; to provide guidance for sustainable development and utilization of energy resources to ensure optimal benefits to Tanzanians and contribute towards transformation of the national economy. The Policy document covers the following areas or sub-sectors: (i) Electricity generation, transmission, distribution, interconnection, power trading and rural electrification; (ii) Petroleum and gas upstream, midstream and downstream activities; (iii) Renewable energy, energy conservation and energy efficiency including Feed-in-tariff; and (iv) Cross-cutting issues including subsidies, institutional, legal, regulatory as well as monitoring and evaluation frameworks.</p> <p>Implementation of NEP, 2015 will ensure improved performance and governance of the energy sector through strategic mobilization and utilization of resources including human resource for socio-economic. Proponent should ensure that environmental and safety issues are given an upper hand using tools such as ESMP/EMP, and economic instruments to manage environmental impacts.</p> <p>The proposed MV electrical distribution line intends to improve clean and safe water supply which will be supplied from Rusumo Water Treatment Plant.</p>

Policy	Purposes
National Strategy for Growth and Reduction of Poverty, 2003	<p>The National Poverty Reduction Strategy (NPRS) is a national organizing framework for putting the focus on poverty reduction on the country's development agenda. The strategy emphasis is on the growth momentum to fast track the targets of vision 2025 for high and shared growth, high quality livelihood, piece, stability and unity, good governance, high quality education, and international competitiveness.</p> <p>The project is in line with the interest of the strategy as to improve water infrastructures and clean and safe water supply to enhance wellbeing of local communities.</p>
National Child Development Policy 2008	<p>The policy describes on the Right for Protection concerns the prevention of wicked and evil actions which are done to children. Such protection and security is needed in all stages of growth of children, before and after being born. So, a child needs security and protection against heavy duties and occupations, which are incongruent with the age or to be neglected; illegitimate / criminal abortions; to be oppressed; not to be taken into consideration. However; the Proponent will consider this by not engaging children under 18Years in any activities during project phases.</p>
National Health Policy (URT, 2003)	<p>The Health Policy is aimed at improving the health status of all people wherever they are, in urban and rural areas, by reducing morbidity and mortality and raising life expectancy. Good health, i.e. physical, mental and social wellbeing, is a major resource and economic development. Relevant section of the policy include Part IV which deals with primary health care in which the policy advocates for community involvement and provision of health education in order to prevent occurrences of disease. Part V elaborates the health service delivery structure from national to village level. The project is expected to contribute significantly to the objectives of this policy as it will enhance improved clean and safe water supply hence to avoid waterborne disease.</p>

3.3 Applicable Legal Framework

The National Laws, which are relevant for environmental management in relation to this project include:

ACT	Purposes
Environmental Management Act No. 20 - Cap 191, 2004	<p>The Environmental Management Act, Cap 191 seeks to provide legal and institutional framework for sustainable management of the environment in the implementation of the National Environmental Policy.</p> <p>The Environmental Management Act provides for continued existence of the National Environmental Management Council (NEMC). Under this Act, NEMC is mandated to undertake enforcement, compliance, review and monitoring of environmental impact assessment and has a role of facilitating public participation in environmental decision making, exercise general supervision and coordinating over all matters relating to the environment. The Act also requires the Council to determine whether the proposed project should be subjected to an EIA, approves consultants to undertake the EIA study, invites public comments and also has the statutory authority to review EIS and recommend to the Minister for approval and issuance of EIA certificate. This new Act imposes an obligation on Proponents to conduct an ESIA prior to the</p>

	<p>commencement of the project to determine whether the project may/or is likely to have, or will have a significant impact on the environment. Article 82 makes EIA mandatory to all projects that fall under the EIA mandatory list (Schedule 2). Proponent has complied with relevant provisions of the Act in carrying out this EIA.</p> <p>Other caps where proponent should be aware on them are: Environment Management Act Cap 72 which emphasize on land users and occupiers shall be responsible for the protection, improvement and nourishment of the land and for using it in an environmentally sustainable manner as may be prescribed by the minister.</p> <p>Section 201 among others; as a corporate body, the Act requires the Proponent to comply with other licensing bodies including National Environmental Council (NEMC) and to acquire the clearance certificate.</p> <p>Proponent has decided to hire environmental expert so as to conduct Environmental Impact Assessment Study so as to obtain Environmental Clearance</p>
<p>Land and Land Village Act (URT, 1999b) (No. 4 of 1999 amended by No. 2 of 2004)</p>	<p>The Acts relate to land-use planning processes and land-use management and guidance to land ownership in Tanzania. However, the laws declare the value attached to any piece of land and as such any land rights transfer is subject to compensation. Under the Government Standing Order on expropriation for public utility, the holder of a Right of Occupancy is guaranteed a free enjoyment of the land and is entitled to compensation if dispossessed by the Government for public use.</p> <p>The proposed project shall be carried out on the piece of land owned by TARURA</p>
<p>The Constitution of Tanzania (1977)</p>	<p>The mother law recognizes the basic rights for its people as outlined in Part III section 14 and 24 (Act No. 15 of 1984). Section 14 states that every person has the right to life – that every person has the right to live and to the protection of his / her life by the society in accordance with the law</p> <p>Section 24 stipulates that every person is entitled to own property and has a right to the protection of his property held in accordance with the law. However, there are certain limitations upon enforcement and preservation of basic rights, freedom and duties as stipulated in the Act No. 15 of 1984 Section 6 and Act No. 34 of 1994.</p> <p>The national constitution must be observed by the project proponent, especially in matters concerning human rights as stipulated in the constitution and the proponent shall adhere with the national constitution of Tanzania</p>
<p>Occupation health and safety act (No.5, 2003)</p>	<p>The Act requires assurance of safety to workers during project construction, operation and demolition. Safety should be ensured against any mechanical machinery (cranes, chains, vehicles, etc.), chemicals (fumes from generators, etc.), liquid and hazardous materials (electrical installations and apparatus, toxic materials, wastewater, etc.) and fire. It is indicated that, for the assurance of workers safety, safety provisions will include fire extinguishers, first aid facilities, water supply and sanitary facilities, etc. The Contractor shall therefore address all these issues stipulated in this Act.</p> <p>The project proponent will cause her contractor to safeguard health and safety of construction workers through presence of safety drills, warning signs, provision of Person Protective Equipment (PPE), installation of well-equipped</p>

<p>HIV and AIDS (Prevention and Control) act (No. 28, 2008)</p>	<p>first aid kit.</p> <p>The Act generally requires that adequate information on the acquisition, Transmission, prevention and post-infection of HIV/AIDS to be provided to the public including workers at workplaces. It also made provisions for appropriate treatment, care and support using available resources to people living with or at risk of HIV and AIDS.</p> <p>Section 4(1) requires every person, institution and organization living, registered or operating in Tanzania, to promote public awareness on causes, modes of transmission, consequences, prevention and control of HIV and AIDS.</p> <p>The project proponent will cause her contractor to prepare and implement program for prevention of HIV/AIDS transmission.</p>
<p>Standards Act, 2009</p>	<p>The Tanzania Bureau of Standards is the designated national authority for developing all kinds of national standards, including environmental standards. The TBS Act establishes the National Environment Standards Committee (NESC), which is responsible for developing environmental standards. The National Environment Management Act 2004 recognises the existence of the NESC. Part X enumerates the types of environmental standards to be established, they include water quality, discharge of effluent into water, air quality, control of noise and vibration pollution, sub-sonic vibrations, soil quality, control of noxious smells, light pollution, and electromagnetic waves and microwaves.</p> <p>Relevant national environmental standards include:</p> <ul style="list-style-type: none"> i. TZS 932:2006: ACOUSTICS - General Tolerance Limits for Noise <p>This standard specifies limits of environmental noise. It also describes the methodology and standard equipment used for measuring noise.</p> <ul style="list-style-type: none"> ii. TZS 837: 2004 Air Quality standards <p>The proponent will endeavor to adhere to this standard by applying modern equipment and construction materials.</p>
<p>Employment & Labor Relations Act (2004)</p>	<p>The Act provides for core labor rights and establishes basic employment standards, provides framework for collective bargaining, and provides for prevention and settlement of disputes. The Act provides fundamental rights and protection e.g. prohibition of Child Labor, forced labor and discrimination in the workplace. It also sets employment standards. Act also characterizes a contract for an employee as follows; (i) A contract for an unspecified period of time; (ii) A contract for a specified period of time for professionals and managerial cadre, (iii) A contract for a specific task. The Act also states that an employer shall supply an employee, when the employee commences employment, with the following particulars in writing: (a) Name, age, permanent address and sex of the employee; (b) Place of recruitment; (c) Job description; (d) Date of commencement; (e) Form and duration of the contract; (f) Place of work; (g) hours of work; (h) Remuneration, the method of its calculation, and details of any benefits or payments in kind, and (i) Any other given matter.</p> <p>Therefore, project proponent should make sure that all the requirement of this Act are adhered and promotes equal opportunity in employment and strives to eliminate discrimination in any employment.</p>

The Public Health Act 2009	The Act provide for the promotion, prevention and maintenance of the public health with a view to ensuring the provision of comprehensive, functional and sustainable public health services to the general public and to provide for other related matters.
The Contractors Registration Act (1997)	<p>The Contractors Registration Act requires contractors to be registered by the Contractors Board (CRB) before engaging in practice. It requires foreign contractors to be registered by the Board before gaining contracts in Tanzania.</p> <p>Proponent shall comply with the law requirement during the recruitment of contractors for project implementation.</p>
The Road Traffic (Amendment) 1990 regulation	<p>The Road Traffic (Amendment) Act No. 4 of 1990 amended Section 28 of The Road Traffic Act of 1973, which is the principal Act. The Act deals, among others, with damage or destruction of traffic signs, electric poles or any other structures erected along the road. It requires individuals to pay sum equal to the cost of repairing any damage or destruction so caused.</p> <p>Due to the fact that the construction activities will be undertaken within the road reserve that means other social activities will be continuing including motorists and pedestrians hence the Contractor must ensure public safety by placing safety signs in all potential locations to avoid accidents and any social inconveniences such as traffic jams, etc.</p>
Engineers Registration Act No 15, 1997 (Revised Edition 2007)	<p>This is an act which formed the Engineers Registration Board, a statutory body with the responsibility of monitoring and regulating engineering activities and the conduct of engineers and engineering consulting firms in Tanzania through registration of engineers and engineering consulting firms. Under the law, it is illegal for an engineer or an engineering firm to practice Engineering profession if not registered with the board. The board has also been given legal powers and has the obligation to withdraw the right to practice from registered engineers if found guilty of professional misconduct or professional incompetence.</p> <p>During construction of the MV Electrical distribution line, every worker either from the Contractor(s) or Engineer(s) side who will carry out the duties of an Engineer as required by the Contract shall be registered with ERB. In addition, the Engineer and his staff who will carry the duties of engineers shall be registered with ERB.</p>
Architects and Quantity Surveyors Act No 16, 1997 (Revised Edition 2010)	<p>This act provides for establishment of the Board of Architects and Quantity Surveyors responsible for registering and regulating the conduct of the Architects, Quantity Surveyors and Architectural and Quantity Surveyors Consulting Firms.</p> <p>The Act requires that any person who carries out duties of a Quantity Surveyor be registered with the Architect and Quantity Surveyors Registration Board (AQRB).</p> <p>During construction of the Medium Voltage electrical distribution, every worker either from the Contractor(s) or Engineer(s) side who will carry out the duties of Quantity Surveyor shall be registered AQRB.</p> <p>The proponent shall comply with the requirements of this act and shall assist the board during inspections of the project works.</p>
Penal Code 1981	The Sexual Offences Special Provisions Act 1998 (SOSPA) amended the

	<p>sexual offences division of the Penal Code. The Penal Code with its laws specifying that for the crime of rape, evidence of resistance such as physical injuries to the body is not necessary to prove that sexual intercourse took place without consent. It also specified that men who abuse a position of authority or trust to commit rape will be subject to the maximum penalty. The Penal Code strictly prohibits all forms of sexual offences in Tanzania. The Proponent in collaboration with Consultant Engineer and Contractor will adhere to this Penal Code during all project phases.</p>
<p>Environmental Management Act (Air Quality Standards) Regulations, 2007</p>	<p>These regulations have been made under sections 140, 145 and 230 (2) (s) of the Environmental Management Act, 2004. They are aimed at setting minimum standard of air quality as well as prohibit emission of hazardous substances, chemicals and materials or gas. They also provide for emission limits, highest permissible quantity (emission), and special tolerance limits of emissions from special factories such as cement factories and exhaust emissions of motor vehicles and emissions from mining operations.</p> <p>During construction phase, the Contractor/proponent shall abide by these regulations including adhering to permissible weight concentration (Emission limits) from the atmosphere to a receptor as set out in the first schedule of the regulations.</p>
<p>The Environmental Management (Soil Quality Standards) Regulations, 2007</p>	<p>These regulations have been made under Section 143, 144 and 230 (2) (s) of the Environmental Management Act, 2004. They are aimed at, among other things, prescribe minimum standard of soil quality to maintain, restore and enhance the inherent productivity of soil in the long term.</p> <p>Section 21(1) stipulates that no person is allowed to discharge effluent from industrial, commercial or any other trade into soil without a consent duly granted by the National Environment Management Council or any other person designated by the council for that purpose.</p> <p>The Contractor/Proponent shall make every effort to adhere to these regulations during the construction by ensuring proper management of oil/fuel to avoid soil contamination.</p>
<p>The Environmental Management (Water Quality Standards) Regulations, 2007</p>	<p>These regulations have been made under Section 143, 144 and 230 (2) (s) of the Environmental Management Act, 2004. They are aimed at, among other things, setting permissible limits for municipal and industrial effluents, special permissible limits for chrome tanning industries, special tolerance limits for vegetable industry, special tolerance limits for fertilizer industry, taste, colour and smell of potable water and Chemical and physical limits for quality of Drinking Water Supplies. Of relevance to the proposed Stone quarry and aggregates project is the first schedule particularly Table A and B which stipulate permissible limits for industrial effluents.</p> <p>Since the proposed project is zero water use, hence small volume of water will be used for domestic/sanitary usage during construction phase. Wastewater generated from sanitary facilities need attention and proper management and not to be discharged haphazardly into public areas.</p>
<p>Environmental Management (Hazardous Waste Management) Regulations, 2021</p>	<p>These regulations have been made under section 110(4) and (5), 128, 133 (4), 135 and 130 of the Environmental Management Act, 2004. These regulations apply to all categories of hazardous waste and to generate, storage, disposal and their movement into and out of mainland Tanzania. These regulations require that any person dealing with hazardous waste in Tanzania be guided by following principles of environment and sustainable development:</p> <ul style="list-style-type: none"> ▪ The precautionary principle ▪ Polluter pays principle, and ▪ The producer extended responsibility

	The Contractor shall adhere to this regulation by stymieing any leakage of Oil/Fuels within the project site. The maintenance/repair will be conducted within Rusumo water treatment plant at a special designated area
Environmental management (Standards for Control of Noise and Vibration) Regulations, 2015	The objectives of the regulations are to set standards for the Control of Noise and Vibrations Pollution from various sources. The regulation is applicable among other areas to the construction sites, plants, machinery, motor vehicles, and aircraft, including sonic booms, industrial and commercial activities. The regulation strictly forbids the making or causing of any loud and unnecessary noise that annoys, disturbs, injures or endangers the comfort, health or safety of others and that of the environment. Proponent observes these regulations by carrying construction activities only at day hours with light and modem equipment
The Electricity Act No. 10/08 of 2008	The Electricity Act No. 10/08 of 2008 provides for the facilitation and regulation of electricity generation, transmission, transformation, distribution, supply and use of electric energy, to provide for cross-border trade in electricity and the planning. It also provides for regulation of rural electrification and related matters. The act is relevant to the proposed project as it is enhancing availability of electrical power to the water treatment plant which is of public interest.

3.4 Institutional Framework for the Management of Environment

3.4.1 Overall Management Responsibility

The institutional arrangement for environmental management in Tanzania is well spelt out in the EMA (2004). There are seven (7) institutions mentioned by the act, of which the Minister Responsible for the Environment is the overall in-charge for administration of all matters relating to the environment as provided for in Section 13(1) of the Act.

The legal institutions for environmental management in the country include;

- National Environmental Advisory Committee;
- Minister responsible for Environment;
- Director of Environment;
- National Environment Management Council (NEMC);
- Sector Ministries;
- Regional Secretariat;
- Local Government Authorities (City, Municipal, District, Township, Ward, Village, sub-village “Mtaa and Kitongoji”)

3.4.2 National Environmental Advisory Committee

The National Advisory Environmental Committee 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. Other functions include:

- Examine any matter that may be referred to it by the Minister or any sector Ministry relating to the protection and management of the environment;

- Review and advise the Minister on any environmental plans, environmental impact assessment of major projects and activities for which an environmental impact review is necessary;
- Review the achievement by the NEMC of objectives, goals and targets set by the Council and advise the Minister accordingly;
- Review and advise the Minister on any environmental standards, guidelines and regulations;
- Receive and deliberate on the reports from Sector Ministries regarding the protection and management of the environment;
- Perform other environmental advisory services to the Minister as may be necessary.

3.4.3 Minister Responsible for Environment

The Minister is responsible for matters relating to environment, including giving policy guidelines necessary for the promotion, protection and sustainable management of the environment in Tanzania. The Minister approves an EIA and may also delegate the power of approval for an EIA to the Vice President's Office – Division of Environment (VPO-DoE), Local Government Authorities or Sector Ministries. The Minister also:

- Prescribes (in the regulations) the qualifications of persons who may conduct an EIA;
- Reviews NEMC reports on the approval of an EIA;
- Issues an EIA certificate for projects subject to an EIA;
- Suspends an EIA certificate in case of non-compliance.

3.4.4 Director of Environment

The Director of Environment heads the Office of the Director of Environment and is appointed by the President of the United Republic of Tanzania. The functions of the Director of Environment include:

- Coordination of various environmental management activities undertaken by other agencies;
- Promotion of the integration of environmental considerations into development policies, plans, programs, strategies, projects;
- Undertaking strategic environmental risk assessments with a view to ensuring the proper management and rational utilization of environmental resources on a sustainable basis for the improvement of quality of human life in Tanzania;
- Advise the Government on legislative and other measures for the management of the environment or the implementation of the relevant international environmental agreements in the field of environment;
- Monitoring and assessing activities undertaken by relevant Sector Ministries and agencies;
- Preparation and issuing of reports on the state of the environment in Tanzania through relevant agencies;
- Coordination of issues relating to articulation and implementation of environmental management aspects of other sector policies and the National Environment Policy

3.4.5 National Environmental Management Council (NEMC)

The NEMC's purpose and objective is to undertake enforcement, compliance, review and monitoring of EIA's and to facilitate public participation in environmental decision-making. As far as EIA is concerned, NEMC is the processor and for that matter the engine for the environmental assessment of development projects. The Environmental Management Act (2004) confers powers on NEMC to;

- Registers experts and firms authorized to conduct EIA;
- Registers projects subject to EIA;
- Determines the scope of the EIA;
- Set-ups cross-sectoral TAC to advise on EIA reviews;
- Requests additional information to complete the EIA review;
- Assesses and comments on EIA, in collaboration with other stakeholders,
- Convenes public hearings to obtain comments on the proposed project;
- Recommends to the Minister to approve, reject, or approve with conditions specific EIS;
- Monitors the effects of activities on the environment;
- Controls the implementation of the Environmental Management Plan (EMP);
- Makes recommendations on whether to revoke EIA Certificates in case of non-compliance;
- Promotes public environmental awareness; and
- Conducts Environmental Audits

3.4.6 Sector Ministries

The existing institutional and legal framework the Sector Ministries are required to establish Sector Environmental Sections headed by the Sector Environmental Coordinator. The Ministry of Water (MoW) has already established an Sector Environment Office, with the responsibilities among others to ensure environmental compliance by the Sector Ministry; liaise with the DoE and the NEMC on matters involving the environment and all matters with respect to which cooperation or shared responsibility is desirable or required; refer to the NEMC any matter related to the environment; and to oversee the preparation of and implementation of all EIA's required for investments in the water sector

3.4.7 Local Government Authorities

Under the Local Government Act of 1982 (Urban and District Authorities), Local Government Authorities include the City Councils, Municipal Councils, District Councils, Town Councils, Township, Kitongoji, Ward, Mtaa and Village. All administrative levels have Environmental Management Committee of each jurisdiction. The Environmental Management Act (2004), provides for City, Municipal, District and Town Councils to be headed by Environmental Inspectors who are responsible for all environmental matters in the respective jurisdiction

3.5 International Guidelines

3.5.1 World Bank Safeguard Policies

World Bank has various safeguard policies, which governs and ensures that Bank operations do no harm people and the environment. The Bank undertakes screening of each proposed project to determine the appropriate extent and type of Environmental Assessment (EA) to be undertaken and whether or not the project may trigger other safeguard policies. The policies require the borrower (country or private sector) to ensure compliance of environmental and social safeguards to projects that the Bank provides credit. The safeguard policies provide mechanisms for incorporation of environmental and social issues during project implementation. Thus, the proposed project activities may trigger following Bank policy: Environmental Assessment (OP/BP 4.01), as illustrated in the following sub section.

3.5.1.1 Environmental Assessment (OP/BP 4.01)

The World Bank Environmental Assessment Policy (OP. 4.01) requires Environmental Assessment (EA) of projects/programs proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus improve decision making. The OP 4.01 requires EA process to take into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and cultural property) and trans-boundary and global environmental aspects.

This policy helps to ensure that the environmental and social safety and sustainability of investment projects is adhered. It also intends to ensure that Bank financed projects are environmentally sound and sustainable and decision-making is improved through appropriate analysis of actions and their likely environmental impacts. The policy also promotes environmentally sustainable development by supporting the protection, conservation, maintenance, and rehabilitation of natural habitats and their functions. The proposed construction activities involved assessment of the negative and positive impacts and recommendation made to activate measures that will minimize negative impacts or compensate for adverse impacts. Therefore, the borrower must ensure that appropriate safeguard measures to mitigate potential risks and impacts are addressed prior to commencement of works and during implementation of the construction activities as stated in the ESMP.

The proposed project is under EIA study as required by OP 4.01. The EIA study aimed at identifying environmental and social impacts and thereafter development of mitigation measures to eliminate or reduce the adverse project impacts to acceptable level.

3.5.2 World Bank Group Industry Sector Guidelines for Electric Power Transmission and Distribution, 2007

The EHS guidelines for electric power transmission and distribution are applied in World Bank projects in order to ensure best practice in environmental management during implementation. The implementation of this construction of Medium Voltage electrical Line (11KV) will require applying the EHS guidelines in all aspects of environment, occupational health and safety, community health and safety, operation and decommissioning as referred to www.ifc.org/ehsguidelines. The EHS Guidelines are technical reference with general and

industrial-specific examples of Good International Industry Practice as defined in IFC's performance standards. The EHS Guidelines and International Finance Corporation (IFC) performance standards have been used as reference in the environmental assessment and implementation of mitigation measures.

The Environmental, Health, and Safety (EHS) Guidelines for Electric Power Transmission and Distribution include information relevant to power transmission between a generation facility and a substation located within an electricity grid, in addition to power distribution from a substation to consumers/end users located in residential, commercial, and industrial areas. Based on the scope of the proposed project the following EHS guidelines will be briefly analyzed;

- Industry-Specific Impacts and Management
- Performance Indicators and Monitoring

3.5.2.1 Environment

Environmental issues during the construction phase of power transmission and distribution projects specific to this industry sector include the following;

Terrestrial Habitat Alteration: The construction and maintenance of transmission line rights-of-way, especially those aligned through forested areas may result in alteration and disruption to terrestrial habitat, including impacts to avian species and an increased risk of forest fires. The proposed project has less or minimum detrimental impacts to the terrestrial habitats since it is located in rural-urban area hence passes within the road reserve dominated with very minimal vegetation covers.

Construction of Right-of-Way: Right-of-way construction activities may transform habitats, depending on the characteristics of existing vegetation, topographic features, and installed height of the transmission lines. Examples of habitat alteration from these activities includes fragmentation of forested habitat; loss of wildlife habitat, including for nesting; establishment of non-native invasive plant species; and visual and auditory disturbance due to the presence of machinery, construction workers, transmission towers, and associated equipment. The guideline recommends potential measures to be implemented to prevent and control impacts to terrestrial habitats during construction of the right-of-way.

Right-of-Way Maintenance: Regular maintenance of vegetation within the rights-of-way is necessary to avoid disruption to overhead power lines and towers. Unchecked growth of tall trees and accumulation of vegetation within rights-of-way may result in a number of impacts, including power outages through contact of branches and trees with transmission/distribution lines and towers; ignition of forest and brush fires; corrosion of steel equipment; blocking of equipment access; and interference with critical grounding equipment.

Regular maintenance of rights-of-way to control vegetation may involve the use of mechanical methods, such as mowing or pruning machinery that may disrupt wildlife and their habitats, in addition to manual hand clearing and herbicide use. Vegetation management should not eradicate all vegetation, but aim to maintain trees and plant growth that may negatively affect infrastructure at a level that is under an economically-damaging threshold. Excessive vegetation

maintenance may remove unnecessary amounts of vegetation resulting in the continual replacement of successional species and an increased likelihood of the establishment of invasive species. The guideline requires comprehensive mitigation measures to stymie any detrimental impacts that may results during the management of Right-of-Way.

Forest Fires: The guideline is mostly applicable to those projects which are located within the forest or dense grassland unlikely to this proposed project. If underlying growth is left unchecked, or slash from routine maintenance is left to accumulate within right-of-way boundaries, sufficient fuel can accumulate that may promote forest fires.

Avian and Bat Collisions and Electrocutions: The combination of the height of transmission towers and distribution poles and the electricity carried by transmission and distribution lines can pose potentially fatal risk to birds and bats through collisions and electrocutions. Avian collisions with power lines can occur in large numbers if located within daily flyways or migration corridors, or if groups are traveling at night or during low light conditions (e.g. dense fog). In addition, bird and bat collisions with power lines may result in power outages and fires. This guideline is mostly applied in areas with birds' migratory corridor or settlements although limited impacts are anticipated from this project but mitigation measures need to be in place.

Electric and Magnetic Fields: Electric and magnetic fields (EMF) are invisible lines of force emitted by and surrounding any electrical device (e.g. power lines and electrical equipment). Electric fields are produced by voltage and increase in strength as the voltage increases. Electric field strength is measured in volts per meter (V/m). Magnetic fields result from the flow of electric current and increase in strength as the current increases. Magnetic fields are measured in units of gauss (G) or tesla (T), where 1T equals 10,000G. Electric fields are shielded by materials that conduct electricity, and other materials, such as trees and building materials. Magnetic fields pass through most materials and are difficult to shield. Both electric and magnetic fields decrease rapidly with distance. Power frequency EMF typically has a frequency in the range of 50 – 60 Hertz (Hz), and is considered Extremely Low Frequency (ELF).

Hazardous Materials: Hazardous materials in this sector include insulating oils / gases (e.g. Polychlorinated Biphenyls (PCB) and sulfur hexafluoride [SF6], and fuels, in addition to chemicals or products for wood preservation for poles and associated wood construction material. The Developer in respect to Regulatory Authority (TANESCO) significantly will enhance proper management of any hazardous materials which will be used on site.

Insulating Oils and Fuels: Highly-refined, mineral insulating oils are used to cool transformers and provide electrical insulation between live components. They are typically found in the largest quantities at electrical substations and maintenance shops. Sulfur Hexafluoride (SF6) may also be used as a gas insulator for electrical switching equipment and in cables, tubular transmission lines, and transformers. SF6 may be used as an alternative to insulating oils. However, the use of SF6, a greenhouse gas with a significantly higher global warming potential (GWP) than CO2, should be minimized. In cases the gas is used for applications involving high voltages (>350 KV), equipment with a low leakage- rate (<99 percent) should be used.

Liquid petroleum fuels for vehicles and other equipment may also be used and stored at transmission and distribution projects. Recommendations for prevention and control of hazards associated with spill prevention, emergency response, clean-up, and contaminated soil remediation must be put in place to stymie the anticipated adverse impacts.

Wood Preservatives: The majority of wooden utility poles are treated with pesticide preservatives to protect against insects, bacteria, and fungi, and to prevent rot. The preservatives most commonly used for power poles are oil-based pesticides such as creosote, pentachlorophenol (PCP), and chromated copper arsenate (CCA). Use of these preservatives is being limited in some countries due to their toxic effects on the environment. While in use, poles may leach preservatives into soils and groundwater, however, levels are highest directly beside poles and decrease to within normal levels at approximately 30 centimeters (cm) distance from the pole. The most significant potential environmental impacts occur at specialized wood treatment facilities if not managed appropriately. Poles should be pretreated at an appropriate facility to ensure chemical fixation and prevent leaching, and to impede the formation of surface residues at the right-of-way.

3.5.2.2 Occupational Health and Safety

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

Live Power Lines: Workers may be exposed to occupational hazards from contact with live power lines during construction, maintenance, and operation activities. Prevention and control measures associated with live power lines should be implemented effectively to eliminate such impacts.

Working at height on poles and structures: Workers may be exposed to occupational hazards when working at elevation during construction, maintenance, and operation activities. The Guideline requires the contractor to undertake proper measures to avoid such adverse impacts.

Electric and Magnetic Fields (EMF): Electric utility workers typically have a higher exposure to EMF than the general public due to working in proximity to electric power lines. Occupational EMF exposures should be prevented or minimized through the preparation and implementation of an EMF safety program with other potential measures.

Table 8: Occupational hazards and types of PPEs the Working Site

Objective	Workplace Hazards	Suggested PPE
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation.	Safety Glasses with side-shields, protective shades etc.
Head protection	Falling objects, inadequate height clearance, and overhead power cords	Plastic helmets with top and side impact protection
Hearing protection	Noise	Hearing protectors (ear plugs or ear muffs)
Foot protection	Falling or rolling objects, pointed objects. Corrosive or hot liquids	Safety shoes and boots for protection against moving and falling objects, liquids and chemicals
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures	Gloves made of rubber or synthetic materials, leather, steel, insulating materials, etc
Respiratory protection	Dust, fogs, fumes, mists, gases, smokes, vapors	Facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapors and gases). Single or multi-gas personal monitors, if available
	Oxygen deficiency	Portable or supplied air (fixed lines) On-site rescue equipment
Body/Leg protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration	Insulating clothing and gloves, body suits, aprons, etc. of appropriate materials

3.5.2.3 Community Health and Safety

Community health and safety impacts during the construction and decommissioning of transmission and distribution power lines are common to those of most large industrial facilities, and are discussed in the General EHS Guidelines. These impacts include, among others, dust, noise, and vibration from construction vehicle transit, and communicable diseases associated with the influx of temporary construction labor. In addition to general health and safety standards outlined in the General EHS Guidelines, the operation of live power distribution lines and substations may generate the following industry-specific impacts:

Electrocution: Hazards most directly related to power transmission and distribution lines and facilities occur as a result of electrocution from direct contact with high-voltage electricity or from contact with tools, vehicles, ladders, or other devices that are in contact with high-voltage electricity.

Electromagnetic interference: The corona of overhead transmission line conductors and high frequency currents of overhead transmission lines may result in the creation of radio noise. Typically, transmission line rights-of-way and conductor bundles are created to ensure radio reception at the outside limits remains normal. However, periods of rain, sleet or freezing rain sharply increases the streaming corona on conductors and may affect radio reception in residential areas near transmission lines.

Visual Amenity: Power transmission and distribution are necessary to transport energy from power facilities to residential communities, but may be visually intrusive and undesirable to local residents. The guideline requires proper community awareness campaign to be undertaken regularly to impress the local community on the particular project.

Aircraft Navigation Safety: Power transmission towers, if located near an airport or known flight paths, can impact aircraft safety directly through collision or indirectly through radar interference. Aircraft collision impacts may be mitigated by proper measures to stymie possible accidents and incidents.

3.5.3 Performance Indicators and Monitoring

3.5.3.1 Environment

Emissions and Effluent Guidelines: The power transmission and distribution sector does not typically give rise to significant air emissions or effluents. Where dust or potentially contaminated water runoff exists, site operations should comply with principles and guidelines described in the General EHS Guidelines to meet ambient air and surface water guidelines. Table 8 lists exposure limits for general public exposure to electric and magnetic fields published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).

Table 9: ICNIRP exposure limits for general public exposure to electric and magnetic fields.

Frequency	Electric Field (V/m)	Magnetic Field (µT)
50 Hz	5000	100
60 Hz	4150	83

Source: ICNIRP (1998) : "Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz)

Environmental Monitoring: Environmental monitoring programs for this sector should be implemented to address all activities that have been identified to have potentially significant impacts on the environment during normal operations and upset conditions. Environmental monitoring activities should be based on direct or indirect indicators of emissions, effluents, and resource use applicable to the particular project. Monitoring frequency should be sufficient to provide representative data for the parameter being monitored. Monitoring should be conducted by trained individuals following monitoring and record-keeping procedures and using properly calibrated and maintained equipment. Monitoring data should be analyzed and reviewed at regular intervals and compared with the operating standards so that any necessary corrective actions can be taken. Additional guidance on applicable sampling and analytical methods for emissions and effluents is provided in the General EHS Guidelines.

Table 10: Alternating Current - Minimum Working Distances for Trained Employees

Voltage Range (phase to phase – Kilovolts)	Minimum Working and Clear Hot Stick Distance (meters)
2.1 to 15	0.6
15.1 to 35	0.71
35.1 to 46	0.76
46.1 to 72.5	0.91
72.6 to 121	1.01
138 to 145	1.06
161 to 169	1.11
230 to 242	1.5
345 to 362	2.13 ^b
500 to 552	3.35 ^b
700 to 765	4.5 ^b

^bNOTE: From 345-362 kv., 500-552 kv., and 700-765 kv., the minimum working distance and the minimum clear hot stick distance may be reduced provided that such distances are not less than the shortest distance between the energized part and a grounded surface.

Source: ICNIRP (1998) : "Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz)

Table 11: ICNIRP exposure limits for occupational exposure to electric and magnetic fields.

Frequency	Electric Field (V/m)	Magnetic Field (μT)
50 Hz	10,000	500
60 Hz	8300	415

Source: ICNIRP (1998) : "Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields (up to 300 GHz)

3.5.4 General Liquid Effluent Quality

Discharge to Surface Water: The guideline is applicable to the proposed project mainly during construction phase since sanitary wastewater will be generated by employees meanwhile is less generated during operation phase since the project is zero water use. Oil/Insulating oil from utility operations particularly electrical transformer may leak/spills hence to cause surface water contamination through storm water overflow. However; surface water should not result in contaminant concentrations in excess of local ambient water quality criteria or, in the absence of local criteria, other sources of ambient water quality.

Sanitary wastewater: The guideline is applicable only during construction phase whereby sanitary wastewater will be generated by the site workforce. However; sanitary wastewater from project sites may include effluents from domestic sewage, food service, and other facilities serving site employees. Recommended sanitary wastewater management strategies include

Table 12: Indicative Values for Treated Effluent Discharges

Pollutants	Units	Guideline Value
PH	pH	6 – 9
BOD	mg/l	30
COD	mg/l	125
Total Nitrogen	mg/l	10
Total Phosphorus	mg/l	2
Oil and grease	mg/l	10
Total suspended solids	mg/l	50
Total coliform bacteria	MPN ^b /100ml	400 ^a

Notes:
^aNot applicable to centralized, municipal, wastewater treatment systems which are included in EHS guidelines for water and sanitation
^bMPN – Most probable number

Source: www.ifc.org/ehsguidelines

3.5.5 Noise Level Guidelines

Noise is expected to be generated both during construction and operation phases. Most noise in a substation comes from a transformer, which is generally 95-98% efficient. The energy that is lost is turned into heat and vibration which can be noisy when there is high load. Noise prevention and mitigation measures should be applied where predicted or measured noise impacts from a project facility or operations exceed the applicable noise level guideline at the most sensitive point of reception. The preferred method for controlling noise from stationary sources is to implement noise control measures at source. Methods for prevention and control of sources of noise emissions depend on the source and proximity of receptors. Noise reduction options that should be considered include selecting equipment with lower sound power levels; installing vibration isolation for mechanical equipment; limiting the hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas; re-locating noise sources to less sensitive areas to take advantage of distance and shielding; and reducing project traffic routing through community areas wherever possible.

Noise impacts should not exceed the levels presented in Table 13

Table 13: Noise Level Guidelines

Receptor	One Hour L _{Aeq} (dBA)	
	Daytime 07:00 – 22:00	Nighttime 22:00 – 07:00
Residential; institutional; educational	55	45
Industrial; commercial	80	60

3.5.6 WHO Ambient Air Guidelines

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

Emissions of air pollutants can occur from a wide variety of activities during the construction, operation, and decommissioning phases of a project. These activities can be categorized based on the spatial characteristic of the source including point sources, fugitive sources, and mobile sources and, further, by process, such as combustion, materials storage, or other industry sector-specific processes

Where possible, facilities and projects should avoid, minimize, and control adverse impacts to human health, safety, and the environment from emissions to air. Where this is not possible, the generation and release of emissions of any type should be managed through a combination of:

- Energy use efficiency
- Process modification

- Selection of fuels or other materials, the processing of which may result in less polluting emissions.

Projects with significant sources of air emissions, and potential for significant impacts to ambient air quality, should prevent or minimize impacts by ensuring that:

- Emissions do not result in pollutant concentrations that reach or exceed relevant ambient quality guidelines and standards⁹ by applying national legislated standards, or in their absence, the current WHO Air Quality Guidelines¹⁰ (see Table 14), or other internationally recognized sources;
- Emissions do not contribute a significant portion to the attainment of relevant ambient air quality guidelines or standards. As a general rule, this Guideline suggests 25 percent of the applicable air quality standards to allow additional, future sustainable development in the same air shed

Table 14: WHO Ambient Air Quality Guidelines

	Averaging Period	Guideline Value in mg/m ³
Sulfur dioxide (SO₂)	24 hour	125 (Interim target-1)
	10 minute	50 (Interim target-2) 20 (guideline) 500 (guideline)
Nitrogen dioxide (NO₂)	1-year	40 (guideline)
	1-hour	200 (guideline)
Particulate Matter PM₁₀	1-year	70 (Interim target-1) 50 (Interim target-2) 50 (Interim target-3) 20 (guideline)
	24-hour	150 (Interim target-1) 100 (Interim target-2) 75 (Interim target-3) 50 (guideline)
Particulate Matter PM_{2.5}	1-year	35 (Interim target-1) 25 (Interim target-2) 15 (Interim target-3) 10 (guideline)

	24-hour	75 (Interim target-1) 50 (Interim target-2) 37.5 (Interim target-3) 25 (guideline)
Ozone	8-hour daily maximum	160 (Interim target- 1) 100 (guideline)

Source: WHO Air Quality Guidelines

3.6 IFC/WBG Performance Standards on Biodiversity Conservation

According to Performance Standard 6 of the World Bank’s International Finance Corporation (IFC) (2012) protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development. The requirements set out in this Performance Standard have been guided by the Convention on Biological Diversity, which defines biodiversity as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species, and of ecosystems.”

This Performance Standard addresses how clients can sustainably manage and mitigate impacts on biodiversity and ecosystem services throughout the project’s lifecycle including (i) protect and conserving biodiversity; (ii) maintain the benefits from ecosystem services; and (iii) promote the sustainable management of living natural resources through the adoption of practices which integrate conservation needs and development priorities.

As a matter of priority, the standards provides, the proponent should seek to avoid impacts on biodiversity and ecosystem services. When avoidance of impacts is not possible, measures to minimize impacts and restore biodiversity and ecosystem services should be implemented. Given the complexity in predicting project impacts on biodiversity and ecosystem services over the long term, the proponent should adopt a practice of adaptive management in which the implementation of mitigation and management measures are responsive to changing conditions and the results of monitoring throughout the project’s lifecycle.

3.7 International Conventions

The United Republic of Tanzania Government has signed and ratified several international conventions, including those on biodiversity, climate change, desertification and protection of the ozone layer. The conventions and their relevance to the proposed road-upgrading project are listed in the table 15.

Table 15: International Conventions and Treaties with Relevance to the project

S/No	Name of Convention	Description of the Convention	Relevance to This Specific Project
1.	Convention concerning the Protection of Workers Against Occupational Hazards in the Working Environment due to Air Pollution, Noise and Vibration, adopted in 1977.	To ensure safe working environment for workers.	The proponent to implement a Occupational Health and Safety program in accordance with Tanzania laws and World Bank guidelines.
2.	The United Nations Convention on Conservation of Biological Diversity signed in 1992.	This convention was agreement on developing national strategies for the conservation and sustainable use of biological diversity.	In the course of its operations, the proponent shall ensure that the provisions of the Convention are observed.
3.	Africa Convention on the Conservation and Natural Resources (1968)	This convention intends to promote conservation efforts by requiring contracting States to adopt the measures necessary to ensure conservation, utilization and development of soil, water, flora and fauna resources in accordance with scientific principles and with due regard to the best interests of the people.	The proponent shall support Tanzania's Commitment by promoting conservation efforts in all of its operations.

CHAPTER FOUR: ENVIRONMENTAL AND SOCIAL BASELINE INFORMATION

4.1 Introduction

The baseline data and information on biophysical and social –economic settings at the site, where the proposed project is located, provide important benchmark necessary for future project environment performance monitoring. Appraisal was made at the core project areas, including the existing premises of the project site at Rusumo Village and its immediate environs as well as broad description of the areas of influence i.e Ngara District Council and Kagera region

To get the big concept of the existing situation on the project site, this chapter provides a comprehensive description of areas that may be impacted by the project activities or vice versa. A more general description that attempt to capture the different setting is presented. There are two methodologies used to get baseline information such as existing source of information include databases, report and local community also field works which include monitoring and survey

4.1.1 Administrative Units

Administratively, Ngara district council social economic profile is divided into 4 divisions and 22 wards, 75 villages (see Table 5 which indicates project village) and 391 hamlets distributed unevenly. Among the divisions, Nyamiaga division covers largest part of land of the district approximately to 33.40 percent followed by Rulenge division with 27.56 percent of the total land and Kanazi division covers 24.81 percent. Finally, Murusagamba division follows which has smallest land covering 14.23 percent. The Nyamiaga Division where the project site is found has the total land approximately 1250.51 Square Kilometers. It has seven (7) wards, 21 Villages and 127 hamlets. Moreover; the project site is located in Rusumo Village with five (5) hamlets.

4.1.2 Administrative Set Up

The village government is run with a complete governance structure comprised of village chairperson, Village Executive Officer (VEO) and elected members of the village Council whilst there is Ward Office comprised of Ward Executive Officer (WEO) and its Ward Council members. Both Governance levels are directly responsible to the District Executive Director of Ngara District Council.

Table 16: Village with LADP Project

Division	Ward	Village	No. Of Sub Villages
Nyamiaga	Rusumo	Rusumo	5

Table 17: Land Area and Administrative Units of the proposed project Village

Division	Land Area (Sq. km)	No. of ward	No. of Villages	No. of Hamlets	Percent of Land Area
Nyamiaga	1250.51	7	21	127	33.40

Source: Site Visit, November/2021

4.2 Physical Environment

4.2.1 Climatic Condition

4.2.1.1 Rainfalls

Ngara district receives adequate annual rainfall. The rainfall pattern is bi-modal, which occurs between September/October and March/May. Rainfall averages between 800 mm in Bushubi (in Rulenge and Murusagamba Divisions) and 1,400 mm annually in Bugufi (Nyamiaga and Kanazi Divisions) areas. The annual rainfall within the project site is typically of Nyamiaga Division which ranges between 1,400mm for September and October.

Nyakahanga Hamlet which falls in Nyamiaga Division has four climatic seasons, two dry seasons from June to September and January to February with two rainy seasons from September to October and from March to May. During dry seasons there are sometimes strong winds/hazy air and temperatures vary between 18^oC and 30^oC depending on the time of day or night. During the rainy seasons, sudden and heavy downpours may occur daily, lasting from a few minutes to several hours. The rain is sometimes associated with strong winds, floods, mud, fog and temperatures may range between 12^oC and 28^oC (*Ngara District Profile, 2018*).

4.2.1.2 Temperature

Temperatures range between 14^oC - 28^oC. The region consists of series of hilly running North-South and parallel to the lakeshore. September and October are the hottest months with temperature going as high as 28^oC while July is the coldest month with minimum temperature of 14^oC (*Ngara District Profile, 2018*).

4.2.1.3 Wind Patterns

Relative humidity around the proposed project area is on average of 79% with little variation during the year. In the wet season values are between 80% and 85% and are slightly lower during the dry season. On a monthly basis wind speed seems to be little variation – averaging to 0.9 m/sec, during the rainy season wind speeds are slightly lower than during the dry season. Strong winds frequently occur associated with rainstorms, particularly at the onset of the rains (*Ngara District Profile, 2018*).

4.2.2 Noise Level

Four stations for noise levels were accomplished using a portable Clas Ohlson digital sound level meter type 36-1604, model ST-805 with measurement range of 30 to 130 dB (A), A-weighted factor deciBel. The meter meets ANSI S1.4 type 2 standards and conforms to IEC 651 type 2. Its accuracy is ± 1.5 dB of reading. The meter is calibrated using electrical calibration with built in oscillator (1 kHz sine wave). On taking measurement, the instrument was held vertically at a breathing height of 1.0–1.5m above the ground level. Four runs were recorded at each sampling point and their hourly average value was used as representative value and then compared with local standards and international guidelines. Moreover, the peak (maximum) noise levels associated with project activities were also targeted and recorded during the study period.

The major source of noise at the project site and its nearest receptors were from trucks/cars and motorcycles movements passing through the Nyakiziba and Nyakariba road, other noise sources include socio-economic activities to the nearest households. Referring to table 18 the hourly equivalent sound level was in the range of 45.4 to 55.5 LAeq, dB (1h) for both measuring points. The hourly minimum noise level was in the range of 40.3 to 47.8 dB (A), while the maximum hourly noise level was in the range of 55.3 to 63.4 dB (A).

All measured sampling points were recorded with noise level within the limit value established by local standards for noise exposure at daytime. Referring to local [EMR (2010)] standard all assessed points were recorded with equivalent sound level LAeq (1h) which is below ceiling limit value of 60 LAeq dB for normal environment at day time.

Table 18 describes the summarized minimum, equivalent and maximum noise levels at all Sampling Points within the project site.

Table 18: Average Noise Level

Category	Measuring Location	GPS Coordinates		Session			Source of Noise
		Latitude (°S)	Longitude (°E)	Daytime			
				Min, dB(A)	LAeq, (1h)	Max, dB(A)	
Nyakahanga road	A1: At the Tapping Point T-Intersection/Junction. Western side of the right-of-way.	9735427	253713	47.8	55.5	63.4	-Trucks/motorcycles movements at the road -Economic activities
	A2: Close to the residential Buildings (15 meters offset from the road boundary)	9735498	253609	42.2	51.2	61.5	-Trucks/motorcycles movements at the road -Socio-Economic activities
	A3: At the proposed Electric Substation closely to	9735417	253709	40.3	45.4	55.3	-Trucks/motorcycles movements at Nyakariba road

	(Water Treatment Plant)							--Socio-Economic activities
	A4: Water Treatment Plant	9735415	253701	41.7	46.4	56.6		-Trucks/motorcycles movements at Nyakariba road --Socio-Economic activities
Noise Guidelines	Local standard: (EMR, 2010) for normal environment at day time			60				

Source: Project site field measurement: November/ 2021: N.M=Not Mentioned

4.2.3 Ambient Air Quality Emissions Levels

4.2.3.1 Ambient Particulate Matters (PM_{2.5} and PM₁₀ Sizes) Concentration

At project site there is no major point sources of dust fumes or particles during measurements and measurements was affected with weather conditions (winter and rainy season) that's why there are slightly dust levels in assessed locations. The dust meter used sampled or detected dust particles suspended in breathing air in which the employees/workers breathe in when they are working on the respective area.

All surveyed locations were recorded with ambient particulate matter (PM_{2.5} and PM₁₀) within the limit value established by both Local standards: EMR (AQS), 2007] and International Guideline: WHO [2005] for ambient particulate matter.

Referring to the dust results summarized in the table 19 below, the averaged maximum ambient particulate matter of PM_{2.5} with 4.2 µg/m³ value and PM₁₀ with 5.9 µg/m³ value were recorded to the way-leave/ Right-of-Way along Nyakahanga Road and to the tapping point while the averaged minimum dust level of PM_{2.5} with 3.3 µg/m³ and PM₁₀ with 3.6 µg/m³ were recorded at substation/transformer closely to the water treatment plant. The dust levels recorded at the Right-of-Way/electrical route were contributed by movements of trucks/vehicles, motorcycles along the road.

The Local Standard: EMR (AQS), 2007] states that, the ambient particulate matter guideline for PM₁₀ size shall not exceed 60–90 µg/Nm³ (0.05–0.116 mg/kg). By comparing the guideline value with results, it is evident that all assessed sampling points were recorded with PM₁₀ ambient particulate matter within the ceiling limit.

On the other hand, the World Health Organization (WHO: 2005) Air Quality Guideline states that, the ambient dust emission levels for PM_{2.5} and PM₁₀ should not exceed 25 µg/m³ and 50 µg/m³ respectively for 24–hour mean. By comparing the results with the Standard, it is evident that all assessed four locations were recorded with PM_{2.5} and PM₁₀ ambient particulate matters within the ceiling limit.

Table 19: Summary on ambient particulate matter (dust) concentrations for assessed stations

Category	Measuring Location	GPS Coordinates (UTM)		Session	
				Daytime	
		Latitude (S)	Longitude (E)	PM _{2.5} [µg/m ³]	PM ₁₀ [µg/m ³]
Nyakahanga road	A1: At the Tapping Point T-Intersection/Junction. Western side of the right-of-way.	9735427	253713	5.5	9.9
	A2: Close to the residential Buildings (15 meters offset from the road boundary)	9735498	253609	4.3	6.2
	A3: At the proposed Electric Substation closely to (Water Treatment Plant)	9735417	253709	3.7	4.0
	A4: Water Treatment Plant	9735415	253701	3.3	3.6
	Overall Minimum Value			3.3	3.6
	Overall Mean Value			4.2	5.9
	Overall Maximum Value			5.5	9.9
Dust Guidelines	Local standard: EMR (AQS), 2007]			N.M	60-90
	International Guidline (WHO, 2005)			25	50

Source: Project site field measurement: November/ 2021, Tanzania Bureau of Standards, 2009

4.2.3.2 Ambient Gaseous Emission Concentration

At project site there is no major point sources of gaseous emissions. Referring to the results summarized in table 20, all locations found with enough oxygen (O₂) level of 20.9 % at all measured sampling points, this range value is normal and naturally present in air environment but it decreases from day to night. All surveyed locations were recorded with CO₂ which ranging from 0.02 to 0.05 % (200 to 500 ppm). The CO₂ level of 0.02% (200 ppm) is normal and naturally existing in air environment. The points detected with 0.0 Hydrogen Sulfide (H₂S), sulfur dioxide (SO₂), Nitrogen oxide (NO), nitrogen dioxide (NO₂) and Methane (CH₄).

Furthermore, sampling points were recorded with carbon monoxide (CO) gaseous emission levels ranging from 1.0 to 3.0 ppm due to combustion emissions of trucks and motorcycles movements through Nyakahanga and Nyakiziba roads.

The local (EMR (AQS), 2007] has offered the ambient gaseous emissions limits of the following parameters. Carbon monoxide (CO) emission limit for 15 minutes time-weighted exposure should be 100 mg/Nm³ (87 ppm) and 10 mg/Nm³ (9 ppm) for 8 hours exposure. For sulfur oxides (SO_x) limit should be 0.5 mg/Nm³ (0.2 ppm) for 10 minutes. And for nitrogen oxides

(NO_x) limit should be 150 µg/Nm³ (0.15 mg/Nm³, 0.12 ppm for NO or 0.08 ppm for NO₂) for 24–hours average and value 120 µg/Nm³ (0.12 mg/Nm³, 0.10 ppm for NO or 0.06 ppm for NO₂) for 8 hours exposure.

Comparing the averaged results with Local standard EMR [(AQS), 2007] and International (WHO, 2005) standards, it is evident that, all measured sampling points have gaseous emissions which is within both standards used for comparison.

Table 20: Summary on ambient gaseous concentrations for assessed sampling points

Category	Measuring Location	Gaseous Parameter	GPS Coordinates (UTM)		Session			Standards	
			Latitude (S)	Longitude (E)	Day			EMR [(AQS), 2007]	WHO [2005]
					Minimum	Average	Maximum		
Nyakahanga road	A1: At the Tapping Point T-Intersection/Junction. Western side of the right-of-way.	CO ₂ (%)	9735427	253713	0.01	0.02	0.05	N.M	
		NO ₂ (ppm)			0	0	0	N.M	0.2
		CO (ppm)			1.3	1.0	3.0	9	N.M
		SO ₂ (ppm)			0	0	0	0.5	0.25
		O ₂ (%)			19.8	19.8	19.8	NM	N.M
		CH ₄ %			0	0	0		
		H ₂ S (ppm)			0	0	0	N.M	0.03
		NO (ppm)			0	0	0	0.12	N.M
	A2: Close to the residential Buildings (15 meters offset from the road boundary)	CO ₂ (%)	9735498	253609	0.02	0.03	0.04	N.M	
		NO ₂ (ppm)			0	0	0	N.M	0.2
		CO (ppm)			1.0	1.0	2.0	10	N.M
		SO ₂ (ppm)			0	0	0	0.5	0.25
		O ₂ (%)			19.8	19.8	19.8	NM	N.M
		CH ₄ %			0	0	0		
H ₂ S (ppm)		0			0	0	N.M	0.03	
NO (ppm)		0			0	0	0.12	N.M	
Within the Major Project	A3. Water Treatment Plant	CO ₂ (%)	9735415	253701	0.01	0.02	0.03	N.M	
		NO ₂ (ppm)			0	0	0	N.M	0.2
		CO (ppm)			0	0	0	10	N.M
		SO ₂ (ppm)			0	0	0	0.5	0.25
		O ₂ (%)			19.8	19.8	19.8	NM	N.M
		CH ₄ %			0	0	0		
		H ₂ S (ppm)			0	0	0	N.M	0.03
		NO (ppm)			0	0	0	0.12	N.M

Source: Air Quality field measurement: November/2021: N.M=Not Mentioned

4.3 Topography

Rusumo village is characterized by a series of dissected plateau at different altitude levels forming harsh undulating topography. Subsequent erosion and dissection has resulted into hills and valleys. The altitude ranges between 1,320m (the level of River Kagera) to about 1,550m above the mean sea level. Major landscapes of the proposed project area are comprised of hills, ridges and scarps, dissected plains, plateau, swamps, flood plains, river terraces and valleys. The average elevation of Rusumo village is approximately 1,500m above mean sea level and has been considered to be one of Tanzania highlands. (Source: Ngara District Social Economic Profile; 2018)

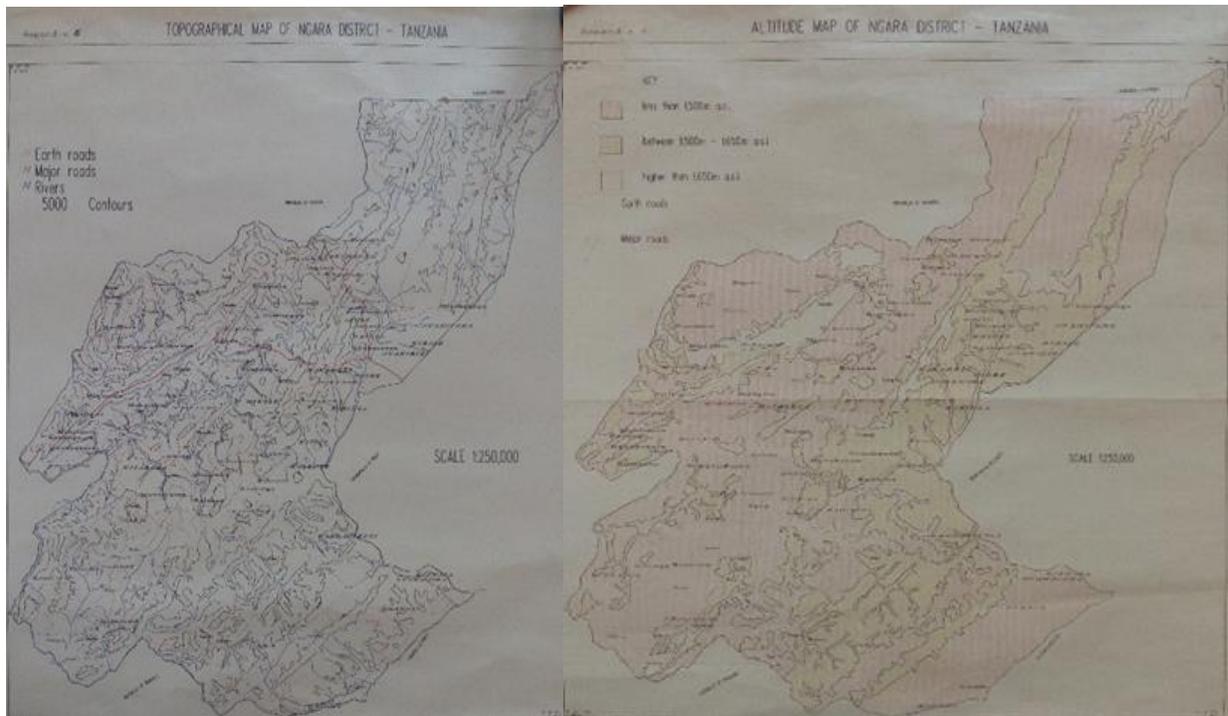


Figure 7: Map of Terrain and Topography for Ngara District

(Source: Ngara District Social Economic Profile; 2018)

4.4 Soils and Geology

Pre-Cambrian rocks of the Karagwe – Ankolean system, dominate the project area. The existing main rock types are phillies, philliticshale's and mixed quartzites. Many parts have remnants of old landscapes, which are characterized by laterites caps. Some parts have few granitic rocks. The soil within Rusumo village is mainly dominated by strongly weathered, reddish, loamy soils on foot- slopes and plateau plains. In highly dissected parts of the rocky areas, shallow soils dominate the hill slopes that have poor water retention capacity. The major landscapes Of Rusumo village comprises hills, ridges, scarps, dissected pen plain, plateaus, swamps, flood plains, river terraces and minor valleys. The soils range from shallow (less than 50 cm) to very

deep (more than 120 cm). Most of them have either dark red-to-red or brown to yellowish red clay sub-soil, and deeply weathered, medium to strongly acid and have a low natural reserve of nutrients. In the valleys darker alluvial clays predominate. The soils typically have relatively low infiltration rates and are classified as having slightly impeded drainage characteristics with good agricultural production. The less dissected areas of the Rusumo depression, notably at the proposed project areas are characterized by extremely weathered clay soils. Topsoil's within the village have a wide range of characteristics in terms of thickness, organic matter content and texture. In most areas deep soils, which are good or productive, are found in the low lands where most of the crops are grown. The proposed electric line route for Rusumo water treatment plant is located in the ranges of hills about 1km from the Rusumo One Stop Border Post (ROSBP). (Source: Ngara District Social Economic Profile; 2018)

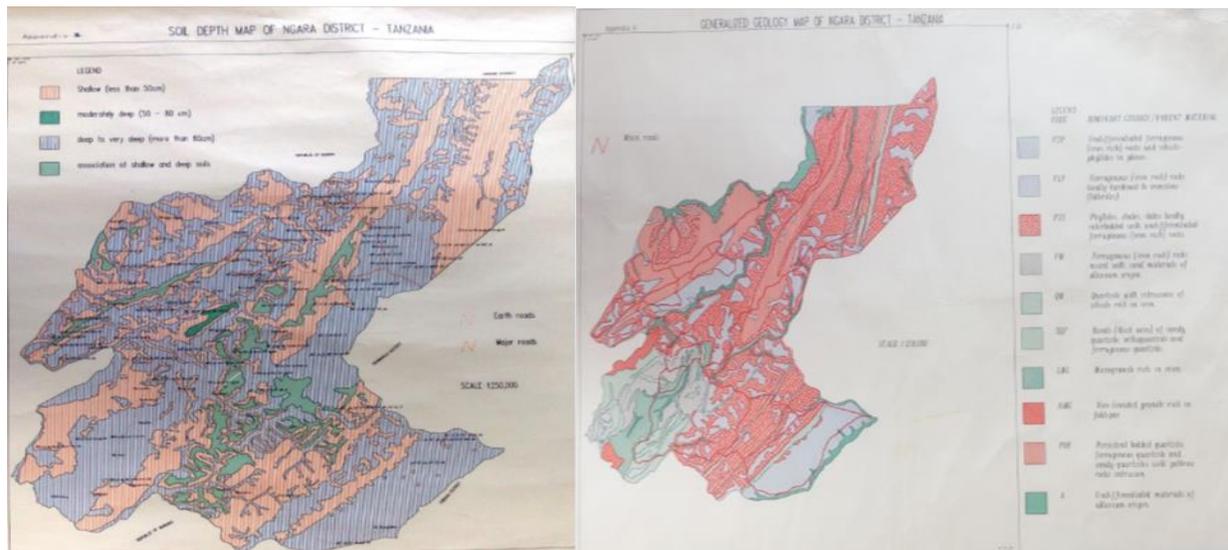


Figure 8: Map of Soil and Geology for Ngara District

(Source: Ngara District Social Economic Profile; 2018)

4.5 Hydrology

Surface water characteristics: Rusumo valley harbors three major watershed namely Ruvuvu (or sometimes called Ruvubu), akagera and Kagera Rivers. The river system is a southern portion of Nile basin. Ruvubu River originates about 300km distance from northern highlands of Burundi near Kayanza Town. The River flows its water southwards to Gitega (still in Burundi) and eventually to Rusumo valley through Ngara District in Tanzania. The name Ruvubu means "hippopotamus", because the river, at its origin is a home to a large population of hippos.

Akagera River also originates in Burundi from Lake Rweru and then flows eastwards along Burundi - Rwanda and Rwanda - Tanzania borders. Both Ruvuvu and Akagera Rivers form a confluence at Rusumo valley which resulting into Kagera River. Thus, Ruvubu and Akagera Rivers provide waters of Kagera River. Kagera River flows the northeastwards of the Rusumo

village to Lake Victoria through Karagwe, Kyerwa, Misenyi and Bukoba Districts. Rusumo falls are found approximately 100m from Ruvubu and Akagera Rivers confluence. The closest distance from project site to the Ruvuvu River is approximately 70meters



Figure 9: Ruvuvu River located 100meters from the proposed MV Electrical Line route

Source: Site visit, November/ 2021

Ground water characteristics: The water table in the project area is high and water is found at a depth ranging from 10.00m to 15.00m below the ground surface within the drilled depth. *(Source: Ngara District Social Economic profile; 2018)*

4.6 Land Uses

The land of Ngara district is loamy, clay, stretched with some hills, divided into arable land that is suitable for crop production while normal forests are used for grazing. Some areas are of high lands with rocks, stones and gravels which is not fertile for crops production. The largest land area of the Ngara district is used for grazing followed by settlement, arable land and agriculture

Agriculture activities and residential houses largely occupy the proposed project site. Based on the survey conducted by the Consultant in November/ 2021, most of the houses found within Rusumo Village consist of a cluster of low-rise buildings made of improved building materials such as burnt bricks, pitched roof with corrugated iron sheets, timber, wooden doors and cement floors. Institutions found at Rusumo Village include Police, schools, religious dominations, and several NGOs. Generally; the project site is located within the Urban setting environment dominated by Socio-economic activities. *(Source; Ngara District Social Economic Profile, 2018)*

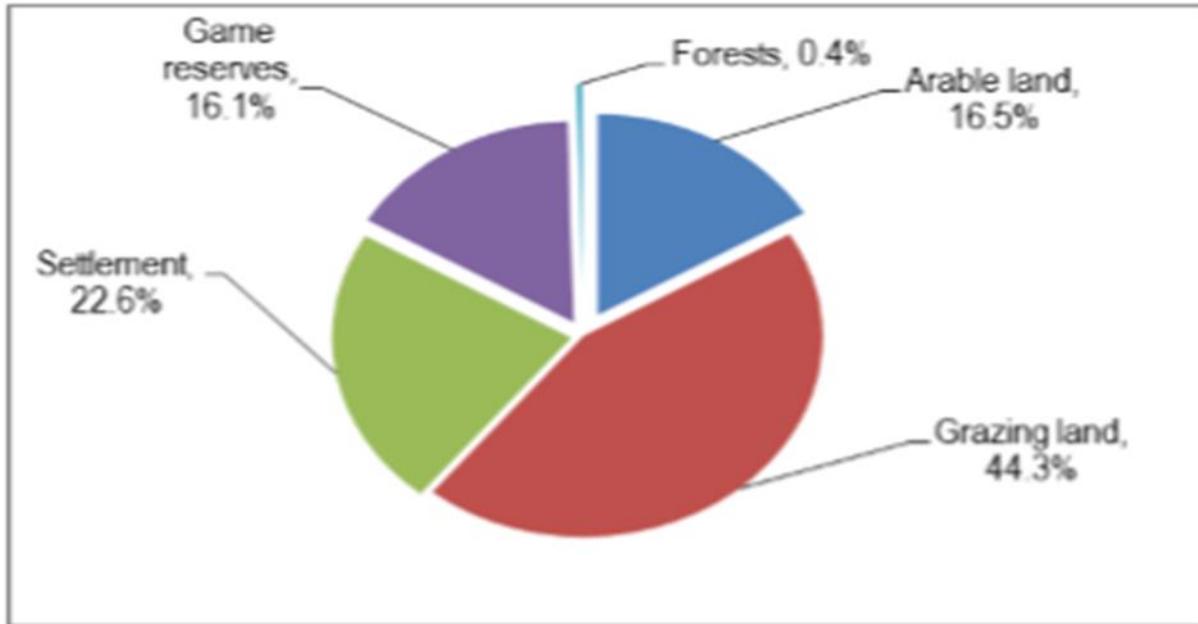


Figure 10: Land use pattern for Ngara District

Source: Ngara District Council Socio-Economic Profile, 2018

4.7 Biological Environment

4.7.1 Flora

The vegetation survey was conducted by involving local community in naming the tree species by their vernacular names. The identified tree species were then recorded and the list of tree species was compiled. Further investigation was conducted whereby the recorded list was used to identify the scientific names of the trees by comparing it against the National Forestry Resources Monitoring and Assessment of Tanzania (NAFORMA 2010). The recording of species involved the DAFOR system whereby D=dominant, A=abundant, F=frequent, O=occasional and R=rare.

Mainly exotic and little natural vegetation types adaptive to low land and sub montane habitat dominated the project area whilst the specific electrical line route (road reserve) is dominated by short grasses meanwhile there is no crops which will be cleared during the project implementation. The dominated vegetation species within the site specific (road reserve) is Scutch grass (*Elymus repens*). Dominant short grasses within the Right-of-way will be cleared off from the site to allow construction activities to be commenced.

The consultation with the local community and the inventory of the vegetation type available onsite mainly at road reserve both revealed that, there are no vegetation species that are of

conservation interests to stop implementation of the project, thus, withdrawing the project because of conservation purposes is less viable.

On top of that, the species of trees identified to the vicinity of the project area during the survey were also crosschecked against the IUCN list of species of special scientific and conservation interests and further revealed that there are no endemic or endangered species which need special attention during project commencement. The contractor is advised to confine all its activities only in the specified area for the existing Rusumo water treatment access road reserve to avoid vegetation distortion to the adjacent land parcels.



Figure 11: Grasses found within the proposed project site-Right-of-Way

Source: Site Visit, November/2021

4.7.2 Fauna

The proposed project site was surveyed using methodologies identified in Duthie 2000 coupled with the consultation of the local community. The consultation with the local community revealed availability of rabbits. The clearance will to some extent affect habitat and pattern of the food web for this organism. The site is also proximity to the built-up areas where the impact of noise is inevitable. This may affect breeding densities for some species however, new species mostly pests and undesirable species like lizards, scavenging birds, rats and snakes hiding may develop and be available in the structures.

The presence of the Nyakahanga and Nyakiziba roads, Residential houses and the associated socio-economic activities within and nearby proposed project site may have probably contributed to the limited number of particular species of organism's multiplication and distribution due to noise generated in this areas and fear of human. Therefore, through observation and interviews it was confirmed that no specific animals sign which suggest the availability of big animals in the area. It is also envisaged that no any fauna will be disturbing the construction activities, as the site is not nearby the wildlife areas.

4.8 Socio-Economic Environment

4.8.1 Population and Housing

The population of Ngara District has experienced significant growth in the last decade. Population has decreased by 4.29 percent in 2012 from 334,409 people in 2002 to 320,056 people reported in the 2012 Population Census, resulting in a significant decrease of 14,353 people during the inter-censal period. The 2012 population census put the council's population at 320,056 out of which, females account for 52.36 percent (167,613) of the population whilst the population for Rusumo Ward is about 27,425. The population composition of the Village in the proposed LADP project (Rusumo Village) is presented in Table 21. However; in this proposed Village, the sex ratio is less than 90.

Table 21: Population Distribution in the Rusumo Village.

			Population				Sex Ration
				Total Number			
Division	Ward	Name of Village	Households	Males	Females	Total	
Nyamiaga	Rusumo	Rusumo	780	1,520	1,786	3,306	99

Source: Village Council Records November/2021

Generally, Ngara District is one of the areas that might require great attention because had been receiving refugees from Burundi since 1993 and Rwanda in 1994 during the Great Lakes Refugee Crisis. A number of refugee camps were established to accommodate refugees and to date some of the camps have been closed. Despite of the recorded population data from existing district profile, consultant updated population data from respective Village.

4.8.2 HIV/AIDS Infections Status

The impact of HIV/AIDS pandemic have also replicated to the high rates of orphans experienced in the 2012-population census. Ngara District Council is among the councils in Kagera region with average rates of orphans of 8.1 percent. Orphan males were more than orphan females. There is a need for the council management to conduct a survey in order to know the current status of orphan hood and factors contributing to have higher rates of orphans and come up with solutions.

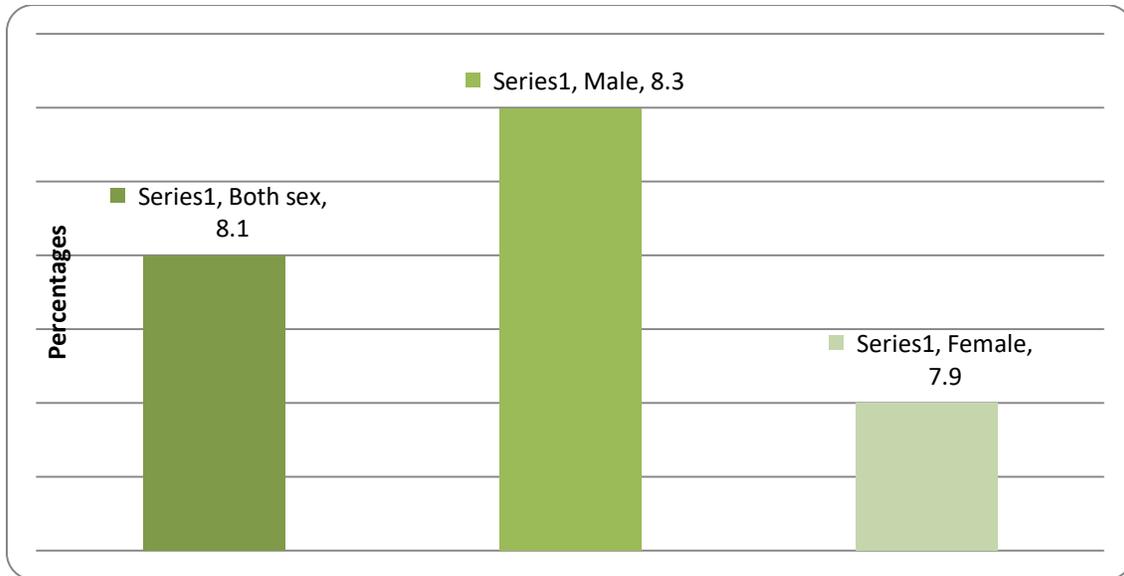


Figure 12: Percentage Distribution of Orphans by Sex,

(Source: Ngara District Council, 2012 Census)

4.9 Economic Activities

This section provides baseline information on economic activities in the project area as per requirements of EIA and EA regulations. These activities may not have direct impact to the proposed project, but may in one way or another influence activities, employments and income to the communities around the project area, district and regional and large.

4.9.1 Agriculture

The main economic activities in the proposed project village are agriculture, employment, livestock keeping, and small-scale enterprises. Agricultural crops include both food and cash crops. The main food crops are beans, bananas and maize. Other food crops include cassava, sweet potatoes, yams and vegetables. However, surplus production of food crops is sold to earn cash income to the households. Presence border and its associated activities is the essence of constructing the proposed project will create employment opportunities to the villagers. In addition, proposed project’s operations will enhance running of small scale businesses such as food vending and petty trading, retail shops, kiosks and food stalls that are regarded as alternative sources of income to the households.

At Nyakahanga Hamlet where the proposed project is located the major agriculture crops includes Banana, Sweet potatoes, and Cassava. The table below presents agricultural land productivity in Ngara District.

Table 22: Agricultural Land Uses in Ngara District

Agricultural land uses	Size (Ha)	Proportion
Total District's land Size	374,400	
District's arable land	303,483	81%
Arable land which is currently in use	64,940	21%
Land size suitable for Irrigation	5,000	2%
Non - arable land	70,917	19%

Source; Ngara DC Website: www.ngaradc.go.tz



Figure 13: Mixed crops in the backyard farming plots adjacent the way-leave - Nyakahanga Hamlet

Source; Site survey, November/ 2021

4.9.2 Livestock Keeping

Livestock keeping is the second most important economic activity after agriculture in Ngara DC. Most of the livestock keeping are cattle, sheep, goats and chicken. The Hangaza and Tutsi tribes are dominating in livestock keeping. Most of them develop scattered settlements in the district searching for green pastures. Also they practice shifting grazing around the district and nearby areas. Within the project village, livestock keeping is practiced at low level since it is an urbanized area hence experiencing challenges in grazing. Source; Ngara District Social Economic Profile; 2018

4.9.3 Other Economic Activities

Kagera Region Investment Guide (2019) mentions other economic activities in Ngara district to include local trade and businesses, tourism, mining (Kabanga Nickel Project) and cross border trade.

4.10 Economic Infrastructure

4.10.1 Transport Services

Roads

The truck road (T03) Isaka - Lusahunga - Rusumo passes across the village on its way to Rwanda. This road is in double surface treatment bituminous standard and was constructed late 1980's. Due to recurrent traffic loads, heavy down pour and ageing some of T03 road sections have been deteriorated such that there is significant number of pot holes that causing difficult passage of trucks. On the other hand the village has a total of 28km gravel local roads, which are well maintained and passable throughout the year.

Railway

Rusumo Ward including Ngara District is not serviced with railway transport. According to the Feasibility Study Report prepared by East African Community in 2010 there is plan for construction a railway line from Isaka to Kigali (in Rwanda) via Rusumo village. It is envisage that constructions of Isaka - Rusumo - Kigali railway line will easy transportation of passengers and goods at Rusumo village and in Ngara District at large

4.10.2 Electricity

TANESCO is the sole supplier of electrical power at Rusumo Village. Electricity supply in the village is not yet stable and faces a number of problems such as intermittent power supply, low voltage and rationing. In one way or another, these problems affect production of goods and services in the village. In order to eliminate problems related to power supply there is on-going Rusumo Hydro Power Generation Project under NELSAP that will produce about 80 MW to be equally shared between Tanzania, Rwanda and Burundi. Nyakahanga Hamlet where the proposed project is located has connected to national grid (TANESCO) since it is in urban area closely to Rusumo Boarder and village centre

4.10.3 Telecommunication

There has been a recent improvement in telecommunications within Rusumo Village. Six mobile phone service providers namely Airtel, Tigo, Zantel Vodacom, Halotel and TTCL are in operational at Rusumo Village. With the exception of a few areas, the mobile telecommunication networks can reach almost all parts of the village. Radio and Television (TV) broadcasts already reached Rusumo Village. TBC Taifa and Radio Kwizera are examples of radio broadcasts that can be received at Rusumo Village

Nevertheless, like other parts in Tanzania the access of some television network at Rusumo Village is subject to payment of monthly pre-paid service charges imposed at different rates depending on televised company and user requirement.

4.11 Social Services Infrastructure

4.11.1 Health Facilities

Ngara district, like other rural councils in the region, experiences shortages of health facilities, practitioners such as Medical officer, assistant medical officers (AMOs), nursing officers, pharmaceutical technologist, laboratory technologist, nutritionist, assistant laboratory technologist, pharmaceutical technologist assistant, clinical officers (COs), dental surgeon, dentist, nurses, physiotherapist, environmental health officers, assistant environmental health officers, health assistant, medical attendant, radiologist and radiographic assistants. These shortages cause unnecessary loss of people's lives due to incomplete treatment of preventable diseases. Top ten diseases in Ngara district are ARI, Malaria, Diarrhea, Pneumonia, intestinal worms, other diagnosis, skin disease, eye condition, emergency surgical condition and ear condition.

Ngara district is still improving the health sector by constructing and renovating health facilities, especially dispensaries and health centers. Ngara district had remained with only 60 health facilities in the last five years covering with 6 health centers and 54 dispensaries. It is obvious that, the available facilities cannot serve the ever increasing population of the district. The council authority should continue motivating the community to participate in current initiative of construction more health facilities in order to meet health strategies as stipulated in the Policy. Implementation of the LADP projects in the health sector, which include dispensary and health centers is expected to improve the situation in the district. There are three health centers at the

Implementation of the LADP projects in the health sector which include health Centers and Dispensaries is expected to improve the situation in the district. In Rusumo Village there is no any health facility hence LADP Phase I established a Health Centre which is expected to serve more than 20,000 people around the Rusumo Ward and the nearby Villages. Currently; inhabitants in Rusumo Village are obtain medical service at neighboring Villages of Kyenda, Nyamiaga and Mshikamano which is about 10-28Km.

4.11.2 Educational Services

Enrolment of primary school pupils dropped from 66,704 in 2013 to 61,164 in 2015 which was eight (8) percent decrease. The main reason attributed to the decrease of enrolment was the parents' lack of funds to finance school expenses including fees. In 2018 the enrolment increased by 38% compared to that of 2015. The increase was said to be due to the introduction of the new Government policy of free education for primary and secondary education. Rusumo ward having both primary school and secondary school owned by government. The proposed LADP projects phase two on construction of building facilities for two primary schools and five secondary schools are likely to improve the delivery of education services in the Ward and the district at large. Currently; Rusumo Village has only one Primary school whilst depending on Rusumo B secondary school which is about 12km from the Village.

4.11.3 Ethnic Groups

Ngara District council is among the seven district councils in Kagera region; experiencing slow population growth by natural birth and moderate population growth by migration. As a result, more ethnic groups are found in the council. However, among all people, the council has three main ethnic groups namely Hangaza, Shubi and Haya. Hangaza being the main ethnic group occupy most wards of the council, while Shubi occupy most of the Rulenge division and Haya are found mostly in Bugufi i.e. Kanazi and Nyamiaga Divisions especially in the high altitudes

4.11.4 Sanitation Services

With the exception of town centers such as Ngara Town, more than 90% of the households in the rural areas of the district use traditional pit latrines. There is an ongoing campaign in the district to ensure that each household owns and uses a latrine. The fact that only about 0.02% of the households is without toilets indicates success of the campaign.

4.11.5 Water Supply

The National Water Policy requires every person to get water within short distance from an improved source of water, such as piped water, protected boreholes, dug wells and springs. The region, therefore mainly uses different types of water sources including Rusumo water supply, shallow wells, bore holes, charcoal dams and surface water such as springs, lake, river and rain water harvesting. Rusumo Village where the project site is found obtains water from Mshikamano Village through a Pipeline. However; NELSAP Phase I project constructed Rusumo water supply scheme which intended to supply water in all five hamlets. Constructions of this electrical distribution line will improve water supply in the village and its hamlets. Other sources within the Village are Ruvuvu River, Kagera River, shallow wells and rain water harvest

Table 23: Number and Type of Rural Water Sources by Ward, Ngara DC; 2018

Water Source	Working	Percent Working	Not Working	Percent Not Working	Total	Percent Source
Charcoal	0	0	0	0	0	0
Spring	176	84.2	33	15.8	209	29.2
Shallow wells	236	112.9	50	17.5	286	39.9
Rain Water Harvesting	78	37.3	6	7.1	84	11.7
Bore Holes	24	11.5	4	14.3	28	3.9
Piped Scheme	38	18.2	7	15.6	45	6.3
	Permanent	Percent	Season	Percent		
River water	64	100	0	0	64	8.9
Lake	0	0	0	0	0	0
Dam	0	0	0	0	0	0
Total	616	86.0	100	14.0	716	100

Source: Compiled data from district executive director's office, Water Supply and Sanitation Department, 2017

4.11.6 Financial Services

Only two financial institutions are operating in Ngara DC which is NMB and CRDB Bank. There is local financial institute which is also operating in the district. This is an indication the council is in need of more financial institutions as there is an increase of number of formal and informal small scale businesses. Also the District council has some credit facilities targeted to women and youth. These credit facilities are provided to individuals as well as group for economic activities. Moreover; nowadays the raise of money transaction done through different mobile networks such as tigo pesa, Hallo Pesa, Mpesa and Airtel money has accelerated the growth of the financial services in the Ngara Town and Ngara District.

4.12 Income Poverty Rate, Poverty Gap and GINI Coefficient

The Poverty Gap is an estimate of how far the poor are below the poverty line, expressed as a percentage of the poverty line. The GINI coefficient is a measure of equality of the income distribution. A measure of 100 corresponds with complete inequality; a measure of 1 corresponds with complete equality. District poverty and GINI estimates show a negative correlation, indicating that low poverty rates are associated with a high inequality in income distribution.

According to the 2015 REPOA report (Where are the poor poverty map), Ngara District Council was among the low income councils on Tanzania Mainland in regard to the least number of people living below the basic needs poverty line. The Report indicates 41.7 percent of Ngara DC residents live below the basic needs poverty line.

The situation is different as regards to the GINI Coefficient Rate. All councils had better inequality and variation in the distribution of wealth in Kagera region

4.13 Database for Monitoring

To facilitate easy follow up and monitoring of socio-economic activities and development processes in general at the village level functional departments of Ngara District Council should be encouraged to track and keep in their databases data of their particular performance indicators at village level.

Each functional department should be required to update data using the variables contained in the Socio-Economic Profile of the District so as to enable one to make updated interpretation of the variables contained therein.

CHAPTER FIVE: STAKEHOLDERS CONSULTATION AND ANALYSIS

5.1 Introduction

The Environmental Management Act 2004 provides directives and guidelines on public participation during the EIA process. Regulation 17 under Part IV of the EIAAR 2005 stresses that “the Proponent or Developer shall in consultation with the Council, seek the views of any person who is or is likely to be affected by the project”. Section 89 of the EMA No. 20 of 2004 provides directives on public participation issues and its importance in ESIA. The EIA and Audit Regulations of 2005, provides further details and procedures for public participation in environmental assessments. Nevertheless; World Bank Environmental and Social Standards (ESS10: Stakeholder Engagement and Information Disclosure) 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. Generally; Stakeholders involvement ensures all interested and affected parties are involved in the project.

Consultant carried out consultations with stakeholders with the assistance from counterpart staffs from Ngara District Council. Consultation took place in the project community. Interviews were conducted with village government officials, local people representatives, Ngara District officials and Regional level officials.

5.2 Stakeholders Identification and Consultations

Section 89 of the EMA No. 20 of 2004 provides directives on public participation issues and its importance in ESIA. The EIA and Audit Regulations of 2005, provides further details and procedures for public participation in environmental assessments. In this ESIA the concept stakeholder was given a broad definition to encompass all key stakeholders required to be involved in the proposed project. The names and contacts of the people consulted are appended in this report (prior permission was granted to allow their details to be used in this report). To accomplish the need of getting the public’s opinion on the proposed project, discussions with communities residing or running businesses around the proposed facilities were conducted. Efforts were made to involve more women as they much highly affected by the particular project. All the respondents were in support for the project to be implemented and that construction of the MV Electrical Line is for their benefits. Their views and concerns have been included in the recommendations and suggestions part of this report.

Consultant carried out consultations with stakeholders with the assistance from counterpart staffs from Ngara District Council. Consultation took place in the project community. Interviews were conducted with village government officials, local people representatives, Ngara District officials and Regional level officials

5.3 Methods Used In Stakeholders Consultation

Various methods were used during consultative meetings subject to the nature of the information that was required. However, the following methods were pertinently used.

5.3.1 Semi-Structured Interviews with Key Informants

Semi-structured interviews were conducted with key informants at the, village, district and regional levels. At the district level semi-structured interviews were conducted with District Executive Officer and functional departmental staffs namely District Executive Director (DED), District Manager-TANESCO, District Manager-Tanzania Rural and Urban Roads Agency (TARURA), District Manager - Rural Water Supply and Sanitation Agency (RUWASA), District environmental Management Officer, District Land and Natural Resources Officer (DLNSO), District Livestock Officer (DLO), District Fire Office and all other related Departments at district level.

At the village level semi-structured interviews were conducted with Village Chairperson, Village Executive Officer (VEO) Ward Executive officer (WEO) and other nearby communities. These interviews enabled the consultant to have in-depth information on the socio-economic, political and cultural conditions of the people in the proposed project areas. The knowledge gained from the interviews helped the consultant to make evaluation of the socio-economic and cultural impacts.

5.3.2 Indoor Village Consultation Meetings

In the village, with the proposed project, the consultant made an indoor consultation meeting with the village council members and village influential persons. Subjects of discussion included the village social, economic, political, and cultural aspects including life styles of the community people and main ethnic groups of the village



Figure 14: Consultation meetings with Rusumo Villagers and Ngara DC CMT

Source: Site Visit November/2021

5.3.3 Public Village Consultation Meetings

Before conducting meeting, letters were sent to the selected villages in Ngara district with the proposed project. These letters were sent prior to the commencement of the study. The main aim of the stakeholder village consultation meetings was to inform the stakeholders about the proposed project and incorporate their views in the design of the mitigation measures. The specific aims of the consultation process were to; reduce problems of institutional coordination; provide precise information about the project to the communities; obtained the main concerns and perceptions of the stakeholders regarding the projects; and obtain opinions and suggestions directly from the affected communities on their preferred mitigation measures. The public stakeholder village consultation meetings were also intended to collect information regarding sources of livelihood, living standards, and views and perceptions of the communities regarding the proposed projects.

5.3.4 Direct Observation

During site visit to the proposed project site, indoor village consultation meetings and stakeholder public village consultation meetings the consultant made direct observation to phenomena and surroundings of the communities. In the process triangulation to counter-check information obtained through other described methods was possible.

5.4 Consultation Process and Stakeholders Consulted

The overall goal of the consultation process was to disseminate Project information and to incorporate the views of stakeholders in the design of the Environmental mitigation measures, management plan and Monitoring Plan. The specific aims of the consultation process are to improve project design and hence minimize conflicts and delays in implementation; Increase long term Project sustainability and ownership; and to gather the information needed to complete the assessment. Stakeholders consulted include those at village and district level. List of Stakeholders consulted and minutes during village meetings is as shown in Appendix I

Table 24: Status on the Consulted Stakeholders

Date	Venue	Stakeholders	Participants
09.11. 2021	Ngara District Council Conference Room	Ngara District Council Departmental Staffs	24
09.11. 2021	Ngara LADP Office	Ag. Environmental Officer & LADP Coordinator	4
09.11. 2021	Ngara District TANESCO Office,	Ngara District TANESCO Manager & TARURA	7
07.11. 2021	Rusumo Ward/Village	Direct and indirect project beneficiaries, and Village leaders.	90
Total			125

5.5 Stakeholders Concerns

In respect of the intended project activities, the stakeholders that were consulted raised concerns on a number of issues that need attention. The summaries of issues/concerns raised by stakeholders are as presented in Table 25.

Table 25: Concerns and Issues from Stakeholders' Consultations

S/N	Stakeholder	Issue/concern
1	District Executive Director (DED)	<ul style="list-style-type: none"> - Wider stakeholder consultations and community involvement with regard to land issues should be done before construction. - In order to avoid delays of the implementation of the proposed project, there should a memorandum of understanding between World Bank, NELSAP and Ngara DC - The district shall obtain written agreement/consent from TARURA to prove land use for the road reserve.
2	District Environmental Management Officer (DEMO)	<ul style="list-style-type: none"> - The issue was how environment can be protected to avoid environmental degradation. The district has managed to have bylaws that govern. The bylaws have been adopted from Environmental and Management act No.20 of 2004. - As a department for environment has managed to prepare monitoring strategies which will govern contractor from extracting construction materials. All materials must be sources from the designated areas. - Ward Executive Officers have been given by-laws that govern them on how communities are required to take care of their environment as per set guidelines. The issue still in question due to irresponsible leaders. - Management of solid waste is still a problem though the project design considered it. - Environmental Education should be properly provided to local residents and staffs for management and sustainability. - Contractor shall be well supervised to confine his construction activities to protect any possible detrimental impact to River Ruvuvu
3	District Community and Development Officer (DCDO)	<ul style="list-style-type: none"> - Community development had to be involved from the initial stage of the project development. - Each department should know that community development is a crosscutting issue that should be shared to the department too; DCDO has to be involved at early stages of the project to have better community participation.
4	District Land and Natural Resource Officer (DLNRO)	<ul style="list-style-type: none"> - The department is well informed about this proposed project. - Good enough, land is 100% owned by TARURA hence no any social conflict is expected from local community. - The proposed area has no any conflict, this has approved during Village General Assembly. - TARURA and Ngara DC shall be responsible to supervise all construction activities to make sure no any activity is conducted offsite.

5	District Planning Officer (DPLO)	<ul style="list-style-type: none"> - Education on proper land use plan should be given to all communities and to instruct them not to offer lands illegally to investors without prior permission.
6	TARURA-Ngara DC	<ul style="list-style-type: none"> - The land covered by the Rusumo Water Treatment Plant access road belongs to TARURA hence there will be no any land conflict. - The Contractor must be aware and well supervised during project commencement not to destruct individuals' properties beyond the project site.
7	TANESCO-Ngara Office	<ul style="list-style-type: none"> - The project scope is too small hence there will be no complications during implementation - The Contractor shall adhere to TANESCO rules and standards during construction - Electrical substation/transformer should be well fenced with all precautions to avoid accidents and incidents - Ngara DC should involve TANESCO technical personnel during project construction for technical advices
7	Rusumo Ward & Rusumo Village Officials and Villagers	<ul style="list-style-type: none"> - Employment should be given to the local people surrounding the project site - Local suppliers to be given priority during construction stage - The contractor should extract construction materials in an environmentally friendly ways. - They should participate in programs of developments of the Village - They should consider the safety of their workers - Construction activities will increase unplanned and early pregnancy cases, especially to School girls because their lusts they tend to date project workers. The contractor is advised to take precaution and strictly enforcement to his employees. - Connection of electricity at Rusumo Water Treatment Plant will improve clean and safe water supply in the village hence the project needs to be implemented immediately - If possible the Government should set a standby/backup generator in case of power outages.

Source: Consultant's Analysis from Stakeholders Consultation: November/2021

CHAPTER SIX: ASSESSMENT OF IMPACTS AND IDENTIFICATION OF ALTERNATIVES

6.1 Introduction

This chapter describes an assessment and analysis of the physical, biological and human environment impacts identified during ESIA. Since the proposed construction activities are in groupings that fall under similar geographical area, impacts were assessed in terms of their magnitude (size) and significance (importance) and actions necessary to mitigate them. Impacts' monitoring requirements are summarized in a section of this report. The proposed project is expected to have some impacts on certain aspects of the physical, biological and human environment of the proposed project area. These impacts may occur during construction or operation or during decommissioning phases. These impacts may be beneficial (positive) or negative.

6.2 Impacts Identification and Analysis

Impact identification is a process designed to ensure that all potential significant impacts are identified and taken into account in project design and implementation. A number of 'tools' are available to assist in impact identification. The simplest, and most frequently used, are checklists of impacts, although matrices, network diagrams and map overlays are also commonly used. In this study, a checklist and matrix methods were used. The checklists, developed from previous experiences, provide lists of potential impacts associated with specific activities. They provide a quick method of identifying the impacts and in such help also practitioners to avoid overlooking some of potential of the impacts associated with a particular activity. The matrix provides a rather systematic way of evaluating the identified impacts.

The Impact Identification Checklist was used for identification of impacts associated with the proposed project at different phases. The identification of impacts was based on the interaction between project activities during pre-construction or mobilization, construction, decommissioning or demobilization of the project and the characteristics of the project environment that could be affected. The main receptors of impacts associated with the anticipated project include human livelihood, public health and safety, physical environment (hydrology, surface water quality, soils, geology, vibration, air quality and noise) and biophysical environment (vegetation characteristic and fauna). In general, proposed project construction is for public interest, it has significant positive socio-economic impacts to the national, regional and local levels. Therefore; the project is accelerated to have potential impacts whilst on the other hand the proposed project contributes negative impacts to the general environments.

6.3 Potential Impacts during Mobilization and Construction Phase

Construction phase shall begin with the site preparations for construction works to take place. Construction Impacts have the potential to create nuisance for residents in the neighborhood, however these shall be managed within acceptable limits. In addition the construction impacts are also temporary in nature.

6.3.1 Potential Positive Impacts

6.3.1.1 Creation of Temporary Job Opportunities

Both direct and indirect forms of employment shall arise from the project initiation. Direct employment will be mainly through skilled and unskilled laborers whose workforce shall be needed to construct the proposed project and the ancillary infrastructures. Employment opportunities will be a benefit both in economic and social sense. In the economic sense it means abundant unskilled labor will be used in economic production. Several workers including casual laborers are expected to work on the site for a period that the project will start to the end. Apart from casual labor, semi-skilled and unskilled labor and formal employees are also expected to obtain gainful employment during the period of construction. *This impact is considered to be direct, positive, short-term and of moderate significance.*

6.3.1.2 Increased Income to Rusumo Villagers

There is an expectation that majority of unskilled labours will be employed from residents of Rusumo Village. This will increase the income to local people who might have the opportunities to be employed by the contractor. However, some of the villagers, especially women will also get opportunity to sell food items to the construction workforce, thus increase income at the household level. *This impact is considered to be direct, positive, short term and of high significance*

6.3.1.3 Benefit to Local Producers and Suppliers of Construction Materials

Construction of the proposed project and ancillary infrastructures has considered the use of local laborers and local available materials at Ngara District and nearby districts. This is economically and socially viable hence streamed as the efforts to improve the standards of living for local/internal suppliers. *This impact is considered to be direct, positive, short term and of low significance.*

6.3.1.4 Increased Human Capital

Villagers may gain new skills and knowledge from the people outside the village coming to seek employment in the project. *This impact is considered to be direct, positive, short-term and of moderate significance.*

6.3.2 Potential Negative Impacts

6.3.2.1 Air Pollutions (Fugitive Dust and Exhaust Emissions)

The proposed construction activities will involve Right-of-Way clearance, excavations of holes for utility poles as well as transportation of construction materials. This is likely to generate dust in and around construction site. Exhaust emissions from the trucks, machinery and construction equipment are likely to generate mixture of toxic gases such as carbon monoxide (CO), nitrogen oxides (NOX), Oxides of sulphur (SOX), Hydrocarbons (HC) and Suspended Particulate Matter and possibly Lead (Pb). Dust and exhaust emission may create nuisance and in extreme cases may lead into adverse health impacts. *This impact is considered to be direct, negative, short term and of low significance.*

6.3.2.2 Soil Erosion and Modification of Landscape

Clearance of vegetation due to construction activities will leave considerable soil surface to be exposed and can be easily eroded by runoff. Movement of heavy equipment to the site may lead into soil compaction and soil erosion. *This impact is considered to be direct, negative, long term and of high significance*

6.3.2.3 Population Influx (Labor Influx)

In many cases, labor influx is compounded by an influx of other people (followers) who follow the incoming workforce with the aim of selling them goods and services, or in pursuit of job or business opportunities. The influx of workers and followers can lead to adverse social and environmental impacts on local communities, especially if the communities are rural, remote or small. Such adverse impacts may include increased demand and competition for local resources and social services as well as for water demand, which can lead to price hikes and crowding out of local consumers, increased volume of traffic and higher risk of accidents, increased demands on the ecosystem and natural resources, social conflicts within and between communities, increased risk of spread of communicable diseases, and increased rates of illicit behavior and crime. These impacts need to be well mitigated. *The impact is considered to be negative of short-term duration with high significance.*

6.3.2.4 Increased Risk of GBV, SEA and Harassment

Males seeking employment in the project are likely to come there without their spouses. Women and girls are at risk of gender-based violence from such males seeking forced social relationships. Victims of violence can suffer sexual and reproductive health consequences, including forced and unwanted pregnancies, unsafe abortions, traumatic fistula, sexually transmitted infections including HIV, and even death. *This impact is considered to be direct, negative, short term and of high significance*

6.3.2.5 Generation of Human Sanitary Wastes

Contractor's workforce to be involved for proposed project shall generate liquid waste consists of grey water, urine and fecal matters at the site. If not properly managed, the anticipated liquid waste from construction workers can significantly impair aesthetic value of the proposed site as well as Ruvuvu River and cause threat to public health. *This impact is considered to be direct, negative, short term and of high significance.*

6.3.2.6 Generation of Solid Wastes

It is obvious that the proposed project construction activities will be associated with production of solid wastes. These waste streams are likely to be generated from fabrication and domestic activities of the workers at the construction site. The types of solid wastes likely to be generated during construction activities include vegetation residues, garbage, gravels, plastic waste (bottles and bag) and pieces of metals. All these if not well handled may cause environmental pollution and health and safety risks to workers and nearby community. *This impact is considered to be direct, negative, short term and of high significance*

6.3.2.7 Generation of hazardous waste

Hazardous materials that might be generated include insulating oils / gases (e.g. Polychlorinated Biphenyls (PCB) and sulfur hexafluoride (SF6) especially during the construction of substation/electric transformer. However; Repair and maintenance activities of construction machinery and equipment will produce significant quantity of hazardous wastes including used oil filters, scrap metals, waste oils, greases and used batteries. Improper handling of the generated hazardous wastes can lead into soil contamination, underground water pollution and public health threat. *This impact is considered to be direct, negative, short term and of medium significance.*

6.3.2.8 Vegetation clearing

Generally; the Medium Voltage electrical distribution line route crossing within the road reserve. The construction will commence with vegetation clearance at the road reserve. The road reserve is partly dominated by short grasses hence detrimental impacts resulted from vegetation clearance will be very limited. *This impact is considered to be direct, negative, short-term and of low significance*

6.3.2.9 Risk of Construction Materials vandalism

Generally; construction projects experience vandalism and theft of construction materials mainly by locals in conjunction with construction technicians. For the proposed project these acts of vandalism may take a number of forms including utility poles, electric conductors, working tools, theft of valuable spare parts and other accessories leading to an increase in the construction costs and state of trepidation to Contractor. Vandalism and theft acts will totally jeopardize the proposed project and subsequently cause directly great loss to the Proponent and Contractor. *This impact is considered to be direct, negative, short-term and of low significance*

6.3.2.10 Teenage Pregnancies

Teenage pregnancies are a global problem as well as Tanzania in particular but occur most often in poorer and marginalized communities. Early pregnancies remain the major contributors to maternal and child mortality whilst complications relating to pregnancy and childbirth are the leading cause of death for girls aged 15-18. Adolescent pregnancy can also have negative social and economic effects on girls, their families and communities such as drop out of schools, limiting opportunities for future employment, perpetuating poverty cycle, etc. Nevertheless; the proposed project will cause high socio interactions during construction state that may cause sexual interaction and sexual infidelity at Nyakahanga Hamlet/ Rusumo Village and nearby areas.

6.3.2.11 Risks of Leakage of Hazardous Materials

The project will utilize a number of chemicals during construction and maintenance of construction equipment. Some of the materials will have to be transported from outside the project area, and will therefore require special attention in their transport, handling, and storage. Such materials will include different grades of lubricants (oils, grease etc.) and fuels, (all hydrocarbons compounds), solvents, brake fluids, battery acid.

Leakage of such chemicals poses a risk of soil contamination as well as surface and groundwater pollution especially Ruvuvu river which is close to the project site. *The impact is will be direct, moderate, irreversible, and long term since when it occurs, clean-up of chemicals, apart from being very expensive, will take long time.*

6.3.2.12 Child labour, forced labour and human trafficking

Child labour, forced labor and human trafficking are the results of many factors, including poverty, social norms condoning them, lack of decent work opportunities for adults and adolescents, migration and emergencies. These factors are not only the cause but also a consequence of social inequities reinforced by discrimination. The project Proponent, Contractor, Consultant engineer and other stakeholders need critical attention to abide with employment Act

6.3.2.13 Creation of safety risks to local people

Workers working on site during development phase definitely will generate some wastes in solid and liquid form including human wastes. This might result into sanitary related diseases such as cholera, dysentery and alike. Depending on the number of construction workers and the season when work will be done the impact might become significance. Likewise, mismanaged solid wastes such as plastic bottles, food remains, used packaging material and alike might end up into drainage system and interfere the usual flow of storm water. This might also create untidy condition in the area while also creating favourable condition for germs. Furthermore; temporary disruptions in local electric-service will regularly happen during the construction phase. *The impact is considered negative, short term and of moderate significance*

6.3.2.14 Generation of Noise Nuisance and Vibration

Although not expected to create a significant negative impacts but the construction activities are expected to produce point source noise, which is defined as noise that remains in one place for extended period of time. For example, noise, which will be generated from site clearance in one location. Noise from a point source spreads spherically over distance, and travels in all directions equally from the source. Noise nuisance may also occur due to operation of construction machinery / equipment and movement of trucks transporting construction materials to the site mainly utility poles. The significant noise is expected from operation of noise creating equipment like grader machinery, winch for erection of utility poles and other construction activities will generate vibrations due to reactions between earth and the equipment. *This impact is considered to be direct, negative, short term and of low significance*

6.3.2.15 Soil and Water Quality Contamination

Project related with removing of earth materials could lead to soil and ground water quality degradation. Contaminated soil or ground water in the path of the project could be disturbed by excavation resulting in a potential transfer of the contaminants to surface water mainly Ruvuvu River. The excavated area, if linear could act as a conduit to extend groundwater contamination to new areas. Spills of hazardous materials in excavated areas during construction could introduce contaminants to ground water. The machines on site may be containing moving parts, which will require continuous oiling to minimize the usual corrosion or wear and tear. Possibilities of such oils spilling and contaminating the soil and water on site are real. Likewise, moving vehicles on site may require oil change. *It is expected that the impacts will be mild, local, and they will occur mostly during the construction stage (short term)*

6.3.2.16 Disruption of Traffic Flow

The proposed project involves site clearance of the road reserve as Right-of-Way and erection of utility poles meanwhile the existing road is currently used by local community. There will be frequent turning of motor grader and winch during site clearance and erection of utility poles respectively. This could result into disruption of movement of traffic along the road and if no measures are taken it could result into accidents and accumulation of trucks resulting into traffic jam. *This impact is considered to be direct, negative, short term and of medium-term significance*

6.3.2.17 Occupational Health and Safety Hazards to Workers

Project workers working near mobile equipment such as motor grader, Winch, unstable erected utility poles, loosen electrical conductors, e.t.c or members of the community near such equipment will be exposed to physical hazards due to the possibility of being hit, entangled, or crushed by the equipment during their operations.

Construction activities, involving the use of different construction materials will expose workers and the public to health hazards. Health hazards can be categorized into chemical health hazard (due to fuel, insulating Oil, dusts, gases, and fumes), physical health hazards to (due to heat, noise and vibrations, compressed air, and manual handling), and biological health hazards

Furthermore, during construction phase, workers are also likely to be exposed to diseases from building materials. It is therefore recommended that before the construction commences, there is need for the materials to be well inspected according to the occupational health and safety standards.

With clear instructions, safety measures, awareness training and protective equipment in place there are no features of the Project that would result in a higher potential for accidents, malfunctions, and unplanned events resulting in harm to workers, the public, or the environment to occur.

Also at the work place environment there are several issues on occupational health and safety has to be complied with which include the following;

- **Ergonomics hazards** (long standing hours, long working hours, working in confined space and lightning hazards.)
- **Biological hazards:** Physical risk factors to which workers are exposed on construction site include noise from vehicles, extreme air temperatures (hot and cold) during the seasons with extreme temperatures characteristic of a project area risk factor include contact with the bacteria, viruses, fungi which the construction workers come into contact due to diversity of people.

The impact is considered to be negative of short-term duration with high significance.

6.3.2.18 Possible Spread of HIV/AIDS, COVID-19 and Other Infectious Diseases

The main health risk associated with the project relates to the HIV/AIDS epidemic. Considering the socio-economic as well as geographical characteristics of the project area, there exist a number factors (including poverty) that either may influence high infection rate, or deter efforts to combat the epidemic. For example, the problem of low or irregular incomes among young women aged 15 – 45 years is the HIV/AIDS risk factor, which can influence high infection rate in the project area. It is expected that the project will increase interaction between people in the cause of livelihood sustenance or social relaxation. Nevertheless; the social interactions may influence COVID-19 transmission among workers and the local community.

6.4 Demobilization Phase

6.4.1 Positive Impacts

6.4.1.1 Restored Clean Site

It is anticipated that soon after completion of construction works for the proposed project the Contractor will be caused to remove all unwanted and left over materials from the site. Similarly, all loose soil found within excavated areas either within or along the project site will be backfilled and properly compacted to allow uninterrupted use of land by the general public. *This impact is direct, positive, long term and of medium significance.*

6.4.2 Negative Impacts

6.4.2.1 Loss of Employment and Economic Activities at the End of the Project

The local people who will be benefiting from the project during construction phase through selling of their commodities and services to the construction workers will lose the created potential market during previous phase. This situation will result into loss of household income to Rusumo Villagers.

Laborers who will be employed during the construction phase will lose job after decommissioning of the project phase. Some labours may change job and be employed to work on industries that will emerge and some may leave the place for other jobs in other areas. In most cases most laborers employed during construction phase are semi-skilled laborers that

move to seek for similar jobs in other areas. *This impact is rated as moderately significant with wide spread impact occurring over short period of time.*

6.4.2.2 Deterioration of Ambient air Quality

Demobilization; mainly collection, and transport of wastes will generate dust. The dust generated will affect workers at the site as well as residents as the trucks move across settlements. *The impact is gauged to be direct, moderate, reversible, and short term.*

6.4.2.3 Generation of Solid Wastes

Solid waste generation will be very limited due to the project scope to be small hence solid waste might be generated are as scrap metals, Oil cans, dilapidated utility poles and working tools of which at the end of the construction phase are likely to cause scenic degradation, pollution and become an eye sore.. *The impact will be indirect, minor, short term, and reversible since it disposal of solid and liquid wastes shall be part and parcel of the construction activities of the project.*

6.5 Potential Impacts during Operational and Maintenance Phase

The operation of the proposed project will potentially be related to changes in the biophysical and socio-economic environment within and around the project area.

6.5.1 Positive Impacts during Operation Phase

6.5.1.1 Improved Water Supply

Construction of Medium Voltage electric distribution line is directly improving clean and safe water supply in Rusumo Village and its hamlets. The impact due to improved water supply shall be enhanced by ensuring that repair and maintenance of the electrical line with ancillary equipment are done properly and on timely and Installation of standby diesel powered generator as power backup. Water treatment and supply depend on continuous, uninterrupted electricity to run operational equipment. *The impact will be direct, major, and long term, and reversible.*

6.5.2 Potential Negative Impacts

The proposed development will cause significant disturbances within the area, which shall be kept at controllable levels.

6.5.2.1 Impact on Vegetation

Unchecked growth of tall trees and accumulation of vegetation within rights-of-way may result in a number of impacts, including power outages through contact of branches and trees with distribution line and utility poles; ignition of bush fire; corrosion of steel equipment; blocking of equipment access; and interference with critical grounding equipment. Nevertheless; Regular maintenance of right-of-way to control vegetation may involve the use of mechanical methods, such as mowing or pruning machinery, manual hand clearing and herbicide use that may disrupt

habitats as well as food web for tiny creatures/organisms. Excessive vegetation maintenance may remove unnecessary amounts of vegetation resulting in the continual replacement of successional species and an increased likelihood of the establishment of invasive species. *The impact is gauged to be direct, moderate, reversible, and long term.*

6.5.2.2 Avian and Bat Collisions and Electrocutions

The height of distribution poles and the electricity carried by distribution lines can pose potentially fatal risk to birds and bats through collisions and electrocutions. Avian collisions with power lines can occur in large numbers if located within daily flyways or migration corridors, or if groups are traveling at night or during low light conditions (e.g. dense fog). In addition, bird and bat collisions with power lines may result in power outages and fires. *The impacts will be direct, moderate, long term, and irreversible. The impact will be residual because accident cannot be prevented fully.*

6.5.2.3 Aesthetics and Visual Impact

The aesthetic impact of electrical lines is a subjective matter determined by individual preferences. The utility poles might be perceived as architectural monuments and symbols of development or as intrusions in the landscape. The attitudes and perceptions will change over time. However, it is fair to say that the visual impacts of power lines in most cases will be regarded as negative.

The impacts are caused by two elements: the towers and the way-leave where the taller vegetation is removed. In an open landscape it is the tower themselves and to some extent the conductors that will make the visual element. *The impact is gauged to be direct, Low, irreversible, and long term.*

6.5.2.4 Impacts of Electromagnetic Waves on Human Health

Electric and magnetic fields (EMF) are invisible lines of force emitted by and surrounding any electrical device (e.g. power lines and electrical equipment). Electric fields are produced by voltage and increase in strength as the voltage increases. Electric field strength is measured in volts per meter (V/m). Magnetic fields result from the flow of electric current and increase in strength as the current increases.

Electric fields are shielded by materials that conduct electricity, and other materials, such as trees and building materials. Magnetic fields pass through most materials and are difficult to shield. Both electric and magnetic fields decrease rapidly with distance.

Although there is public and scientific concern over the potential health effects associated with exposure to EMF (not only high voltage power lines and substations, but also from everyday household uses of electricity), there is no empirical data demonstrating adverse health effects from exposure to typical EMF levels from power transmissions lines and equipment.

Even though there are no concrete scientific proofs, it is thought that the electromagnetic waves generated along the distribution line may cause health problems to the people who are directly

exposed to them for a long period of time (8 hours per day). The exposure limits stipulated internationally define 5kV/m as the maximum allowed limit for human exposure. Thus precautionary attitude should be maintained and measures taken that may avoid the occurrence of possible effects of those waves to human health.

Also the strength of the magnetic field depends mainly on the configuration of the conductors, the operational mode of the line and also magnetic field will be below the ICNIRP standard at the edge of a 35 meter way-leave. *The impact is gauged to be direct, Low, reversible, and long term.*

6.5.2.5 Accidents and Hazards

Medium Voltage power lines are associated with electrocution, electrical shocks and burns risks that can significantly affects human beings and climbing/flying animals particularly pedestrians, motorists along the road as well as people staying nearby. This risk is along the entire line together with its substation/transformer. Fall of utility poles due to any causative factor is another risk that may pose safety risk to the aforesaid groups. However, the effect or risk will be more fatal to the populated locations. *The impact is gauged to be direct, High, reversible, and long term.*

6.5.2.6 Generation of Hazardous Waste

During operation of Medium Voltage electric distribution line several hazardous materials will be used periodically for maintenances. Insulating oils (Polychlorinated Biphenyls (PCB) will be used for cooling transformer at the substation meanwhile Sulfur hexafluoride (SF6) may also be used as gas insulator for electrical switching equipment and cables. These gases contributing potent greenhouse gas with a high global warming potential, and its concentration in the earth atmosphere is rapidly increasing. During its working cycle, PCB and SF6 decompose under electrical stress, forming toxic byproducts that are a health threat for working personnel in the event of exposure such as acne, rashes, irritating the nose and throat while higher exposure can cause pulmonary edema, headache, suffocation, fainting, etc. *The impact is gauged to be direct, Low, reversible, and long term.*

6.5.2.7 Occupational Health and Safety Risks to Workers

Occupational exposures are mostly related to maintenance and operation activities at the electrical line and substation/transformer. Workers may be exposed to occupational hazards such as direct contact with live power lines, when working at the height on utility poles and structures during maintenance operation. Moreover; workers typically have a higher exposure to EMF due to working in proximity to electric power lines. Occupational exposures to chemicals primarily include handling of pesticides (herbicides) used for right-of-way maintenance and exposure to PCB and SF6 in transformers and other electrical components which in-turn producing toxic byproducts that are health threat for workers. *The impact is gauged to be direct, High, reversible, and long term.*

6.5.2.8 Impacts due to regular power Interruption

Electrical disturbance/Distortion is likely to be caused by electrical equipment interaction in domestic buildings, commercial organizations, and small industries as well as by operational activities taking place on the utility system. Once an electrical disturbance has been caused, the wiring network carries the disturbance to other equipment, and may aggravate the disturbance, especially if there are wiring problems in the network. Finally, the disturbance reaches sensitive connected equipment, which reacts to the disturbance such as Transients, Sag, Swells, Harmonics, etc. Excessive power disturbances may cause power interruption/outages to the water treatment plant hence lead to failure of water treatment and supply which may pose potential adverse impacts due to lack of clean and safe water to households.

6.5.2.9 Increased Pressure on Natural Resources due to population increase

The constructed electrical distribution line is significantly improving clean and safe water supply in the village which is likely to cause population increase “Pull Factor” at Nyakahanga Hamlet and Rusumo Village in general. The increased population in turn will lead into pressure on natural resources as well as to social amenities if not well managed. *The impact is then considered to be negative of long-term duration and medium significance.*

6.6 Potential Impacts during Decommissioning Phase

Decommissioning forms the end part of the project life cycle. The proposed project is not expected to end at near future due to its nature and inelasticity. However; if decommissioning becomes inevitable due to any causative factors such as if the constructed electric line need more improvement and extension then the Closure Plan must be abided.

Decommissioning may involve excavation and other activities that will lead to temporary increase in noise and vibration as well as air pollution due to dust emissions. The deconstruction of public utilities alongside the road will also result in the creation of both solid wastes that needs to be handled according to waste management regulations.

The earth moving works during topsoil replacement will lead to significant deterioration of the acoustic environment within the area and the surrounding areas. This will be as a result of the noise and vibration that will be experienced from machines and workforce being utilized. Dust will also be emitted affecting the surrounding environment. The decommissioning works will involve occupational health and safety risks similar to those of the construction phase.

6.7 Consideration of Project Alternatives

The ESIA study requires identification and analysis of project alternative, which includes consideration of different options in implementing the project. Identifying project alternatives provides the chance to compare different options, the advantages and disadvantages of implementing a specific option. Conducting environmental assessment for each project alternative helps to weigh out the best alternative that meets the project objective. In the analysis of these options, it is also important to consider the no project alternative, which will help to assess what will happen in the absence of the proposed project. The analysis of project

alternatives in this study has considered several options as discussed in the following sections.

6.7.1 No Project Alternative (Zero option)

The No Project option in respect to the proposed project implies discontinuation of the project proposal hence the status quo is maintained. The result is the site being retained in its existing form that means the Rusumo Water Treatment Plant should not be connected with electrical power from TANESCO. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions. This option will however have the greatest implications on the socio-economic environment of the area and surrounding communities. This will mean the proposed project if will not be commenced and Rusumo Water Treatment Plant will remain underutilized for the specific purpose it is supposed to serve.

In other words the “Zero Option” is not in line with the Government policies of improving the investment development in order to achieve the requirements of National Strategy for Growth and Reduction of Poverty II (NSGRP II/MKUKUTA) as envisaged in the Tanzania’s Development Vision (Vision 2025) which stresses on development and commitment to regional and other international initiatives for social and economic development and industrialized Tanzania.

The No Project Option is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

- Unimproved clean and safe water supply coverage to the majority rural population in Rusumo Village
- Unprotected public health as the cases for water born and water related diseases will be significantly increased due to inadequate supply of clean and safe water for domestic consumptions
- Increased Poverty cycle among the households because most of the time will be spent for fetching water instead of undertaking income generating activities.
- Increased in project running cost

From the analysis above, it becomes apparent that the No Project alternative is not attractive to the local communities in Nyakashinga hamlet, Rusumo village, Ngara District and Kagera region at large.

6.7.2 Alternative on project location

Therefore, option considerations in route selection were done through Google earth and ground verification so as to identify challenges such as traversing line through wetlands, floodplains, swamps, quarry sites, terrains, etc. Therefore, after ground verification the study realised that the selected route is the most optimum route as it has avoided socio-economic and physical hindrances. The proposed line route is properly surveyed and pole schedule is made available

and that the route is chosen based on technical, economical, safety and environmental issues. The proposed route is passing within the road reserve which owned by TARURA hence no social and economic displacement to local community.

6.7.2.1 Advantages of the proposed project location

- Less adverse impacts on environmental resources i.e. water, vegetation, biodiversity, habitats, air etc.
- The project intends to replace the existing single phase by three phase electrical lines.
- No economic and social displacement
- No impacts on cultural heritage sites.

6.7.3 Energy Supply Alternative

In order to ensure continuous water supply to Rusumo villagers while avoiding power interruptions during pumping of water to the elevated water storage tank, the following three (3) energy or power sources were examined by the designers: :

- National Grid Electricity;
- Solar Panels; and
- Diesel Engines

6.7.3.1 National Grid Electricity

Rusumo village is connected to the National grid electricity through existing 11kV TANESCO power lines. Currently; the project site is connected with Single phase electrical line which has proved failure to operate the existing treatment plant. It is therefore recommended by designers that the installed pumps for Rusumo water supply scheme shall use Three Phase electrical lines from TANESCO. The selected option for energy source has the following advantages:

- It is the replacement of single phase by three phase
- It has minimum investment and operation costs
- It does not require intensive security measure against vandalism
- It is environmentally friendly as the project is closest to the Ruvuvu River.
- The voltage supply can be augmented through on-going Rusumo Hydroelectric Power Generation Project which will contribute about 17 MW to the TANESCO power lines.

6.7.3.2 Solar Panels

Nowadays Photovoltaic solar panel (PV) power system is used in Tanzania to provide affordable and sustainable power supply to number rural water supply schemes. Through PV method electricity is directly generated by converting solar radiations using semi-conductors that display the photovoltaic effect. One of disadvantage of PV technology is that the magnitude of energy generated depends on the amount of photovoltaic material available to harness solar energy, and on the intensity and duration of sunlight. In this context use of solar powered pumps is only feasible for small scale water supply scheme. Technical analysis of the option to

construct as solar powered water supply scheme at Rusumo village provided the following demerits:

- The system could result into huge investment cost, this is explained by the fact that in order to operate a designed high lift pump (Head = 280m, Discharge = 36m³/hr) large number of panels are required with approximated area of 5,000m².
- PV power system requires intensive security measures against vandalism on the panels, batteries and inverters

Based on above mentioned limitations the option for providing solar powered pumps to the proposed Rusumo water supply scheme was discarded by designers

6.7.3.3 Diesel Engine

Early in 2000's many village water supply schemes under Rural Water Supply and Sanitation Project (RWSSP) were installed with Diesel Engine driven pumps. As of today majority of diesel engine power water supply scheme under RWSSP proved failure due to the following constraints:

- The system generally reflects high operation cost through fuel/diesel consumption which often fluctuates in the global market.
- Lack of community to undertake repair and maintenance works of the installed diesel engine. Recalling that Water Supply and Sanitation Act (2009) vests power to COWSOs in managing village water supply schemes
- Unavailability of prime spare parts at the District and Regional levels. Majority of spare parts are available in Dar es salaam or sometimes have to be imported from the manufacturer

With experience gained in RWSSP and availability of TANESCO power lines at Rusumo village, the option for constructing a diesel engine powered water supply scheme was observed not feasible. Thus, use of electricity from National grid proved convenient for the proposed Rusumo village water supply scheme. In the environment point of view diesel engines produce loud noise and sometimes after certain period of constant use emit heavy black smoke due to incomplete combustion of fuel hydrocarbon, which result into air pollution

6.7.4 Alternative on Pole Types (Structures)

By considering urgency for the electric distribution line to the Water treatment plant, land profile, requirements for acquisition of right-of-way and resource constrain including workforce, structures for distribution line had to be carefully examined. Alternatives of structures were highlighted and discussed as follows:

- a) Wooden Utility Poles:** These are mostly used to distribute lower voltage power to customers/end users, durable, environmentally friendly and cost-effective. Wood is light and tough easy to be hauled even on rugged terrains; also wooden utility poles endure heavy loads. Fewer wooden utility poles than steel or concrete ones are required per

kilometer which means lower costs. Wooden utility poles are easily accessible/obtained, less time consuming during construction and less expensive.

- b) Self-supported Steel Lattice Towers:** These are mostly preferred in high voltage mainly transmission lines and NOT in distribution lines. Moreover; Lattice tower are self-supporting type and suitable for long distance high voltage transmission line. Strong, stable, reliable, less maintenance cost but higher investment cost and will need higher engineering skills. Also lattice tower have greater mechanical strength, long life span, can withstand the severe climatic conditions and construction of lattice tower is relatively complicated as the towers are being transported separately and assembled on site. These tower-types demanding large number of workforce and working equipment compared to wooden utility poles.

The proposed Medium Voltage 11KV distribution line project will opt for the Wooden Utility poles rather than other mentioned structures above due to the mentioned factors.

6.7.5 Alternative to Conductor types

6.7.5.1 Aluminium Conductor Steel Reinforced (ACSR)

In this proposed project with Medium Voltage 11kV distribution line, Aluminium Conductor Steel Reinforced (ACSR-100mm²) will be preferred) due to the following features:-

- i. High strength to weight ratio;
- ii. Less sag than other conductors;
- iii. Improved electrical properties mainly overhead power lines;
- iv. Excellent resistance to corrosion decent mechanical stress resistance
- v. Higher operating efficiency of the line.
- vi. The outer strands are high-purity aluminium
- vii. Low cost

6.7.5.2 All Aluminum Conductor (AAC) to COPPER or AAC and Aerial Bundled Conductor (ABC)

The standard service line according to electricity Act 2008 (Cap 131) Regulation 2011 No. 2, is defined as “ a Service line not exceeding thirty meters in length in the nearest tapping point from distributing main line to the point of metering at the customer premises”. The service line conductor size shall depend on the loading of the premises to be supplied with the electricity and the conductor type can either be AAC to Copper or AAC and ABC only. This service shall either be Single Phase and Neutral (SPN) or Three Phase and Neutral (TPN) type and at supply voltage of 230 ±5% Volts SPN or 400 ±5% Volts TPN.

However; this types of conductors are not suitable to the proposed project since they are for single phase electrical line.

CHAPTER SEVEN: IMPACTS MITIGATION AND ENHANCEMENT MEASURES

7.1 Introduction

This chapter presents mitigation measures and/or compensatory actions and enhancement measures for the identified impacts. Many of the potential impacts identified in the preceding chapter can be eliminated or reduced/enhanced through the implementation of appropriate mitigation/enhancement measures either at the planning stage or when applied to specific project tasks and activities.

The proponent will ensure that any significant impacts identified is managed (mitigated/enhanced) within its capability in collaboration with other relevant stakeholders. A contractor on behalf of the proponent will:

- Plan and design the project with environmental consideration to reduce the impacts to the natural and social environment;
- Raise awareness of employees and communities surrounding the project site regarding environmental protection, social interaction with communities, security, safety and health issues (e.g. infectious diseases such as HIV/AIDS, COVID-19, STIs, accidents and theft);
- Ensure daily environmental and safety management best practices to minimize and prevent accidents, spill of hazardous material, soil erosion and improve waste management;
- Put in place a mechanism for waste collection and safe disposal of all kinds of wastes generated from the working site;
- Make a provision of monitoring the implementation of mitigation measures during construction and operation phases; and
- Continually improve the mitigation measures following monitoring and evaluation exercise.

7.2 Mitigation Measures during Mobilization & Construction Phase

7.2.1 Enhancement Measures for Positive Impacts

7.2.2 Employment Opportunities

- The Proponent shall be encouraged to employ local, unemployed yet willing to work hard, manpower to the extent viable subject to a maximum of 50% unskilled labor. This will ensure that local people are more benefited out of the project.
- In search for skilled labors, the Contractor must first look in the village/District before going on to other villages/Districts.
- Employment should be on equal opportunities for both gender
- Proponent shall not cause children under the age eighteen (18) to be employed or be engaged in any project activities.

7.2.1.3 Increased Income to Rusumo Villagers

- The Contractor must ensure that the laborers are paid as per Tanzania's Minimum wages
- Ensure all payments are timely completed
- The contractor should purchase the required and available materials from local vendors

7.2.1.4 Increased Income Generation Activities to Local People

- Food vendors shall have the market opportunity for the workers engaging in construction activities
- Encourage women to participate in the food vending business

7.2.1.5 Increased Human Capital

- On the job-training to villagers when working with skilled projects' personnel

7.3 Mitigation Measures for Negative Impacts

7.3.1 Vegetation clearing

The selected Medium Voltage electrical line route passes within the road reserve which dominated with short grasses. However; the contractor must take the following measures to avoid any possible detrimental impacts;-

- The problem could be minimized by confining the construction activities within the specific project site/Right-of-Way
- The Contractor shall avoid unnecessary clearing of vegetation beyond the project site construction area.
- The contractor shall use the existing designated areas at Rusumo Water Treatment Plant for stockpiling and preparation of all construction materials to avoid unnecessary vegetation clearing beyond the project site

7.3.2 Generation of Noise and Vibrations

Despite that only motor grade will be used for site clearance hence the Contractor should use the following mitigation measures;-

- The Contractor shall avoid use of construction equipment that generates loud noise due to poorly tuned engines or damaged exhaust pipes. The construction machinery must be properly tuned and exhaust pipes fitted with mufflers.
- Adhere to Section 62 of Occupational Health and safety Act (2003) and Section 126 of Factories (Building Operations and Works of Engineering Construction) Rules, 1985, by ensuring that workers exposed to noise level above the limit of 85dB are equipped with ear plugs to protect them against excessive noise level
- The Contractor shall avoid prolonging construction works that produce high pitch noise within the residential areas during the dusk hours (18:00 – 06:00 hours)

7.3.3 Air Pollutions (Fugitive Dust and Exhaust Emissions)

Although air pollution is less anticipated due to the scope of the project being smaller; then the following mitigation measures must be undertaken by the Contractor

- The Contractor shall regularly apply water sprinkling on created dusty areas especially during undertaking clearance to minimize dust emission.
- The Contractor shall provide dust protection masks to construction workers.
- The Contractor shall ensure that appropriate construction equipments that do not emit fumes and smokes are used for construction works

7.3.4 Generation of hazardous waste

- Separate all hazardous wastes from domestic waste during collection and transportation
- Equipments' mechanical repair activities shall be conducted on proper designated space within the Construction site
- All generated hazardous during construction activities shall be temporarily stored at designated area at the site and then to be removed from site by a registered hazardous waste dealer.
- Replaced oil and brake fluid to be properly handled in a designated area with primary and secondary containments prior to be disposed by an authorized dealer

7.3.5 Generation of Solid Wastes

- Waste management on site shall be strictly controlled and monitored. Only approved waste disposal methods shall be allowed.
- Ensure that site personnel are instructed in the proper disposal of all waste.
- Ensure that all facilities are maintained in a neat and tidy condition and the site shall be kept free of litter. Measures shall be taken to reduce the potential for litter and negligent behavior with regard to the disposal of all refuse.
- At all places of work provide litterbins, containers and refuse collection facilities for later disposal.
- Solid waste may be temporarily stored on site in a designated area prior to collection and disposal. Waste storage facility shall be covered, tip-proof, weatherproof and scavenger proof. The waste storage area shall be fenced off to prevent wind-blown litter.
- No burning, on-site burying or dumping of waste shall occur.
- All solid waste shall be disposed of offsite at an approved landfill site.
- The non-reusable and non-recyclable wastes shall be collected and transported to the dumpsite for final disposal

7.3.6 Population Influx (Labor Influx)

- Establish transparent recruitment procedures to avoid site followers in form of job-seekers
- Establish a recruitment policy that gives priority to local residents for less specialized services
- Recruitment procedures to be shared with the local authorities for further dissemination
- Opportunities for sub-suppliers and sub-contractors should be awarded to local firms which in turn employ local labour

- Conduct public health campaigns addressing issues of behavioral change, water and sanitation, malaria, HIV/AIDS, etc.

7.3.7 Increased Risk of GBV, SEA and Harassment

- Regular training for workers on required lawful conducts in the project communities.
- Creation of partnership with local offices of the Ministry of Women Affairs and Youth Development, NGOs and community women groups to report workers' misconduct and complaints/reports on gender-based violence
- Provision of opportunities for workers to regularly return to their families or take advantage of entertainment opportunities away from rural host communities.
- Gender based equal opportunities in all project phases
- Create opportunities for employment of women in both management and casual placements
- All gender based employment must consider labor act (18+ Years and above)

7.3.8 Soil and Water Quality Contamination

- Proper handling of generated solid and liquid waste.
- Construction equipment shall be serviced in a designated area with concrete surface
- All generated hazardous waste during construction of activities shall be temporarily stored at designated area comprised with primary and secondary containments prior to final disposal by the Authorized Contracted contractor
- No waste shall be disposed into waterways or streams

7.3.9 Risk of Construction Materials vandalism

- Installation of lights in strategic areas to illuminate especially at the materials' storage area and nearby areas.
- Regular Community awareness campaign to create sense of ownership
- Materials to be stored in the existing storage facilities at Rusumo Water treatment premise
- Employment of sufficient number of security guards

7.3.10 Disruption of traffic flow

- During site clearance at Right-of-Way/road reserve only qualified operator with appropriate operating license shall be engaged
- Flagman should be onsite to guide motorists and other road users
- Promoting safe drive with specified hours for long drive to avoid fatigue
- Provision of road and safety signs shall be done on site and surrounding areas that are to be followed by public drivers in collaboration with local authority

7.3.11 Generation of Human Sanitary Wastes

- Contractor may use the existing toilets at Rusumo Water Treatment Plant premise during the construction period of six (6) days

- Pit latrines and/or septic tanks/soak-away pits at the site for liquid waste collection; shall be properly used and being emptied if is fully.

7.5.1.1 Possible Spread of HIV/AIDS, COVID-19 and Other Infectious Diseases

- Workers will be sensitized on the issue of HIV/AIDS and STDs and on the usage condoms etc.
- Establishment and implementation of HIV/AIDS awareness and prevention programs.
- HIV/AIDS testing will be conducted and counseling services will be done
- Providing protection gears where needed such as condoms
- Workers and the nearby community will be sanitized on the issues of COVID-19 and protection measures
- The contractor shall provide employment priority to local unskilled laborers to minimize number of new comers
- The Contractor shall develop and implement HIV/AIDS and STIs prevention and control programme
- The Contractor shall put in place the COVID-19 contingency plan developed by Ngara District Council

7.3.12 Creation of occupational health and safety risks to workers

Mitigation measures to workers as the results of being exposed to Transformer/Insulating Oil for a prolonged time;-

- Use barrier creams to prevent skin contact
- Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit
- Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible
- The most suitable glove should be chosen in consideration to MSDS
- Use engineering controls to reduce air contamination to permissible exposure level hence wash promptly with soap and water if skin becomes contaminated
- Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit
- Avoid spilling Always remove oil with soap and water or skin cleaning agent, never use organic solvents. Do not use oil-contaminated clothing or shoes, and do not put rags moistened with oil into pockets

Other mitigation measures include;-

- The use of proper lifting equipment to erect the utility pole and not manually.
- Ensure the electric current is turned off throughout the construction work
- Newly recruited linesman with little knowledge and experience should not be allowed to carry out other works apart from hole excavation, conductor carrying (only at ground level), pole loading/off-loading on truck and pole erection using ropes under strict personal supervision.

- Engaging only those workers that are trained to operate specific machines and equipment.
- Provide safe scaffolding and railings at heights
- All the workers on site shall be provided with on-site with training in site specific safety procedures and in hazards they may encounter at the site
- The Contractor shall be caused to conduct daily tool box meetings with specific occupational health and/or safety topic
- The Contractor shall enforce mandatory use of Personal Protective Equipment (PPE) to all workforces.
- Provide 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.
- The Contractor shall strictly follow occupational health and safety procedures as required in Occupational Health and Safety Act No. 5 of 2003

7.3.13 Creation of Public Health and safety risks

- The contractor shall regularly conduct community communication and engagement meetings with villagers so as to raise safety awareness to the people
- Barricade non-workers to enter the working environment without permission.
- The Contractor shall entirely barricade with visible warning nets or tapes the excavated utility holes
- Proper management of all hazardous and non-hazardous waste not to be disposed haphazardly
- Sign boards:
 - To warn the public on potential dangers that might be caused due to erection of Utility poles
 - Road signs should be displayed to warn motorists
 - Danger sign to be placed in each pylon after construction

7.3.14 Child labour, forced labour and human trafficking

- Employment must consider labor act (18+ Years and above)
- Spread awareness among parents and surrounding communities
- Strict laws in place to prevent child, forced labors and human trafficking
- The Consultant Engineer with Proponent shall strictly make sure the Contractor adheres to Employment and Labour Relations Act No. 6 (2004)

7.3.15 Teenage Pregnancies

- Strictly enforcing labors to avoid sexual abstinence with teenagers
- Developing a community based approach which utilizes school sex education integrated with parent, church, and community groups
- Increasing teenage knowledge of contraception
- Providing counseling and medical and psychological health and education

- There should be close collaboration between parents, teachers, and village governments to reduce truancy of school children.
- The Contractor shall not employ people under the age of 18 years.

7.3.16 Risks of Leakage of Hazardous Materials

- Regarding the project scope and short time of project implementation Transformer oil/ insulating oil will be transported and filled directly to transformer while the motor grader will be filled from the nearby petrol station. However; there will be no fuel storage on site.
- In case of any motor grade repair hence it shall be done in a designated area at Rusumo Water treatment plant premise
- In the event of spill or leak of hydraulic fluid, insulating oil, oil and other petroleum products, they will immediately be cleaned up to prevent discharge of these fluids into the ground or storm water runoff. Absorbent materials such as polypropylene boom and pads saw dust will be kept on hand for clean-up of spilled liquids on pavement, water, and soil. In the event that there is oil spill on the soil, the soil shall be excavated and treated by incineration

7.3.17 Soil Erosion and Modification of Landscape

- Proper backfilling of the excavated pits/utility holes
- Confining the construction activities within the proposed project site could minimize the problem.
- The Contractor shall always ensure that the excavated areas are reinstated whenever possible

7.4 Demobilization phase

7.4.1 Loss of Employment and Economic Activities at the End of the Project

- The impact due to loss of employment at the closure of the project will be a residual impact as cannot be mitigated at the project level. To manage the impact, while recruiting workers the Contractors shall inform the expected duration of their employment. In addition, employment and labour relations act shall be adhered to by the Contractor during termination of redundant workers
- Adapt a project – completion policy: identifying key issues to be considered.
- Assist with re-employment and job seeking of the involved workforce.
- Compensate and suitably recommend the workers to help in seeking opportunities elsewhere.
- Offer advice and counseling on issues such as financial matters.

7.4.2 Generation of Solid Wastes

Despite that limited solid waste will be generated on site but prior to demobilization, the Contractor shall submit to the Engineer for review and approval a closure plan for the site restoration. The plan shall outline steps that the Contractors shall adopt to reinstate the facilities, including disposal of all facilities that were used in the site which would no longer be needed and are likely to be of environmental and health hazard.

7.4.3 Restored clean site

- Collection and transportation of unwanted materials to the disposal site while the wanted materials will be collected to Contractors' compound for future use.

7.5 Mitigation Measures during Operation and Maintenance Phase

7.5.1 Positive Impacts

7.5.1.2 Improved Water Supply Services

- The impact due to improved clean and safe water supply shall be enhanced by ensuring that repair and maintenance of the electrical line with ancillary equipment are done properly and on timely
- Installation of standby diesel powered generator as power backup.
- Water treatment plant with its ancillary facilities depends on continuous, uninterrupted electricity to run equipment that saves lives and protects vital electronic data.

7.5.2 Negative Impacts

7.5.2.1 Impact on Vegetation

- Ensuring that off-site vegetation covers are encouraged and should not be disturbed during the periodic maintenance.
- Allow low height vegetation along the MV corridor as long as they are not overgrown to jeopardize the safety of people and the line. This will allow regeneration of vegetative cover thereby conserving flora and fauna of the area
- Proponent will ensure that pesticides and chemicals are not used within the way-leave corridor for retaining the ecological status
- Vegetation clearance during operation phase should be done manually instead of using heavy machinery. This will reduce unnecessary large scale trampling of vegetation as well as soil compaction and will give some people a periodic job.
- Vegetation management should not eradicate all vegetation, but aim to maintain trees and plant growth that may negatively affect infrastructure at a level that is under an economically-damaging threshold

7.5.2.2 Avian and Bat Collisions and Electrocutions

- Monitoring of bird collision and electrocution and taking appropriate steps to prevent possibility of birds' electrocution in the future.
- Ensuring overhead lines have a minimum separation distance between phases which is greater than the wingspan of most of the birds.
- Design of the Utility Poles that will discourage birds resting or nesting on critical parts of the poles.
- Proper and regular maintenance of distribution lines

7.5.2.3 Generation of Hazardous Waste

- Proper use and response to SF6 gas pressure or density alarms that are furnished with SF6 equipment.
- Permanent installation and use of SF6 gas monitoring alarms, located where SF6 gas could accumulate.
- Strategy for evacuating SF6 gas from accumulation locations including use of SF6 warning signage.
- Adequacy and availability of PPE, including protective clothing and respiratory devices to responsible persons
- Construct and use oil resistant sealing of all surfaces in the substation where hydrocarbons (fuels and lubricants) are permanently handled and stored; these areas have to be sheltered and protected against storm water.
- Use well-maintained equipment and good environmental practices during operation in order to reduce the risk of hydrocarbon pollution; this will be mandatory to stymie ground water sources used for drinking water.
- Provision of second containments for transformer.
- Ensure that the transformer and other electrical equipment are free from PCBs.
- Proponent will develop and implement a spill prevention control and counter measures plan and a waste management plan for the proposed substation

7.5.2.4 Occupational Health and Safety Risks to Workers

- Newly engaged engineers and technicians undergo mandatory rotational training to increase their knowledge and competence on safety issues during maintenance of electrical distribution system

Mitigation measures to workers as the results of being exposed to Transformer/Insulating Oil for a prolonged time during maintenances of substation/transformer; -

- Use barrier creams to prevent skin contact
- Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit
- Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible
- The most suitable glove should be chosen in consideration to MSDS
- Use engineering controls to reduce air contamination to permissible exposure level hence wash promptly with soap and water if skin becomes contaminated
- Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit
- Avoid spilling Always remove oil with soap and water or skin cleaning agent, never use organic solvents. Do not use oil-contaminated clothing or shoes, and do not put rags moistened with oil into pockets

7.5.2.5 Impacts due to regular power Interruption

- Lightning arrester (LA) should be selected and installed properly as the primary protection for distribution transformer.
- Periodic harmonic distortion evaluation to determine harmonic currents produced by nonlinear loads which can interact adversely with the utility system.
- Setup of standby diesel powered generator with sufficient voltage to run water treatment plant's operations during the power outages

7.5.2.6 Aesthetics and Visual Impact

- Avoiding cutting or pruning of trees beyond the way-leave corridor
- During design phase, it is recommended design of MV distribution line should be subjected to an aesthetic view by an Ecologist and Architect or an expert specializing in Landscape /Aesthetic views
- Location of the utility poles should be carefully selected during design stage to minimise impact on landscape aesthetics.

7.5.2.7 Impacts of Electromagnetic Waves on Human Health

Mitigation against EMFs exposure (as per TANESCO) has been undertaken through the establishment and complete acquisition of the distribution line way leave. This means that there will be no residential properties or other buildings within and nearby the electrical route. In addition to this, Proponent can undertake the following mitigation:

- The recommended safety distance from power line (way leaves) regarding the resettlement of the population along the servitude of the distribution line should be observed. Ensure that the distribution line is constructed with the minimum required height clearance to ground level which is 7m-8m while the way-leave corridor not less than 2.5m
- Proponent in collaboration with local authorities should alert people on potential health risk of setting up residences under and nearby the Medium Voltage line or Row
- Periodic monitoring should be carried out to ensure that no one is establishing a residence in the right of way and under the power line.
- In case the fault is based to the TANESCO Authority then the affected persons shall be compensated as per related regulations and guidelines.

7.5.2.8 Increased Pressure on Natural Resources due to population increase

- The impact cannot be mitigated at project level. However, although the impact cannot be easily mitigated at project level, respective local authorities can initiate environmental management measures. This may include proper land management, promotion of tree planting campaigns, proper enforcement of economic instruments charging fees or tax on forest products like charcoal, fuel wood, timber, etc.

7.5.2.9 Accidents and Hazards

- Proper signs like DANGER (HATARI) will be posted at site particularly on every utility Pole and substation/Transformer enclosures to warn the public over the potential danger of medium voltage line.
- The maintain the height between the ground and electrical wires (clearance) as per standards
- Continue with periodic safety awareness campaign to the project vicinity about the potential dangers of medium voltage electricity
- Setting up local emergency reporting channels to report on any potential dangers resulting from falling of the utility poles or broken (cut) conductors so that the respective office to eliminate the danger in shortest time possible

7.6 Mitigation Measures during Decommissioning Phase

At decommissioning, the Developer (Ngara District council) will either improve the project or close or convert it to another use or disassemble all infrastructures in an environmentally sound manner to restore the environment into its original appearance. The adverse impacts for decommissioning activities are the same as indicated in the above Construction phase.

7.7 Impacts Assessment and Evaluation

The identified impacts above have been subjected to assessment by using matrix method, whereby two types of matrices were used. These include the Impact Categorization Matrix (ICM) and Impact Evaluation Matrix (IEM). The ICM has been used to categorize impacts according to environmental components (biophysical and socio-economic) that are likely to be affected, and IEM was used for determination of the significance of impacts. The significance of impacts was based on the following factors:

- Type of impact – whether positive or negative
- Its effects – whether direct, indirect or cumulative
- Intensity – whether low, medium or high
- Magnitude – whether site specific, local or regional
- Duration – whether short-term, long-term or permanent
- Reversibility- reversible or irreversible
- Significance- whether negligible, low, moderate or high

As demonstrated in **Table 26** the proposed project construction project is expected to have both negative and positive impacts of minor, moderate and major significance during mobilization, construction and operation phases. The results of the assessment indicate that most of the impacts are negative; indirect; have moderate intensity; site specific; short term; reversible and with low to medium significance.

Table 26; Summary of Impact Assessment

Impacts	Category	Mobilization Phase	Construction Phase	Demobilization Phase	Operation Phase	Decommissioning phase
Creation of job opportunities	S	+2	+2	0	0	0

Impacts	Category	Mobilization Phase	Construction Phase	Demobilization Phase	Operation Phase	Decommissioning phase
Increased Income to Rusumo Villagers	S	+2	+2	0	+3	0
Improved Clean and Safe water supply	S	0	0	0	+3	0
Increased Human Capital	S	0	+2	0	0	0
Population Influx (Labor Influx)	S	0	-1	0	0	0
Vegetation clearance	B	0	-1	0	-1	0
Air Pollutions (Fugitive Dust and Exhaust Emissions)	B	0	-2	0	0	0
Increased Risk of GBV, SEA and Harassment	S	0	-2	0	0	0
Solid waste generation	B	0	-1	-1	0	-1
Generation of hazardous waste	B	0	-2	0	-2	0
Risks of Leakage of Hazardous Materials	B	0	-2	0	-2	0
Impacts due to regular power Interruption	S	0	0	0	-3	0
Accidents and Hazards	S	0	-1	0	-1	0
Generation of Human Sanitary Wastes	B	0	-2	0	0	0
Generation of Noise and Vibrations	B	0	-1	0	-1	0
Soil and Water Quality Contamination	B	0	-2	0	-1	0
Impacts of Electromagnetic Waves on Human Health	B	0	-2	0	0	0
Increased Pressure on Natural Resources due to population increase	S	0	0	0	-1	0
Aesthetics and Visual Impact	B	0	-1	0	-1	0
Creation of occupational health and safety risks to workers	S	0	-2	0	-2	0
Creation of Public Health and safety risks	S	0	-2	0	-2	0
Disruption of traffic flow	S	0	-1	0	0	0
Possible Spread of HIV/AIDS, COVID-19 and Other Infectious Diseases	S	0	-2	0	0	0
Child labour, forced	S	0	-2	0	0	0

Impacts	Category	Mobilization Phase	Construction Phase	Demobilization Phase	Operation Phase	Decommissioning phase
labour and human trafficking						0
Disruption of Avian and Bat Collisions and Electrocutions	B	0	0	0	-1	0
Teenage Pregnancies	S	0	-1	0	0	0
Restored Clean Site	B	0	0	+2	0	+2
Loss of Employment and Economic Activities at the End of the Project	S	0	0	-2	0	0
Risk of Construction Materials vandalism	S	0	-2	0	0	0

KEY:

S	Socio-economic impact	B	Bio-geophysical Impact
0	Negligible	+2	Moderate positive impacts
-1	Minor negative impacts	+3	Major positive impacts
-2	Moderate negative impacts	-3	Major negative impacts

Source: Consultant's Analysis (November/ 2021)

CHAPTER EIGHT: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1 INTRODUCTION

The EIA guidelines define an Environmental and Social Management Plan (ESMP) as a report or document prepared by the proponent after the conduction of ESIA study to present the case for the assessment of their proposal as part of the environmental and social impact assessment process. The ESMP as presented in this chapter contains recommendations and cost estimates for mitigation measures designed to address the negative impacts of the proposed project. The ESMP provides a general outlay of the environmental and social aspects, potential impacts and mitigation measures, performance indicators, monitoring means and frequency, responsibility for monitoring and associated cost estimates.

The responsibility for the incorporation of mitigation measures for the project implementation lies with the Supervising Engineer, who must ensure that the contractor implements all specified mitigation measures. In order for the contractor to carry out environmental management activities during construction, the contractor should draw up an environmental management plan of his/her own to show how s/he will address the mitigation measures during the construction period. The Supervising Engineer is responsible for assessing the contractor's environmental management plan.

The ESMP has been developed with project knowledge and information available to date. As project commencement and scheduling plans are developed and changed, components of the ESMP might require amendments. This is therefore a working document, which can be updated whenever new information is received or site conditions change.

The objectives of the ESMP are to:

- (i) To bring the project into compliance with applicable national environmental and social legal requirements social policies and procedures; and
- (ii) To outline the mitigation/enhancing, monitoring, consultative and institutional measures required to prevent, minimize, mitigate or compensate for adverse environmental and social impacts, or to enhance the project beneficial impacts.

The objectives, activities, mitigation measures and allocation of costs and responsibilities pertaining to prevention, minimization and monitoring of significant negative impacts and maximization of positive impacts associated with the project equipment installation and operational phases are outlined in the proposed ESMP in the following section. It outlines corresponding management strategies proposed in chapter 8 that will be employed to mitigate potential negative environmental impacts and assign responsibility for the implementation of mitigation measures.

8.2 Implementation of the Management Plan

The environmental and social mitigation measures of the proposed project shall be handed over to the contractor during construction period. The Contractor shall take stock of the contents of the Environmental and Social Management Plan of the Project. The contractor shall implement

the ESMP during the construction period under close supervision of Proponent. During the Operation Phase, Proponent shall implement the ESMP

8.2.1 Environmental and Social Cost

The total cost for implementation of ESMP is estimated at Tshs. 12,250,000.00 in which those of construction phase are included in the works contract of this project. The environmental and social cost estimates was developed based on the measured items in the contractual bill of quantities and experience of the Consultant on projects of similar nature

Table 27: ESMP's Institutional Responsibilities

Unit / Personnel	Responsibilities
National Environment Management Council (NEMC)	<ul style="list-style-type: none"> • Conduct environmental compliance monitoring and enforcement to ensure that project proponent is efficiently implement approved ESMP • Undertake screening of the project to determine level of ESIA study • Reviewing and approval of the project ESIA reports submitted by Ngara DC • Reviewing of the annual environmental and social audit reports submitted by Ngara DC;
Ngara District Council/Proponent	<ul style="list-style-type: none"> • Holds final responsibility for the environmental and social performance of the project • The Client will be represented by Consultant who will be in charge of the supervision works, and overseeing the contract from initiation stage to completion of construction activities at various proposed sites; • The Client has to procure a contractor who will be responsible for the implementation of the entire project activities; • Responsible for ensuring the site development is implemented according to the requirements as stipulated in ESMP; • Ensure that sufficient resources are available to the other role players to efficiently perform their tasks as indicated in ESMP; • Overall management of all project activities; • Receive and supervise the implementation of the recommendations of the environmental report from the Consultant; • Cooperate with Consultant to periodically supervise contractors' activities; and • Carry out annual environmental and social audits of the project and submit the subsequent reports to NEMC for review and approval. • Ensure availability of key staffs for social, environmental, health and safety monitoring during project phases
NELSAP PIU	<ul style="list-style-type: none"> • To provide support to the District where required to facilitate the implementation of LADP activities. • Ensure timely availability and reliability of funding for agreed and approved LADP activities and related interventions. • Ensure timely processing of the direct payments to contractors and consultants on behalf of the district. • Monitoring and evaluation of the progress of LADP activities implemented by the district. • Liaise closely with Ngara DC in preparing a coordinated response on environmental and social management aspects of the project; • Carrying out safeguards due diligence; and • Preparation of quarterly environmental and social performance reports for the project.

Unit / Personnel	Responsibilities
World Bank	<ul style="list-style-type: none"> • Financing the entire project activities • Overall ESMP supervision and monitoring • Provision of technical support and guidance to Ngara DC, NELSAP PIU, Contractor and Supervising Engineer • Recommending on additional measures to strengthening the ESMP implementation performance
Consultant (Supervision Engineer)	<ul style="list-style-type: none"> • monitoring and supervision of the construction works including overseeing implementation of ESMP • administer all construction works, progress review and monitor the works undertaken by the Contractor and implementation of ESMP to ensure compliance with contract specification and contractual requirements • Cooperate with Ngara DC to periodically supervise contractors' activities. Scheduled meetings held between the contractor, Ngara DC representative and Consultant. • Include, among its staff, an environmental officer who will oversee the implementation of the ESMP and report to Ngara DC and NELSAP PIU.
Contractor	<ul style="list-style-type: none"> • responsible for implementation of construction works and ensure compliance with environmental requirements; • Contractor shall prepare/update a Contractor's ESMP (C-ESMP), and ensure that the measures related to environmental and social safeguards are fully carried out as stipulated; • Preparing/Updating the project's Environmental Health and Safety Management Plan; • Conduct general training on occupational health, safety and environment to the construction workforce • Reporting arising works that are detected by Environmental Officer to Consultant and Ngara DC representative for further actions. • Prepare and implement covid-19 contingency plan, prepare and implement emergence preparedness plan, prepare and implement traffic management plan,

Table 28: Environmental and Social Management Plan (ESMP)

Identified Impact	Mitigation & Enhancement Measure	Responsible Institution	Timeframe	Relative Budget (TZS)	Target Level
Mobilization and Construction Phase					
Employment Opportunities	<ul style="list-style-type: none"> The Proponent shall be encouraged to employ local, unemployed yet willing to work hard, manpower to the extent viable subject to a maximum of 50% unskilled labour. This will ensure that local people are more benefited out of the project. In search for skilled labours, the Contractor must first look in the village/District before going on to other villages/Districts. Employment should be on equal opportunities for both gender Proponent shall not cause children under the age eighteen (18) to be employed or be engaged in any project activities. 	Contractor and Proponent	5 days	3,000,000	As many employments as possible
Increased Income to Rusumo Villagers	<ul style="list-style-type: none"> The Contractor must ensure that the laborers are paid as per Tanzania's Minimum wages Ensure all payments are timely completed The contractor should purchase the required and available materials from local vendors 	Contractor and Proponent	During Construction Phase	N/A	Created many opportunities as possible
Increased Human Capital	<ul style="list-style-type: none"> On the job-training to villagers when working with skilled projects' personnel 	Contractor and Proponent	During Construction Phase	N/A	As many employments as possible
Vegetation clearing	<p>The selected Medium Voltage electrical line route passes within the road reserve which dominated with short grasses. However; the contractor must take the following measures to avoid any possible detrimental impacts;-</p> <ul style="list-style-type: none"> The problem could be minimized by 	Contractor and Proponent	During pre-construction and stages.	1,000,000	As minimum impact as possible

	<p>confining the construction activities within the specific project site</p> <ul style="list-style-type: none"> • The Contractor shall avoid unnecessary clearing of vegetation beyond the project site construction area. • The contractor should use the existing designated areas at Rusumo Water Treatment Plant for stockpiling and preparation of all construction materials to avoid unnecessary vegetation clearing beyond the project site 					
Generation of Noise and Vibrations	<p>Despite that only motor grade will be used for site clearance hence the Contractor should use the following mitigation measures;-</p> <ul style="list-style-type: none"> • The Contractor shall avoid use of construction equipment that generates loud noise due to poorly tuned engines or damaged exhaust pipes. The construction machinery must be properly tuned and exhaust pipes fitted with mufflers. • Adhere to Section 62 of Occupational Health and safety Act (2003) and Section 126 of Factories (Building Operations and Works of Engineering Construction) Rules, 1985, by ensuring that workers exposed to noise level above the limit of 85dB are equipped with ear plugs to protect them against excessive noise level • The Contractor shall avoid prolonging construction works that produce high pitch noise within the residential areas during the dusk hours (18:00 – 06:00 hours) 	Contractor Proponent	and	During Construction Phase	0	Not exceeding TBS Limit 85dB

<p>Air Pollutions (Fugitive Dust and Exhaust Emissions)</p>	<p>Although air pollution is less anticipated due to the scope of the project being smaller; then the following mitigation measures must be undertaken by the Contractor;</p> <ul style="list-style-type: none"> • The Contractor shall regularly apply water sprinkling on created dusty areas during especially during undertaking clearance to minimize dust emission. • The Contractor shall provide dust protection masks to construction workers. • The Contractor shall ensure that appropriate construction equipment that do not emit fumes and smokes are used for construction works 	<p>Contractor and Proponent</p>	<p>During Construction</p>	<p>500,000</p>	<ul style="list-style-type: none"> • 0.021mg/m³ for PM₁₀ as per TBS • 0.015mg/m³ for PM_{2.5} as per TBS • 0.12ppm for NO₂ as per TBS • 0.5ppm for SO₂ as per TBS • 10ppm for CO as per TBS • Construction workers wearing dust protection gears (ISO 45001)
<p>Generation of hazardous waste</p>	<ul style="list-style-type: none"> • Separate all hazardous wastes from domestic waste during collection and transportation • All vehicle and equipment mechanical repair activities shall be conducted on proper designated space within the Construction site • All generated hazardous during construction of structures shall be temporarily stored at designated area at the site and then to be removed from site by a registered hazardous waste dealer. 	<p>Contractor and Proponent</p>	<p>During Construction</p>	<p>1,000,000</p>	<p>None or as minimum as possible</p>

	<ul style="list-style-type: none"> Replaced oil and brake fluid to be properly handled in a designated area with primary and secondary containments prior to be disposed by an authorized dealer 				
Generation of Solid Wastes	<ul style="list-style-type: none"> Waste management on site shall be strictly controlled and monitored. Only approved waste disposal methods shall be allowed. Ensure that site personnel are instructed in the proper disposal of all waste. Ensure that all facilities are maintained in a neat and tidy condition and the site shall be kept free of litter. Measures shall be taken to reduce the potential for litter and negligent behavior with regard to the disposal of all refuse. At all places of work provide litterbins, containers and refuse collection facilities for later disposal. Solid waste may be temporarily stored on site in a designated area prior to collection and disposal. Waste storage facility shall be covered, tip-proof, weatherproof and scavenger proof. The waste storage area shall be fenced off to prevent wind-blown litter. No burning, on-site burying or dumping of waste shall occur. All solid waste shall be disposed of offsite at an approved landfill site. The Contractor shall provide metal refuse bins or equivalent plastic refuse bins, all with lids, for domestic waste. Refuse shall be collected and removed from all facilities at least twice per week. The non-reusable and non-recyclable 	Contractor and Proponent	Construction Phase	400,000	As minimum impact as possible

	wastes shall be collected and transported to the dumpsite for final disposal				
Population Influx (Labor Influx)	<ul style="list-style-type: none"> Establish transparent recruitment procedures to avoid site followers in form of job-seekers Establish a recruitment policy that gives priority to local residents for less specialized services Recruitment procedures to be shared with the local authorities for further dissemination Opportunities for sub-suppliers and sub-contractors should be awarded to local firms which in turn employ local labour Conduct public health campaigns addressing issues of behavioral change, water and sanitation, malaria, HIV/AIDS, etc 	Contractor and Proponent	During construction phase	200,000	As minimum impact as possible
Increased Risk of GBV, SEA and Harassment	<ul style="list-style-type: none"> Regular training for workers on required lawful conducts in the project communities. Creation of partnership with local offices of the Ministry of Women Affairs and Youth Development, NGOs and community women groups to report workers' misconduct and complaints/reports on gender-based violence Provision of opportunities for workers to regularly return to their families or take advantage of entertainment opportunities away from rural host communities. Gender based equal opportunities in all project phases Create opportunities for employment of women in both management and casual placements All gender based employment must 	Contractor and Proponent	Daily during construction phase	200,000	As minimum impact as possible

	consider labor act (18+ Years and above)				
Disruption of Traffic Flow and creating traffic jams	<ul style="list-style-type: none"> • During site clearance of Right-of-Way (road reserve) only qualified operator with appropriate operating license shall be engaged • Flagman should be onsite to guide motorists and other road users • Promoting safe drive with specified hours for long drive to avoid fatigue • Provision of road and safety signs shall be done on site and surrounding areas that are to be followed by public drivers in collaboration with local authority 	Contractor and Proponent	Daily	400,000	As minimum impact as possible
Soil and Water Quality Contamination	<ul style="list-style-type: none"> • Proper handling of generated solid and liquid waste. • Construction equipments should be serviced in a designated area with concrete surface • All generated hazardous waste during construction of activities shall be temporarily stored at designated area comprised with primary and secondary containments prior to final disposal by the Authorized Contracted contractor • No waste shall be disposed into waterways or streams 	Contractor and Proponent	During Construction phase	0	As minimum impact as possible
Creation of occupational health and safety risks to workers	<p>Mitigation measures to workers as the results of being exposed to Transformer/Insulating Oil for a prolonged time;</p> <ul style="list-style-type: none"> • Use barrier creams to prevent skin contact • Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit • Eyewear complying with an approved standard should be worn if a risk 	Contractor and Proponent	Daily	1,000,000	As minimum impact as possible

	<p>assessment indicates eye contact is possible</p> <ul style="list-style-type: none"> • The most suitable glove should be chosen in consideration to MSDS • Use engineering controls to reduce air contamination to permissible exposure level hence wash promptly with soap and water if skin becomes contaminated • Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit • Avoid spilling Always remove oil with soap and water or skin cleaning agent, never use organic solvents. Do not use oil-contaminated clothing or shoes, and do not put rags moistened with oil into pockets <p>Other mitigation measures include;-</p> <ul style="list-style-type: none"> • The use of proper lifting equipment to erect the utility pole and not manually. • Ensure the electric current is turned off throughout the construction work • Newly recruited linesman with little knowledge and experience should not be allowed to carry out other works apart from hole excavation, conductor carrying (only at ground level), pole loading/off-loading on truck and pole erection using ropes under strict personal supervision. • Engaging only those workers that are trained to operate specific machines and equipment. • Provide safe scaffolding and railings at 				
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	<p>heights</p> <ul style="list-style-type: none"> • All the workers on site shall be provided with on-site with training in site specific safety procedures and in hazards they may encounter at the site • The Contractor shall be caused to conduct daily tool box meetings with specific occupational health and/or safety topic • The Contractor shall enforce mandatory use of Personal Protective Equipment (PPE) to all workforces. • Provide 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. • The Contractor shall strictly follow occupational health and safety procedures as required in Occupational Health and Safety Act No. 5 of 2003 				
Generation of Human Sanitary Wastes	<ul style="list-style-type: none"> • Contractor may use the existing toilets at Rusumo Water Treatment Plant during the construction period • Pit latrines and/or septic tanks/soak-away pits at the site for liquid waste collection; regular emptying. 	Contractor and Proponent	Daily	300,000	As minimum impact as possible
Possible Spread of HIV/AIDS, COVID-19 and Other Infectious Diseases	<ul style="list-style-type: none"> • Workers will be sensitized on the issue of HIV/AIDS and STDs and on the usage condoms etc. • Establishment and implementation of HIV/AIDS awareness and prevention programs. • HIV/AIDS testing will be conducted and counseling services will be done • Providing protection gears where needed 	Contractor and Proponent	During Construction phase	300,000	As minimum impact as possible

	<p>such as condoms</p> <ul style="list-style-type: none"> Workers and the nearby community will be sanitized on the issues of COVID-19 and protection measures The contractor shall provide employment priority to local unskilled laborers to minimize number of new comers The Contractor shall develop and implement HIV/AIDS and STIs prevention and control programme The Contractor shall put in place the COVID-19 contingency plan developed by Ngara District Council 				
Creation of Public Health and safety risks	<ul style="list-style-type: none"> The contractor shall regularly conduct community communication and engagement meetings with villagers so as to raise safety awareness to the people Barricade non-workers to enter the working environment without permission. The Contractor shall entirely barricade with visible warning nets or tapes the excavated utility holes Proper management of all hazardous and non-hazardous waste not to be disposed haphazardly Sign boards: <ul style="list-style-type: none"> -To warn the public on potential dangers that might be caused due to erection of Utility poles -Road signs should be displayed to warn motorists - Danger sign to be placed in each pylon after construction 	Contractor and Proponent	Daily	300,000	NONE or As minimum impact as possible
Soil Erosion and Modification of Landscape	<ul style="list-style-type: none"> Proper backfilling of the excavated pits Confining the construction activities within the proposed project site could minimize 	Contractor and Proponent	During construction phase	100,000	Attaining an even/level surface

	<p>the problem.</p> <ul style="list-style-type: none"> The Contractor shall always ensure that the excavated areas are reinstated whenever possible 				
Child labour, forced labour and human trafficking	<ul style="list-style-type: none"> Employment must consider labor act (18+ Years and above) Spread awareness among parents and surrounding communities Strict laws in place to prevent child, forced labors and human trafficking The Consultant Engineer with Proponent shall strictly make sure the Contractor adheres to Employment and Labour Relations Act No. 6 (2004) 	<p>-NELSAP/WB -Consultant Supervisor engineer -Site Contractor -Proponent</p>	During the entire period of construction phase	0	No Child Employments
Teenage Pregnancies	<ul style="list-style-type: none"> Strictly enforcing labors to avoid sexual abstinence with teenagers Developing a community based approach which utilizes school sex education integrated with parent, church, and community groups Increasing teenage knowledge of contraception Providing counselling and medical and psychological health and education There should be close collaboration between parents, teachers, and village governments to reduce truancy of school children. The Contractor shall not employ people under the age of 18 years. 	<p>-NELSAP/WB -Consultant Supervisor engineer -Site Contractor -Proponent</p>	During the entire period of construction phase	0	Zero or Minimum impacts as possible
Risk of Construction Materials vandalism	<ul style="list-style-type: none"> Installation of lights in strategic areas within the project site to illuminate the whole compound and nearby areas. Regular Community awareness campaign to create sense of ownership Establishment of temporary materials' storage facilities Employment of sufficient number of security guards 	<p>-NELSAP/WB -Consultant Supervisor engineer -Site Contractor -Proponent</p>	During the entire period of construction phase	200,000	Zero or Minimum impacts as possible

Risks of Leakage of Hazardous Materials	<ul style="list-style-type: none"> Regarding the project scope and short time of project implementation Transformer oil/ insulating oil will be transported and filled directly to transformer while the motor grader will be filled from the nearby petrol station. However; there will be no fuel storage on site. In case of any motor grade repair hence it should be done in a designated area at Rusumo Water treatment plant. In the event of spill or leak of hydraulic fluid, insulating oil, oil and other petroleum products, they will immediately be cleaned up to prevent discharge of these fluids into the ground or storm water runoff. Absorbent materials such as polypropylene boom and pads saw dust will be kept on hand for clean-up of spilled liquids on pavement, water, and soil. In the event that there is oil spill on the soil, the soil shall be excavated and treated by incineration. 	<ul style="list-style-type: none"> -NELSAP/WB -Consultant Supervisor engineer -Site Contractor -Proponent 	During the entire period of construction phase	300,000	Zero or Minimum impacts as possible
DEMOBILIZATION PHASE					
Restored clean site	<ul style="list-style-type: none"> Collection and transportation of unwanted materials to the disposal site while the wanted materials will be collected to Contractors' compound for future use. 	Contractor and Proponent	2 Days	200,000	Almost to its origin state
Loss of Employment and Economic Activities at the End of the Project	<ul style="list-style-type: none"> The impact due to loss of employment at the closure of the project will be a residual impact as cannot be mitigated at the project level. To manage the impact, while recruiting workers the Contractors shall inform the expected duration of their employment. In addition, employment and labour relations act shall be adhered to by 	Contractor and Proponent	3 days	Non Measurable	Zero or as Minimum impacts as possible

	the Contractor during termination of redundant workers				
Generation of Solid Wastes	<p>The impact shall be mitigated as follows:</p> <ul style="list-style-type: none"> Despite that limited solid waste will be generated on site but prior to demobilization, the Contractor shall submit to the Engineer for review and approval a closure plan for the site restoration. The plan shall outline steps that the Contractors shall adopt to reinstate the facilities, including disposal of all facilities that were used in the site which would no longer be needed and are likely to be of environmental and health hazard. 	Contractor and Proponent	5 days	250,000	Retrenchment to go as smoothly as possible
<p><u>Operation Phase</u></p> <p><u>Positive Impacts</u></p>					
Improved Water Supply Service	<ul style="list-style-type: none"> The impact due to improved clean and safe water supply shall be enhanced by ensuring that repair and maintenance of the electrical line with ancillary equipment are done properly and on timely Installation of standby diesel powered generator as power backup. Water treatment plant with its ancillary facilities depends on continuous, uninterrupted electricity to run operational equipment sufficiently. 	Proponent	Operation Phase	Not Measurable	Maximum utilization
<p><u>Operation and Maintenance Phase</u></p> <p><u>Negative Impacts</u></p>					
Impact on Vegetation	<ul style="list-style-type: none"> Ensuring that off-site vegetation covers are encouraged and should not be 	Proponent	Semi Annually	300,000	As Minimum Impacts as

	<p>disturbed during the periodic maintenance.</p> <ul style="list-style-type: none"> • Allow low height vegetation along the MV corridor as long as they are not overgrown to jeopardize the safety of people and the line. This will allow regeneration of vegetative cover thereby conserving flora and fauna of the area • Proponent will ensure that pesticides and chemicals are not used within the way-leave corridor for retaining the ecological status • Vegetation clearance during operation phase should be done manually instead of using heavy machinery. This will reduce unnecessary large scale trampling of vegetation as well as soil compaction and will give some people a periodic job. • Vegetation management should not eradicate all vegetation, but aim to maintain trees and plant growth that may negatively affect infrastructure at a level that is under an economically-damaging threshold 				possible
Avian and Bat Collisions and Electrocutions	<ul style="list-style-type: none"> • Monitoring of bird collision and electrocution and taking appropriate steps to prevent possibility of birds' electrocution in the future. • Ensuring overhead lines have a minimum separation distance between phases which is greater than the wingspan of most of the birds. • Design of the Utility Poles that will discourage birds resting or nesting on critical parts of the poles. • Proper and regular maintenance of distribution lines 	Proponent/Respective facility	Quarterly	300,000	ZERO or As minimum impacts as possible
Aesthetics and Visual Impact	<ul style="list-style-type: none"> ▪ Avoiding cutting or pruning of trees 	Proponent/Respective Facility	Annually	Not Measurable	ZERO or As minimum

	<p>beyond the way-leave corridor/ right-of-Way</p> <ul style="list-style-type: none"> ▪ During design phase, it is recommended design of MV distribution line should be subjected to an aesthetic view by an Ecologist and Architect or an expert specializing in Landscape /Aesthetic views ▪ Location of the utility poles should be carefully selected during design stage to minimize impact on landscape aesthetics. 				<p>impacts as possible</p>
<p>Impacts of Electromagnetic Waves on Human Health</p>	<p>Mitigation against EMFs exposure (as per TANESCO) has been undertaken through the establishment and complete acquisition of the distribution line way leave. This means that there will be no residential properties or other buildings within and nearby the electrical route. In addition to this, Proponent can undertake the following mitigation:</p> <ul style="list-style-type: none"> ▪ The recommended safety distance from power line (way leaves) regarding the resettlement of the population along the servitude of the distribution line should be observed. Ensure that the distribution line is constructed with the minimum required height clearance to ground level which is 7m-8m while the way-leave corridor not less than 2.5m ▪ Proponent in collaboration with local authorities should alert people on potential health risk of setting up residences under and nearby the Medium Voltage line or Row ▪ Periodic monitoring should be carried out to ensure that no one is establishing a residence in the right of way and under the power line. 	<p>Proponent/Respective Facility</p>	<p>Quarterly</p>	<p>400,000</p>	<p>ZERO or As minimum impacts as possible</p>

Accidents and Hazards	<ul style="list-style-type: none"> ▪ Proper signs like DANGER (HATARI) will be posted at site particularly on every utility Pole and substation/Transformer enclosures to warn the public over the potential danger of medium voltage line. ▪ The maintain the height between the ground and electrical wires (clearance) as per standards ▪ Continue with periodic safety awareness campaign to the project vicinity about the potential dangers of medium voltage electricity ▪ Setting up local emergency reporting channels to report on any potential dangers resulting from falling of the utility poles or broken (cut) conductors so that the respective office to eliminate the danger in shortest time possible. ▪ In case the fault is based to the TANESCO Authority then the affected persons shall be compensated as per related regulations and guidelines. 	Proponent/Respective Facility	Quarterly	200,000	ZERO Impacts
Generation of Hazardous Waste	<ul style="list-style-type: none"> ▪ Proper use and response to SF6 gas pressure or density alarms that are furnished with SF6 equipment. ▪ Permanent installation and use of SF6 gas monitoring alarms, located where SF6 gas could accumulate. ▪ Strategy for evacuating SF6 gas from accumulation locations including use of SF6 warning signage. ▪ Adequacy and availability of PPE, including protective clothing and respiratory devices to responsible persons ▪ Construct and use oil resistant sealing of all surfaces in the substation where 	Proponent/Respective Facility	Quarterly	200,000	ZERO or As minimum impacts possible as possible

	<p>hydrocarbons (fuels and lubricants) are permanently handled and stored; these areas have to be sheltered and protected against storm water.</p> <ul style="list-style-type: none"> ▪ Use well-maintained equipment and good environmental practices during operation in order to reduce the risk of hydrocarbon pollution; this will be mandatory to stymie ground water sources used for drinking water. ▪ Provision of second containments for transformer. ▪ Ensure that the transformer and other electrical equipment are free from PCBs. ▪ Proponent will develop and implement a spill prevention control and counter measures plan and a waste management plan for the proposed substation 				
Occupational Health and Safety Risks to Workers	<ul style="list-style-type: none"> ▪ Newly engaged engineers and technicians undergo mandatory rotational training to increase their knowledge and competence on safety issues during maintenance of electrical distribution system <p>Mitigation measures to workers as the results of being exposed to Transformer/Insulating Oil for a prolonged time during maintenances of substation/transformer;-</p> <ul style="list-style-type: none"> ▪ Use barrier creams to prevent skin contact ▪ Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit ▪ Eyewear complying with an approved standard should be worn if a risk assessment indicates 	Proponent/Respective Facility	Semi Annually	500,000	ZERO Impacts

	<p>eye contact is possible</p> <ul style="list-style-type: none"> ▪ The most suitable glove should be chosen in consideration to MSDS ▪ Use engineering controls to reduce air contamination to permissible exposure level hence wash promptly with soap and water if skin becomes contaminated ▪ Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit ▪ Avoid spilling Always remove oil with soap and water or skin cleaning agent, never use organic solvents. Do not use oil-contaminated clothing or shoes, and do not put rags moistened with oil into pockets 				
<p>Impacts due to regular power Interruption</p>	<ul style="list-style-type: none"> ▪ Lightning arrester (LA) should be selected and installed properly as the primary protection for distribution transformer. ▪ Periodic harmonic distortion evaluation to determine harmonic currents produced by nonlinear loads which can interact adversely with the utility system. ▪ Setup of standby diesel powered generator with sufficient voltage to run Water treatment plant's operations during the power outage ▪ To limit both voltage and current harmonic distortion, several standards should be proposed to limit harmonic current injection from end users so that harmonic voltage levels on overall power system will be acceptable if the power system does not inordinately accentuate the harmonic currents. This approach 	<p>Proponent/Respective Facility</p>	<p>Monthly</p>	<p>700,000</p>	<p>ZERO or As minimum impacts as possible</p>

	<p>requires participation from end user/ Rusumo Water Treatment Plant and respective authority</p> <ul style="list-style-type: none"> ▪ Rusumo Water treatment plant needs to be protected from other customers producing excessive distortion on the supply and damaging equipment or causing inconvenient malfunctions. 				
Increased Pressure on Natural Resources due to population increase	<ul style="list-style-type: none"> • The impact cannot be mitigated at project level. However, although the impact cannot be easily mitigated at project level, respective local authorities can initiate environmental management measures. This may include proper land management, promotion of tree planting campaigns, proper enforcement of economic instruments charging fees or tax on forest products like charcoal, fuel wood, timber, etc 	Proponent/Respective Facility	Annually	Not Measurable	ZERO or As minimum impacts as possible
TOTAL				12,250,000	

CHAPTER NINE: ENVIRONMENTAL AND SOCIAL MONITORING PLAN

9.1 Environmental Monitoring Plan

This section discusses the need for programs covering both internal and periodic external monitoring. The overall objective of environmental and social monitoring is to ensure that mitigation and enhancement measures are implemented and that they are effective. The activities and indicators that have been recommended for monitoring are presented in the EMP in the next section. Environmental monitoring will be carried out to ensure that all construction and operation activities comply and adhere to environmental provisions and standard specifications, so that all mitigation measures are implemented. Such monitoring can act as an early warning system to management, providing a feedback mechanism to enable damaging practices to be altered.

Simple monitoring systems should be set up during construction by the Supervising Engineer (SE) and Contractor and by the Proponent during operation, so that potentially environmentally problematic areas can be detected well in advance and the appropriate remedial action taken. This could simply be a checklist of items that need to be inspected as a matter of routine, or periodically, depending on the nature of the aspect.

There are four types of monitoring that are also relevant to this EIA.

- **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 establishment, operation and decommissioning phase in order to detect and quantify environmental and social change, which may have occurred as a result of the project. This monitoring provides experience for future projects and lessons that can be used to improve methods and techniques.
- **Compliance monitoring:** takes the form of periodic sampling and continuous measurement of levels of compliance with standards and thresholds – e.g. for waste discharge, air pollution.
- **Mitigation monitoring:** aims to determine the suitability and effectiveness of mitigation programs designed to diminish or compensate for adverse effects of the project.

Table 29: EMP Institutional Responsibilities

Unit / Personnel	Responsibilities
National Environment Management Council (NEMC)	<ul style="list-style-type: none"> • Conduct environmental compliance monitoring and enforcement to ensure that project proponent is efficiently implement approved ESMP • Undertake screening of the project to determine level of ESIA study • Reviewing and approval of the project ESIA reports submitted by Ngara DC • Reviewing of the annual environmental and social audit reports submitted by Ngara DC;
Ngara District Council/Proponent	<ul style="list-style-type: none"> • Holds final responsibility for the environmental and social performance of the project • The Client will be represented by Consultant who will be in charge of the supervision works, and overseeing the contract from initiation stage to completion of construction activities at various proposed sites; • The Client has to procure a contractor who will be responsible for the implementation of the entire project activities; • Responsible for ensuring the site development is implemented according to the requirements as stipulated in ESMP; • Ensure that sufficient resources are available to the other role players to efficiently perform their tasks as indicated in ESMP; • Overall management of all project activities; • Receive and supervise the implementation of the recommendations of the environmental report from the Consultant; • Cooperate with Consultant to periodically supervise contractors' activities; and • Carry out annual environmental and social audits of the project and submit the subsequent reports to NEMC for review and approval. • Ensure availability of key staffs for social, environmental, health and safety monitoring during project phases
NELSAP PIU	<ul style="list-style-type: none"> • To provide support to the District where required to facilitate the implementation of LADP activities. • Ensure timely availability and reliability of funding for agreed and approved LADP activities and related interventions. • Ensure timely processing of the direct payments to contractors and consultants on behalf of the district. • Monitoring and evaluation of the progress of LADP activities implemented by the district. • Liaise closely with Ngara DC in preparing a coordinated response on environmental and social management aspects of the project; • Carrying out safeguards due diligence; and • Preparation of quarterly environmental and social performance reports for the project.
World Bank	<ul style="list-style-type: none"> • Financing the entire project activities • Overall ESMP supervision and monitoring • Provision of technical support and guidance to Ngara DC, NELSAP PIU, Contractor and Supervising Engineer • Recommending on additional measures to strengthening the ESMP implementation performance
Consultant (Supervision Engineer)	<ul style="list-style-type: none"> • monitoring and supervision of the construction works including overseeing implementation of ESMP • administer all construction works, progress review and monitor the works undertaken by the Contractor and implementation of ESMP to ensure compliance with contract specification and contractual requirements • Cooperate with Ngara DC to periodically supervise contractors' activities.

Unit / Personnel	Responsibilities
	<p>Scheduled meetings held between the contractor, Ngara DC representative and Consultant.</p> <ul style="list-style-type: none">• Include, among its staff, an environmental officer who will oversee the implementation of the ESMP and report to Ngara DC and NELSAP PIU.
Contractor	<ul style="list-style-type: none">• responsible for implementation of construction works and ensure compliance with environmental requirements;• Contractor shall prepare/update a Contractor's ESMP (C-ESMP), and ensure that the measures related to environmental and social safeguards are fully carried out as stipulated;• Preparing/Updating the project's Environmental Health and Safety Management Plan;• Conduct general training on occupational health, safety and environment to the construction workforce• Reporting arising works that are detected by Environmental Officer to Consultant and Ngara DC representative for further actions.• Prepare and implement covid-19 contingency plan, prepare and implement emergence preparedness plan, prepare and implement traffic management plan,

Table 30: Environmental and Social Monitoring Plan (EMP)

Environmental Aspect	Parameters	Monitoring Frequency	Sampling Area	Measurement Units	Measurement Method	Target level/Standard	Responsible Institution	Annual Estimates Cost (TZS)
Pre-construction and Construction Phase								
Soil and Water Quality Contamination due to accidental spill of oil, fuel, lubricants on site	-Hydrocarbons/ Oil & Grease / area affected (Physical, chemical and biological)	-Before to start construction -After construction (Before Operation)	Project Site/discharged water -Nearby Water Source	Mg/l/pH	Laboratory/Visual	<10 / Zero oil spilled to the area - WHO and TBS standards, No contamination	Proponent and Contractor	500,000
Air Pollutions (Fugitive Dust and Exhaust Emissions)	SO ₂	During Construction Phase	Project Site	mg/Nm ³ /yr	Portable Gas Analyzer & Dust Track Aerosol Particulate Monitor	SO ₂ < 0.5	Contractor/ Proponent	500,000
	CO ₂			mg/Nm ³ /yr		CO ₂ < 500,		
	NO _x			mg/Nm ³ /yr		NO _x < 0.2,		
	CH ₄			mg/Nm ³ /yr		CH ₄ <20		
	Particulate matter (TSP, PM10, PM2.5)			mg/m ³		TSP < 0.23, PM10 < 0.05 & PM2.5 < 0.025		
Teenage Pregnancies	Number of incidences recorded and	During Construction Phase	Project site and project Village/Ward	No. of cases	Reports/ Documents Review/Observations	Zero or Minimal cases	- NELSAP/WB -Consultant Supervisor engineer -Site Contractor -Proponent	Not Measurable
Child labour, forced labour and human trafficking	-Number of incidences recorded	During Construction Phase	Project site and project Village/Ward	No. of cases	Reports/ Documents Review/Observations	Zero or Minimal cases	- NELSAP/WB -Consultant Supervisor engineer -Site Contractor	Not Measurable

Traffic Accidents	Number of Accidents reported Number of trainings conducted Number of qualified drivers	Daily	Project Site	Number of accidents reported	Inspection/ Observation/ Document Review	As minimum as possible	-Proponent - NELSAP/WB -Consultant Supervisor engineer -Site Contractor -Proponent	200,000
Increased Risk of GBV, SEA and Harassment	-Percentage of local workers in terms gender -No of cases reported	During Construction Phase	Project site	No. of cases	Recording	Zero or Minimal cases	Proponent and Contractor	100,000
Population Influx	Number of new job seekers	During Construction Phase	Project site and project village	No. of cases	Recording	Zero or Minimal cases	Proponent and Contractor	Not Measurable
Soil Erosion and Modification of Landscape	Eroded area	Once during and after construction phase	Project site	m ³	Physical observation	No undulating surface	Proponent and Contractor	500,000
Vegetation Clearance	Presence of grasses and shrubs vegetation.	Prior to construction activities	Project site	Area covered by vegetation	Physical Inspection	Maximum vegetation covers within and around the project site	Proponent and Contractor	500,000
Noise Levels	Noise Levels	During construction	Project Site	dBA	Noise Detectors/Sound Meters	70 dBA daytime 55 dBA nighttime	Proponent and Contractor	700,000
HIV/AIDS Infections and COVID 19	Number of infected persons Illness of construction workers	Before construction period	Project site	Number of cases	Affected People	Non or as minimum as possible	Proponent and Contractor	300,000

Employment Opportunities and Management	-Number of local employments	During entire period of construction	Project Site	Number of local employments	Employed people	Fully utilization	Proponent and Contractor	300,000
Increased Health and Safety Risks to workers and Local people	Number and type of safety equipments such as PPEs, Warning Signs, Trainings, Medical examinations, Safety Procedures	Daily	Project site and project Hamlet	-Number of PPEs provided	Records, injuries and inspection	Non or as minimum as possible	Proponent and Contractor	500,000
	Number of incidences			-Number of incidents reported				
Waste Management	Solid Waste	Daily		Kg of waste	Weight	As minimum as possible	Proponent and Contractor	200,000
	Liquid Waste	Daily		Litres of waste	Volume			
Operation Stage								
Deterioration of Ambient air Quality due to Emission from Substation/Transformer	SO ₂	Annually	Project site	mg/Nm ³ /yr	Portable Gas Analyzer	SO ₂ < 0.5	Proponent	1,000,000
	CO ₂			mg/Nm ³ /yr		CO ₂ < 500,		
	NO _x			mg/Nm ³ /yr		NO _x < 0.2,		
	CH ₄			mg/Nm ³ /yr		CH ₄ <20		
Occupational Health and Safety Risks to Workers	Incidents and accidents recorded	Quarterly	Project site	Number of cases recorded	Accidents/Incidents Recorded	No exposure	Proponent/ Respective facility	1,000,000
Impacts of Electromagnetic Waves on Human Health	No. of cases recorded	Annually	Project site	-Sensitization meetings -Safety Signs placed on utility Poles and Transformer	Sumpner's test	Zero Impacts	Proponent/ Respective Facility	500,000
Aesthetics and Visual Impact	Good aesthetic view of the site	Annually	Project site					
Avian and Bat	No. of cases	Quarterly	Project t site	-Presence of	-Field survey	Zero or as	Proponent/	300,000

Collisions and Electrocutations	recorded			wild birds collisions monitoring programme -Utility Poles design	and inspection. -Presence of bird collisions	Minimum Impacts as possible	Respective Facility	
Generation of Hazardous Waste	Oil leakages from Electric Transformer (pH, colour, EC, TDS, COD, BOD, DO, Pb, Zn, Cu, TSS)	Semi-Annually	Project site	Mg/l, ppm	Laboratory/Visual	TBS Standards	Proponent/Respective Facility	800,000
Accidents and Hazards	No. of cases recorded	Quarterly	Project site and project vicinity	Number of cases recorded	Accidents/Incidents Recorded	No exposure	Proponent/Respective Facility	Not Measurable
Impact on Vegetation	Absence of vegetation covers within the Right-of-Way	Semi-Annually	Project site	Weight of the Cleared Vegetation covers	Visual/Weight Scale	Zero or as minimum Impacts as possible.	Proponent/Respective Facility	Not Measurable
TOTAL								7,400,000

CHAPTER TEN: PRELIMINARY DECOMMISSIONING PLAN

10.1 Introduction

Decommissioning forms the end part of the project life cycle. The proposed project is not expected to end at near future due to its nature and inelasticity. However; if decommissioning becomes inevitable due to any causative factors such as if the electrical distribution line needs more expansion and improvement then the Closure Plan must be abided. During decommissioning of the project, various disturbances that will have been caused in the area need to be addressed quickly and efficiently in order to minimize the possible impacts that could continue to happen even after closure of the project. It is also important, that all remediation plans suggested be conducted by taking into consideration the needs for sustainable development of the project area. In order to achieve this, consultations with various stakeholders during preparation of the Closure Plan (CP) will be undertaken.

It is the requirement of the Environmental Impact Assessment and Audit regulations of 2005 and its subsequent amendment 2018 regulation that the Proponent have to prepare a closure plan in order to indicate how impacts will be dealt with, including cost of mitigation measures.

10.2 Preliminary Decommissioning and Closure Plan

The council director in collaboration will chair the closure committee with local leaders including WEO and VEO. Members of the committee will be selected through consultations with the local authorities and relevant government institutions i.e. NEMC, TANESCO and TARURA offices. This is the set –up and implementation procedure of the closure plan that will be followed as part of the ESMP. Objectives are set as follows:

- The closure plan must limit the potential adverse effects of the closed proposed project site on the receiving environment and that the quality of life of the surrounding communities is not compromised after operation of proposed project site.
- The rehabilitation of the area in its natural appearance and closure plan complies with current regulatory requirements and must facilitate the attainment of site relinquishment after demonstration of successful implementation of the closure measures stipulated in the plan.
- That decommissioning and rehabilitation are carried out in a planned sequential manner consistent with best practice.
- That as far as is practicable the post project site operation landform is safe stable non-erodible and is integrated into the surrounding environment.
- Prevent or minimize adverse long term social and environmental impacts of the post-project site
- Create a self-sustaining ecosystem or ultimate land use based on an agreed set of objectives
- Enable all stakeholders to have their interests considered during project closure.
- Ensure the process of closure occurs in an orderly cost effective and timely manner.
- Ensure that the cost of closure is adequately represented in proponent's budgets.
- Ensure clear accountability and sufficient resources for the implementation of the closure plan
- Establish appropriate indicators for evaluating success of the closure process. The achievements from this process will justify relinquishment of the project license.

The Proprietor will participate in rehabilitation for disturbed and impacted areas depending on their location, the type of impact, and the proposed end land use. The closure plan identifies those actions that will be undertaken upon completion of project activities and subsequent decommissioning of the site. This includes the removal of structures, the disturbed landscape and vegetation will be restored to make it compatible with future use.

The Proprietor understands the importance for planning for decommissioning and closure early to ensure that the final landforms are properly designed and able to function as ecological systems in the long term and reach a point where the project proponent has met agreed completion criteria to the satisfaction of the Government and surrounding community.

Table 31: Preliminary Decommissioning and Closure Plan

Activity	Closure Plan	Responsibility	Budget (TZS)
Removing Electric Utility Poles	<ul style="list-style-type: none"> Removing overhead conductors Dropping down the utility poles Dismantling other equipment assembled with the utility poles Backfilling of open holes excavated during execution of utility poles Site restoration throughout the Right-of-Way Qualified engineers will supervise all disassembling and demolition activities. Closure Committee will be monitoring all closure activities to ensure they are done appropriately All relevant stakeholders will be consulted for technical assistance during the closure phase 	Proponent and Contractor	2,000,000
Disassemble the electrical Transformer	<ul style="list-style-type: none"> Transformer will be removed from its old position Installation of either new transformer or restoration of the area into its old status 	Proponent and Contractor	1,000,000
Personal Protective Equipment (PPE)	<ul style="list-style-type: none"> All workers during the closure phase shall use appropriate PPE including helmet, safety boot, dust mask, safety gloves, goggles, protective garment and safety Power line MUST be Switched Off. 	Proponent and Contractor	1,000,000
Waste Management	<ul style="list-style-type: none"> All waste generated during the closure phase will be sorted for easy management Metal materials will be collected and transported to steel factories where could be recycled for metal production while those in good conditions will be stored to the Proponent/Contractor for future use. The closure committee will make sure that no wastes will be disposed in the water bodies. 	Proponent and Contractor	1,000,000
TOTAL			5,000,000

10.3 Post –Closure Monitoring

10.3.1 Vegetation

Semi-annual inspection of re-vegetation areas will be carried out until an appropriately qualified independent third-party establishes that they are self-sustaining and that habitat restoration objectives have been achieved.

10.3.2 Physical Stability

Semi-annual assessment of the stability of the following rehabilitated areas and as appropriate and necessary corrective action shall be taken with particular attention on

- The stability of the soil used to fill pits of the site;
- Stability of compacted areas in resistance to soil erosion; and
- Stability of the planted vegetation to avoid soil erosion.

CHAPTER ELEVEN: CONCLUSION AND RECOMMENDATIONS

The Environmental Impact Assessment study has identified a number of issues pertaining to the proposed project. The issues/impacts have been described and assessed in detail to gain adequate understanding of possible environmental effects of the proposed project at all stages. The Environmental Management plan provides a way forward for implementation of the proposed mitigation measures. The Environmental and Social Monitoring Plan shows what has to be monitored during proposed project cycle. The estimated costs for implementing the mitigation measures as well as monitoring are just indicative based on consultant's informed judgment.

11.1 Conclusions

During the implementation of LAPD Phase I projects, Rusumo Village and Ngara District Council collectively agreed to construct water supply scheme to supply clean and safe water in Rusumo village and its hamlets. Also the project aimed at reducing potential public health threat due to poor water supply condition to over 70% of local dwellers. The constructed water supply scheme has been affected by insufficient power supply to run the existing water treatment plant with ancillary operating facilities since it was connected with Single-phase power supply.

Based on the above reason, Ngara District Council collectively with Rusumo Village contracted the designer to examine convenient and feasible energy or power source among three sources which are National Grid Electricity, Solar Panels, and Diesel Engines. The designer recommended that; the use of three-phase power supply from National grid proved convenient for the proposed Rusumo water treatment plant. The decision made on the basis of cost, environment, safety and durability. Based on the above recommendation, the Proponent has proposed to construct Medium Voltage (500kVA/11/0.4KV) electrical distribution line during the commencement of LADP Phase II in the year 2022/2023.

Reliable electrical power will significantly spearhead the main objective of the constructed Rusumo Water Supply scheme.

The identified significant negative impacts associated with the proposed project are mainly related to the proposed construction works and operation phases and observed to be of limited scope. Nevertheless, the identified negative impacts could be minimized or prevented through implementation of recommended mitigation measures. In this regards the project proponent will ensure that the recommended mitigation measures are fully implemented during construction and operation phases. It can therefore be concluded that the proposed project does not pose severe environmental threat to the community, endangered species and natural habitats; hence it is socially acceptable, economically viable, and environmentally sustainable.

While a number of environmental impacts have been identified and assessed accordingly, none of them are considered to be too severe to make their amelioration impossible. Given the nature and location of the development, the conclusion is that the potential impacts associated with the proposed development are of a nature and extent that can be reduced, limited and eliminated

by the application of appropriate mitigation measures. Further, the consultant is of the opinion that implementation of the proposed ESMP and EMP will safeguard the integrity of the environment and welfare of the people in the project area.

11.2 Recommendations

It is evident that the proposed project is associated with both positive and negative impacts during construction and operation phases of the project. The following recommendations are made to enhance the viability of the project: The project shall be continued as planned as it is economically and socially viable, Ngara District Council and TANESCO shall oversee activities of the Contractor in implementation the developed impact mitigation measures described in the ESIA report, The proposed mitigation and enhancement measures (the ESMP) should be implemented in order to minimize and/or avoid the identified adverse environmental and social impacts of the proposed project. The ESMP should be provided as part of the Contractor's contract, The EMP should also be implemented to track the effectiveness of mitigation and enhancement measures and hence further improvement of the mitigation plan. Monitoring will be used as a means of ensuring compliance with national or international standards and this should go hand in hand with obtaining statutory approvals as listed in table 32

Table 32: Statutory Permits, Certificates and Licences for the Project

	Permit, Certificate and License	Relevant Act/Regulation	Responsible authority	Owner/who to apply for	Status
1	EIA Certificate	EMA No. 20, of 2004	VPO-DoE through NEMC	Ngara DC	This document is part of the application
3	Workers Compensation Fund (WCF) registration	The Workers Compensation Act No. 20 of 2008.	Workers Compensation Fund	Ngara DC	To be applied for
5	Construction permit	The Contractors Registration Act No. 17 of 1997	Contractors Registration Board (CRB)	Ngara DC	To be applied for
6	Land Use Permit	The Roads Act No. 13 of 2007 and its Regulation of 2009	TARURA	Ngara DC	Obtained-See Appendix III

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APPENDICES

Appendix I: Consulted Stakeholders & Minutes of Village Meeting

MUHTASARI WA KUTHIBITISHA UWEZO WA ARDHI KWA
AJILI YA MIRADI YA KITIRO CHA AFYA CHA RUSUMO, NJIA
YA UMEME KWENDA KITIRO CHA AFYA NA CHANZO CHA
MAJI, MRADI WA SOKO LA KAHAZA, MRADI WA BARABARA
IENDAYO KITIRO CHA AFYA. 7-11-2021

AGENDA ZA MKUTANO

1. KUFUNGUWA KIKAO
2. UTAMBULISHO
3. UPATIKANAJI NA ARDHI KWA AJILI YA MIRADI
4. TATHMINI YA AITHAL ZA MAZINGIRA NA KIJAMII
5. KUFUNGUWA KIKAO.

MUHT NA 1/2021/2022: KUFUNGUWA MKUTANO.
Mwenzeketi alifingua mkutano mnamo saa 9:12 jioni
kwa kuwakanbisha wananchi kwenge mkutano na
kujadili mada zilizotolewa mbele ya mkutano.

MUHT NA 2. 2021/2022 UTAMBULISHO.
Utambulisho ulifanyika kwa viongozi wa Serikali
ya kijiji wataalam kutoka kwa mkurugenzi wa
Halmashauri ya ulaya ya Ngara na wananchi kwa
kufuata utongoji.

MUHT NA 3: UPATIKANAJI WA ARDHI YA KUTEKELEZA
MIRADI YA KIJIKI CHA RUSUMO:

Katika mkutano huo mtaalam kutoka kwa mkurugenzi
nzi wa ulaya alisimama na kuwasilisha agenda hiyo
kwa kutoka kujua kama kuna ardhi iliyotengwa
kwa ajili ya utekelezaji wa miradi hiyo.

Baadae wananchi walieleza kuwa eneo litolewe kwa ajili ya miradi; na hapatakuwa po na migogoro au manumbano ya ardhi; na ardhi huyo itumike kwa ajili ya miradi tajwa kwa ajili ya maendeleo ya wananchi wote. Na wameshukuru na wanandi kushukuru kwa Benta ya Dunia kuwepadhili miradi maana maisha yao yanaboreka.

AMUHI NA 4: TATHUMINI YA ADHARI ZA MAUNGIRA

Mtaalamu alisimama na pandero kuwa yupo madhara yanatokana na uwepo wa ardhi wakati wa bado hivyo ameomba wananchi wazidhi madhara hayo na faida za miradi hiyo. Baada ya maalizo wananchi wamesoma kuwa Ajira utapatikana mapapatikana na maungira yatahambika kutokana na Uchimbaji wa barabara wa mashimo ya nguzo za kumeme, lakini hasara zita kabilikwa na faida za nyingi. Ulahingani sho hasara za miradi hiyo.

Baadae wananchi walielwa kuwa eneo litolewe kwa ajili ya miradi; na hapatakuwa po na migogoro au marumbano ya ardhi; na ardhi huyu itumike kwa ajili ya miradi tajwa kwa ajili ya maendeleo ya Wananchi wote. Na wameshukuru na wanandi kushukuru kwa Bantu ya Dunia kuwepadhiri miradi maana maisha yao yanaboreka.

MAUMWI NA 4: TATHUMINI YA ADHARI ZA MAUNGIRA

Mtaalamu alisema na maelero kuwa yupo madhara yanatokana na uwepo wa ardhi wakati wa baada huyu amesema wananchi wazidhi madhara hayo na faida za miradi hiyo, Baada ya maelero wananchi wamesema kuwa Ajira utapatikana map yapatikana na maungira yataharibiwa kutokana na Uchimbaji wa bumbura wa mawimbi ya ufurw v'kumeme, lakini hasara zita kabilikwa na faida ni nyingi. Uhalingani sho hasara za miradi hiyo.

wakati amesimama wananchi walimwomba atgaji ni miradi gani inayotarajiwa kutekelezwa, alieleza kuwa miradi kwa Rusumo ni miradi wa kutua cho afya kipeleke umeme wa tenseso kwenye kutua cho afya na kwenye chanzo cho maji na Barabara iendayo kwenda kutua cho afya, uwekaji wa bens kutua cho afya na ugereri wa soko la kahara alieleza kuwa katika kutekeleza miradi hiyo maeneo ya kuwekera miradi hiyo inatakiwa ardhi, na alieleza kuwa faida unaropati kans kutokana na miradi hiyo ni pamoji na

1) Wananchi kupata huduma za afya wakati wote wa ufu utapungua kwa kuwa umeme unakuwepo wa huduma unazoelekea na kuwepo wa umeme.

2) Maji yatapatikana kutokana na umeme wa Barabara Hararusisho kusafishwa wagonjwa na wananchi kwa ujumla.

Baada ya maelezo hayo wananchi waliishi za kama: Je wakati wa kutekeleza miradi Wananchi wanaorunguka Rusumo watapata ujira au shughuli hiyo itafanywa wa kampuni Wananchi walielera kwa ajira za muda zitaungatiwa kwa wazawa ili kinachotakiwa wawe waaminifu maana inayoteleza wananchi kupewa kazi na kuanza kufika kwa maji inayoteleza maeneo mengine

10

MUHT NA 5: KUHNGA MICHANGU

Mkutano wa kazi wa kusipi umefungwa
ho mweykul mnamo saa 11-27 kwa
kuwashukuru kwa michangi yao na
kuwatoka safani njema waidipo matua.
Naomba kuwasitisha.

Priscilla P. L. P. P. P.
Mwenyekiti
Mikala ya Kazi
Rusumo

ELIEN P. W. W. W.
Mtendaji Kazi
Cha Rusumo
Ngara

MASHAHEDI YA MUKTANO MKEU WA ASHARA KUTSI CHA RUSUMO			
JINA KAMILI	WASHIFA	SAFFATI	
1 DEUS DAMIANI	Mikiti Rusumo Borde	D. Damiani	
2 XRBUBUMSI MURARI	Balozzi -		
3 JUMA SERAHA	Mjumbwe	D	
4 FABIAN RUDOVICK	- II - I - II -	Juma	
5 JAMILA SALUMU	Mjumbwe S/Kyayi	Jamil	
6 VESTINA DEUSI	- I - I -		
7 MFINNWA PAUL	- II - I -		
8 PROLA PAPIUS	I - I -		
9 GERVAISE BUIDIO	Balozzi / Mjumbwe		
10 SAFFORD MISAGO	x - x -		
11 XITHANIS BERNARDO	- x - I -		
12 FURATA ANTHONY	- I - I -		
13 KORONERY GISHEGEME	- I - I -		
14 NURU MGHITA	MIENDAJI KIJITA CHA RUSUMO NGARA	Goro M(E)	
15 MEDY SAMBANI	- I - I -		
16 RAZARO PIUS	- x - I -		
17 XBURAKHARY ISMAIL	- x - x -	Lazar O	
18 KAKURU KIBARONGO	Balozzi - Mjumbwe	Kakuru	
19 ISSAIA KEREMENI	- I - x -	Issa	
20 DIDAS DAMIANI	- I - x -	Didas	
21 JOEL JOVINI	- Balozzi - Mjumbwe		
22 GEORGE ALEXANDER	- I - x -		
23 DORIS XRBUMSI	- I - x -		
24 HANDEO ADIRANI	- I - I -		
25 RENA MEDADI	- I - I -		
26 NATANA JOHNI	- x - I -		
27 JESKA MADARAKA	- x - I -		
28 MADARAKA ZINGIRINI	- I - I -		
29 MATHA KETA	- I - I -		
29 ESTER FREDCK	- I - I -		
30 YUSUPH RASTON	- I - I -		

RUSUMO		MUKUJIBU MUKUJIBU MUKUJIBU		MUKUJIBU MUKUJIBU MUKUJIBU	
JINA	KAMILI	KLABINDA		SAMHI	
31	SEREMAN ABUL	x	x		SEREMAN
32	STONY JWINARY	x	x		STOLE
33	FRED BIRAMA	Mjumbwe			fred
34	HASIMU PEIER	x	x		
35	XUDAZ LATICHUMU	Mjumbwe/Baloz			Sati
36	SETH SHASI	M/Kiri/Vijana			
37	MENUSER MTAGWA				
38	JOHNI VAMUNTO				
39	HABILI JOHNI				
40	PROBENSI RUGINA				
41	JAMESI BUKURU				
42	XDIRIAN SHUMBUHO				
43	RUCHUS TURBO				Turbo
44	MASHAKA MASORO GO				MASHAKA
45	NOVATI SHUMBUHO				NOVAT
46	EMANUEL KAMGISHA				KAMULASHI
47	MAPAMBANO ZINGIRAN				
48	SEPERATIUS RUIA				
49	FRANSISI SERESINI NKIRO				
50	JOSEPH LATANTUNGA				
51	JOSEPHATI JOSEPH AAN				
52	JUMATINE KAMUKA				
53	ISSACK ERISITA				Juan
54	KWIZERA ERISITA				Issack
55	IBDI MOTHMERD				Idi
56	ENOCK GUARANTWA				Enoche
57	KAMGISHA PASCHAL				
58	JERARD SEBASTIAN FUND				Jerd
59	ALBERT FERESIAN				
60	ERLW KAZOBWATHO				
61	BEVIDI KAZOBWATHO				
62	GAMURI THOMAS				
63	RUS				

Mtendaji wa Mji wa Rusumo
City: Rusumo

JINA	KAMARI	KAMARA	Guthu
61	ROSIÄ X. YONNA	" - " -	[Blurred]
62	BATHATI WILLIAMU	" - " -	[Blurred]
63	SAMUBU NYUKI	" - " -	SITUANSA
64	MISA BURINTO	" - " -	[Blurred]
65	BATIGAMUKI KATI GAMBUSA	MJIMBES/KIYU	[Blurred]
66	PASCAL POUTANTO	" - " -	[Blurred]
67	PASCAL REOPORO	" - " -	[Blurred]
68	RUKIZA REORUB	" - " -	[Blurred]
69	IBRAHIMU GEORGE KAMUCHAMU	BATHOZI	[Blurred]
70	ERIKANA SUGATI	" - " -	[Blurred]
71	XIPERIA SIMONI	" - " -	[Blurred]
72	ERIBA PIUSI	" - " -	[Blurred]
73	JOSEPH GABRIEL	" - " -	[Blurred]
74	MUSSA KISESE	" - " -	MUSSA
75	MUSAMU MEREKIDY	" - " -	[Blurred]
76	DAUDI NJAMBUNDI	" - " -	[Blurred]
77	BARANTO AMOSI	" - " -	[Blurred]
78	PAUL BUSURA	" - " -	PAUL
79	ELISI PATRIKIJI	" - " -	[Blurred]
80	JIMMI BWEREZA	MTENDAJI KIWIJI CHA RUSUMO INGARA	JIMMY
81	KIRIPAN MEBADI	" - " -	[Blurred]
82	SANDAN KIRIPANI	" - " -	[Blurred]
83	ANTIBIUS T. LABERWA	" - " -	[Blurred]
84	NIIBA BIRAMA	" - " -	[Blurred]
85	MALIA WILLISONI	" - " -	[Blurred]
86	ELISA MINGWA	" - " -	[Blurred]
87	PASCAL NESTORY	" - " -	Christopher
88	CHRISTOPHER SEBATAWA	" - " -	Pascal
89	MALISELINA SEGESA	" - " -	Malsena
90	JAMES BUKURU	" - " -	[Blurred]

Appendix II: Consulted Stakeholders & Minutes of Ngara DC Meeting

HALMASHAURI YA WILAYA

MUHTASARI WA KIKAO CHA KAMATI YA WATAALAM CMT KUJADILI TATHIMINI YA ATHARI ZA MAZINGIRA NA KIJAMII KWA MIRADI PENDEKEZWA AWAMU YA II CHINI YA LADP

WAJUMBE WALIOHUDHURIA

1. BW. SOLOMON. O. KIMILIKE	-	MKURUGENZI MTENDAJI
2. EGIDY TEULAS	-	MKUU WA IDARA YA UTAWALA/UTUMISHI
3. YONA CHARUGAMBA	-	MKUU WA IDARA YA FEDHA NA BIASHARA
4. CONSTANTINE F. MSEMWA	-	MKUU WA IDARA YA MIPANGO, TAKWIMUNAUFUATILIAJI.
5. NGERANGERA TRESPHORY	-	MKAGUZIWA NDANI (W)
6. PETRONILA L. KAGIMBO	-	KAIMU AFISA EIMU MSINGI (W)
7. DIDMUS BAMUHIGA	-	KAIMU MRATIBU WA LADP
8. ADELINA MAPUNDA	-	KAIMU AFISA BIASHARA
9. EMMANUEL M. VICTOR	-	KAIMU AFISA TEHAMA
10. ENOCK G. NTAKISIGAYE	-	AFISA ELIMU SEKONDARI (W)
11. ENOCK MPONZI	-	AFISA ARDHI (W)
12. ATHANASIO ANDREW	-	KAIMU AFISA MAZINGIRA (W)
13. JOSEPH J. MRIANGA	-	KAIMU AFISA MALIASILI (W)
14. EMMANUEL KULWA	-	MKUU WA IDARA YA MAENDELEO YA JAMII,
15. SIMON MTUKA	-	KAIMU MKUU WA IDARA YA UJENZI (W)
16. REMIGIUS E. KAWISHE	-	KAIMU MKUU WA IDARA YA KILIMO, MIFUGO/ USHIRIKA
17. JOSEPHATSANGATATI	-	MKUU WA IDARA YA MIFUGO NA UVUVI
18. SAKINA Y. CHAMITI	-	MRATIBU WA TASAF
19. GABRIEL GIBSON	-	LADP CONSULTAT
20. DR. DAVID S. MAPUNDA	-	KAIMU MGANGA MKUU (W)
21. PERPETUA O. RUTWAZA	-	KAIMU AFISA UGAVI (W)

SEKRETARIET

1. BI. VIVIAN MARUHE	-	MWANDISHI WAWIKA OVYA HALMASHAURI
2. BI. PERAGIA J. NABUDINDI	-	MWANDISHI WAWIKAO
3. JONAS P. NSEKAMBABAYE	-	MHUDUMU

AGENDA NA. 1/1/11/2021/2022: KUFUNGUA KIKAO

Mwenyekiti aliwasalimia wajumbe na kuwakaribisha katika kikao, pia alieleza kwamba lengo la kufanyika kwa kikao ni kujadili au kutoa maoni juu ya tathimini ya athari za mazingira na

kijamii kwa miradi pendekezwa awamu II chini ya LADP. Aidha alieleza kwamba katika kikao kinachofanyika yupo Mtaalam Mshauri wa Mazingira ambaye amekuja kwa ajili ya kufanya kazi, ya kuandika maandiko kwa niaba ya Halmashauri ya Wilaya ya Ngara hivyo ataeleza dhumuni la kikao ambapo wajumbe watatakiwa kuchangia kwa kina. Kikao kilifunguliwa rasmi saa 4.00 asubuhi

AGENDA NA. 2/1/11/2021/2022KURIDHIA AGENDA

Wajumbe walipitia agenda na kuridhia zianze kujadiliwa

AGENDA NA. 3/1/11/2021/2022: TATHIMINI YA ATHARI ZA MAZINGIRA NA KIJAMII KWA MIRADI PENDEKEZWA AWAMU YA II CHINI YA LADP

Iliwasilishwa kwamba Mtaalam Mshauri wa Mazingira alipewa kazi ya kuandaa andiko la athari za kimazingira na kijamii kwa miradi itakayotekelezwa na mradi wa LADP II kwa niaba ya H/W ya Ngara, hivyo aliwaomba wajumbe kutoa maoni yao kwa uhuru na uwazi kwa kila mradi uliowasilishwa katika Nyanja zifuatazo;

- a) Faida za kimazingira na kijamii kwa kila mradi uliopendekezwa
- b) Hasara za kijamii na kimazingira zinazoweza tokea wakati na baada ya kukamilika kwa mradi
- c) Njia mbalimbali za kukabiliana na athari mbaya za kimazingira na kijamii kwa kila mradi

Pia Mtaalam Mshauri wa Mazingira alitaja orodha ya miradi inayopendekezwa kutekelezwa kwa kipindi cha cha awamu ya pili chini ya LADP kwa ufadhili wa benki ya dunia ambayo ni:

1. Construction of Ngara District Head Quarter Administration Block
2. Completion of Nzaza–Kabanga strategic market
3. Construction of Strategic Benaco trucks parking bay
4. Construction and equip Rulenge Health centre Complete and put in use Rusumo and Lukole Health centres built during LADP I by constructin fence around both health centers, procure medical Equipment and furniture for both High voltage Electric Lines to connect both Rehabilitation gravel access road to Rusumo HC and procure Ambulance for Rusumo HC
5. Procure furniture to equip Bukiriro Secondary School
6. Construction of infrastructure at Ngara High school and equip them (Admin Block, Dining Hall, Dormitory and High voltage line to connect the school
7. Construct High voltage Electric Line to connect Rusumo Water Project power source to run water pump after construction
8. Construction and equip Muhweza Dispensary
9. Construct Strategic Market at Kahaza in Rusumo village

Mtaalam Mshauri wa Mazingira alieleza kwamba ameshafika katika Vijiji na maeneo ambako miradi inatarajiwa kutekelezwa kwa ajili ya kuongea na wananchi katika maeneo husika pamoja na kukusanya taarifa mbalimbali na kusema kote alikopita wanajamii wamejitokeza katika mikutano na kutoa ushirikiano.

Wajumbe walipokea taarifa na kujadili/ kutoa maoni kama ifuatavyo;

Mjumbe aliuliza swali “Je kuna umuhimu gani kwa wao kutoa maoni wakati wananchi wa maeneo husika wameshatoa maoni kwa miradi yao waliyopendekeza?”

Ufafanuzi ulitolewa kuwa katika kufanya tathimini ya athari za mazingira na kijamii kwa miradi kuhusisha/kushirikisha wadau wa ngazi mbalimbali ili kuhakikisha miradi/mradi unakuwa na manufaa chanya kwa jamii na mazingira na hivyo kupunguza au kuzuia kabisa athari mbaya za mradi kwa jamii na mazingira, pia aliongezea kwa kusema kuwa wajumbe wa CMT ni moja ya wadau muhim sana katika miradi hii.

Mjumbe mwingine alisema kuwa endapo miradi pendekezwa itapatiwa fedha kwa ajili ya utekelezaji itakuwa na faida kubwa kwa wakazi wa maeneo husika na wilaya kwa ujumla kwa kuwa vijana wetu wenye ujuzi na wasio na ujuzi watapata ajira kipindi cha ujenzi wa miradi, hivyo alisisitiza wakandarasi watakapatiwa kazi wahakikishe wanajaza fomu ya makubaliano kuwa ahakikishe wazawa wanapewa kipaumbele katika utoaji wa ajira wakati wa ujenzi.

Kuna mjumbe alitoa ushauri kuwa miradi kama ya masoko na paking ya malori itasaidia kuongeza mapato kwa H/W na hivyo kuiongezea uwezo H/W kutoa huduma za kijamii kwa wananchi vijijini kama vile kujenga zahanati, kupeleka miundombinu ya maji safi kwa wananchi katika halmashauri ya Ngara.

Mjumbe alisema kuwa katika utekelezaji wa miradi/mradi wa aina yoyote ule kuna wakati huwa inajitokeza changamoto ya vibarua kutolipwa stahiki zao na hivyo kupelekea vibarua kudhulumwa na kuleta manung'uniko katika jamii, je kuna mikakati gani ya kuhakikisha jambo kama hili halijitokezi au likijitokeza ni hatua zipi zitakazo chukuliwa katika kupatiwa ufumbuzi?

Ufafanuzi ulitolewa kuwa ili kukabiliana na changamoto ya aina hii, mkandarasi sharti lazima awe na mikataba kwa wafanyakazi wake wote bila kujalisha ni mfanyazi mwenye ujuzi au asie na ujuzi, pia ufatiliaji na ukaguzi wa kila wiki unapaswa kufanywa na Halmashauri ili kuhakikisha kuwa wafanyakazi watapeleka mkataba pindi tu anapoajirwa na mkandarasi.

Pia ilielezwa kuwa ni muhimu kuwa na mfumo wa namna ya jamii kwa ujumla kutoa malalamiko yao juu ya kero zinazoweka kujitokeza kutokana na utekelezaji wa mradi/miradi, mfumo huo wa wananchi kutoa malalamiko ni lazima uwe rahisi na Rafiki wa walalamikaji.

Mjumbe mmoja alitoa shukrani zake kwa miradi iliyotekelezwa kwa awamu ya kwanza na kusema imekuwa na faida kubwa wa wananchi na kusema mfano ni ujenzi wa miundombinu katika shule ya msingi makugwa ambapo awali walimu walikuwa hawana nyumba ya kuishi, wanafunzi walikuwa wanapeana zamu kutumia darasa kwa sababu ya upungufu wa vyumba vya madarasa, hivyo anaomba na miradi ya awamu ya pili ipatiwe fedha kwa ajili ya utekelezaji ili kupunguza changamoto katika jamii.

Wajumbe walisisitiza kuwa swala la utunzaji wa mazingira lipewe kipaumbele kwa miradi yote itakayopatiwa fedha na kutekelezwa hususani katika swala la upandaji miti ya vivuli na matunda ipandwe mapema ili mkarandi awe anaimwagilia mpaka kufika kumaliza ujenzi iwe imekwisha chipua.

pia kuna mjumbe alisema kuwa katika ujenzi wa jengo ofisi za halmashauri kutahusisha ubomoaji wa baadhi ya majengo yaliyochakaa na hivyo kupelekea uwepo wa vumbi, na je

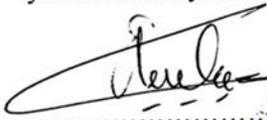
hatuoni kama vumbi hilo litatuadhili sisi wafanyazi na hata kupelekea kuugua kikohozi na mafua?

Ufafanuzi ulitolewa kuwa katika andiko kutakuwa na mpango wa uthibiti wa athari ambapo mkandarasi atawajibika kuzuia vumbi hilo kwa kumwagilia maji na kuweka uzio ili kutenga eneo la kazi na maeneo mengine, wajumbe walichangia pia kwa kusema wanafanyakazi kwa kipindi hicho ni vyema pia kupewa vifaa vya kujikinga vumbi, pia ilishauriwa kuwa ubomojai wa majengo chakavu uwe unafanywa nyakati za jioni ambapo watumishi wa halmashauri wanakuwa wameshatoka mao fisini.

Kuna mjumbe alishauri kuwa miradi ya ujenzi wa masoko mkakati yakishakamilika, kipindi yanafanya kazi kutakuwa na uzalishaji wa taka wa kila siku, hivyo basi nivyema katika usanifu wa miradi hiyo ni muhimu kuwepo na miundombinu ya ukusanyaji taka kwa muda kabla ya kuondolewa na kulepekwa dampo na pia lazima halmashauri ionyeshe mpango namna itakavyokuwa inaondoa taka kutoka kwenye vizimba vya soko na kuzipeleka dampo ili kuepuka mrundikano wa taka kipindi soko linafanyakazi na hivyo kutokuwa kero kwa wafanyabiashara na wakazi wa maeneo ya karibu na soko.

AGENDA NA. 4/1/11/2021/2022: KUFUNGA KIKAO

Mwenyekiti aliwashukuru wajumbe kwa michango na maoni yaliyotolewa juu ya tahimini ya athari ya kimazingira na kijamii kwa miradi itakayotekelezwa katika mradi wa LADP II. Baada ya kutamka hayo kikao kilifungwa saa 9.10 alasiri.


.....
Katibu

UMETHIBITISHWA NA;


.....
Mwenyekiti

Tarehe...10.....11..... 2021.

MKURUGENZI MTENDAJI
HALMASHAURI YA WILAYA
NGARA

Appendix III: TARURA Land Use Permit/Ownership

(123)



JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA RAIS

TAWALA ZA MIKOA NA SERIKALI ZA MITAA

WAKALA WA BARABARA ZA VIJIJINI NA MIJINI-
TANZANIA (TARURA)



TARURA
P.O. BOX 168,
NGARA.

KUMB. Na.NG/TARURA/T.2/VOL.3/47 02 /12/2021.

MKURUGENZI MTENDAJI,
S.L.P 30,
NGARA.

LADP-COORDINATOR
Shughulikia
03/12/2021

03/12/2021

**YAH: KIBALI CHA KURUHUSU NJIA ZA UMEME KUJENGWA
KWENYE HIFADHI ZA BARABARA YA RUSUMO – MSHIKAMANO NA
LUKOLE - RUMASI**

Tafadhari husika na mada tajwa hapo juu, Pja rejea barua yako ya tarehe 29/11/2021 yenye Kumb. Na. AE.582/944/01/20 ikihusiana na mada tajwa hapo juu.

Kwa barua hii napenda kukufahamisha kuwa kibali kimetolewa cha kupitisha njia ya umeme kwa kuzingatia upana wa hifadhi ya barabara iliyoko katika barabara hii. Hata hivyo wawekapo nguzo hizo zizingatie umbali wa kutoka pembezoni mwa barabara ambao ni 3.5m.

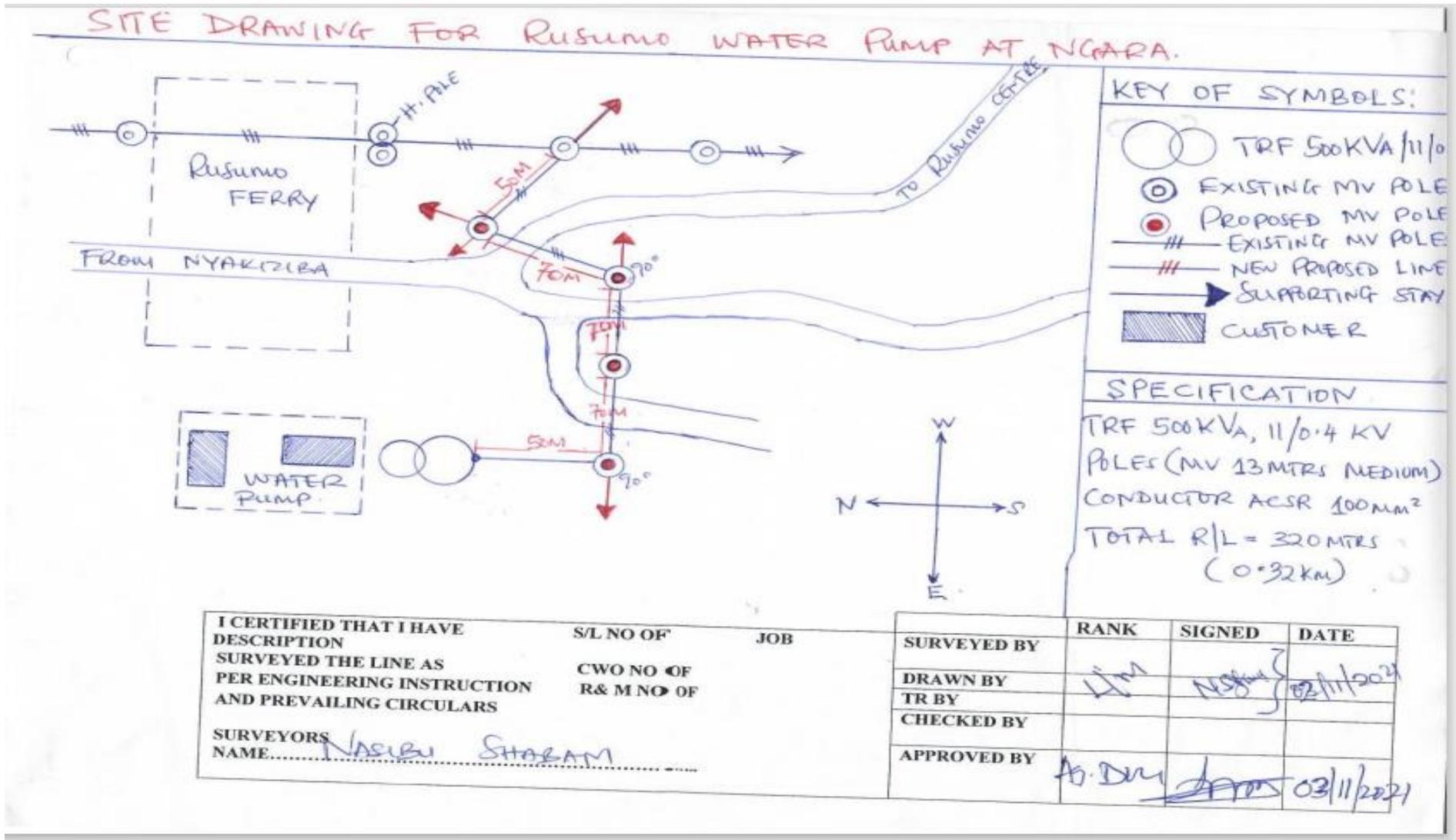
Nakutakia kazi njema.


Eng. Christopher L. Mwanuzi
K.N.Y MENEJA TARURA
NGARA

Meneja wa Halmashauri
TARURA
P.O. Box 168, Ngara

Simu: 026-2322929 Nukushi: 026-2322929 Barua pepe: ceo@tarura.go.tz Tovuti: www.tarura.go.tz
TARURA ni Wakala uliopo chini ya Ofisi ya Rais, Tawala za Mikoa na Serikali za Mitaa (TAMISEMI)
ulioanzishwa chini ya Sheria za Uanzishwaji wa Wakala "Executive Agency Act, CAP 245"

Appendix IV: Rusumo Water Treatment Plant Medium Voltage Distribution Line-Layout



Appendix V: GBV Code of Conduct

Contractor's Gender-based Violence and Child Protection Code of Conduct

The Contractor shall create and maintain an environment which prevents gender-based violence (GBV) and child abuse/exploitation (CAE) issues, and where the unacceptability of GBV and actions against children are clearly communicated to all those engaged on the project. The following core principles and minimum standards of behavior will apply to all employees of the Contractors without exception:

1. GBV or CAE constitutes acts of gross misconduct and are therefore grounds for sanctions, penalties and/or termination of employment. All forms of GBV and CAE including grooming are unacceptable be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who commit GBV or CAE will be pursued.
2. Treat women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
3. Do not use language or behaviour towards women, children and men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
4. Sexual activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child and consent from the child is not a defence.
5. Sexual favours or other forms of humiliating, degrading or exploitative behaviour is prohibited.
6. Sexual interactions between contractor's and consultant's employees at any level and member of the communities surrounding the work place that are not agreed to with full consent by all parties involved in the sexual act are prohibited. This includes relationships involving the withholding/promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex – such sexual activity is considered "non-consensual" within the scope of this Code.
7. All staff, volunteers, consultants and sub-contractors are highly encouraged to report suspected or actual GBV and/or CAE by a fellow worker, whether in the same contracting firm or not. Reports must be made in accordance with Standard Reporting Procedures.
8. All employees are required to attend an induction training course prior to commencing work on site to ensure they are familiar with the GBV and CAE Code of Conduct.
9. All employees must attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce the understanding of the institutional GBV and CAE Code of Conduct.
10. All employees will be required to sign an individual Code of Conduct confirming their agreement to support GBV and CAE activities.

I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and CAE. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action.

For the Company

Signed by _____

Title: _____

Date: _____

Individual Gender Based Violence and Child Protection Code of Conduct

I, _____, acknowledge that preventing gender-based violence (GBV) and child abuse/exploitation (CAE) are important. GBV or CAE activities constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or termination of employment. All forms of GBV or CAE are unacceptable be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who commit GBV or CAE will be pursued as appropriate.

I agree that while working on the Project I will:

- Consent to police background check.
- Treat women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
- Not use language or behaviour towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- Not participate in sexual activity with children—including grooming or through digital media. Mistaken belief regarding the age of a child and consent from the child is not a defence.
- Not engage in sexual favour or other forms of humiliating, degrading or exploitative behaviour.
- Not have sexual interactions with members of the communities surrounding the work place and worker's camps that are not agreed to with full consent by all parties involved in the sexual act. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered "non-consensual" within the scope of this Code.
- Attend and actively partake in training courses related to HIV/AIDS, GBV and CAE as requested by my employer.
- Report through the GRM or to my manager suspected or actual GBV and/or CAE by a fellow worker, whether in my company or not, or any breaches of this code of conduct.
- Wherever possible, ensure that another adult is present when working in the proximity of children.
- Not invite unaccompanied children into my home, unless they are at immediate risk of injury or in physical danger.
- Not sleep close to unsupervised children unless absolutely necessary, in which case I must obtain my supervisor's permission, and ensure that another adult is present if possible.
- Use any computers, mobile phones, or video and digital cameras appropriately, and never to exploit or harass children or to access child pornography through any medium.
- Refrain from physical punishment or discipline of children.
- Refrain from hiring children for domestic or other labour which is inappropriate given their age or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
- Comply with all relevant local legislation, including labour laws in relation to child labour.

Use of children's images for work related purposes

When photographing or filming a child for work related purposes, I must:

- Before photographing or filming a child, assess and endeavour to comply with local traditions or restrictions for reproducing personal images.

Individual Gender Based Violence and Child Protection Code of Conduct

I, _____, acknowledge that preventing gender-based violence (GBV) and child abuse/exploitation (CAE) are important. GBV or CAE activities constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or termination of employment. All forms of GBV or CAE are unacceptable be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who commit GBV or CAE will be pursued as appropriate.

I agree that while working on the Project I will:

- Consent to police background check.
- Treat women, children (persons under the age of 18), and men with respect regardless of race, colour, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
- Not use language or behaviour towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- Not participate in sexual activity with children—including grooming or through digital media. Mistaken belief regarding the age of a child and consent from the child is not a defence.
- Not engage in sexual favour or other forms of humiliating, degrading or exploitative behaviour.
- Not have sexual interactions with members of the communities surrounding the work place and worker's camps that are not agreed to with full consent by all parties involved in the sexual act. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered "non-consensual" within the scope of this Code.
- Attend and actively partake in training courses related to HIV/AIDS, GBV and CAE as requested by my employer.
- Report through the GRM or to my manager suspected or actual GBV and/or CAE by a fellow worker, whether in my company or not, or any breaches of this code of conduct.
- Wherever possible, ensure that another adult is present when working in the proximity of children.
- Not invite unaccompanied children into my home, unless they are at immediate risk of injury or in physical danger.
- Not sleep close to unsupervised children unless absolutely necessary, in which case I must obtain my supervisor's permission, and ensure that another adult is present if possible.
- Use any computers, mobile phones, or video and digital cameras appropriately, and never to exploit or harass children or to access child pornography through any medium.
- Refrain from physical punishment or discipline of children.
- Refrain from hiring children for domestic or other labour which is inappropriate given their age or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
- Comply with all relevant local legislation, including labour laws in relation to child labour.

Use of children's images for work related purposes

When photographing or filming a child for work related purposes, I must:

- Before photographing or filming a child, assess and endeavour to comply with local traditions or restrictions for reproducing personal images.

- Before photographing or filming a child, obtain informed consent from the child and a parent or guardian of the child. As part of this I must explain how the photograph or film will be used.
- Ensure photographs, films, videos and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive.
- Ensure images are honest representations of the context and the facts.
- Ensure file labels do not reveal identifying information about a child when sending images electronically.

I understand that it is my responsibility to use common sense and avoid actions or behaviours that could be construed as GBV or CAE or breach this code of conduct. I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and CAE. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signed by _____

Title: _____

Date: _____

Manager's Gender Based Violence and Child Protection Code of Conduct

Managers at all levels have particular responsibilities to create and maintain an environment that prevents GBV and CAE. They need to support and promote the implementation of the Contractor's Codes of Conduct. To that end, they must adhere to the Manager's Codes of Conduct and also sign the Individual Codes of Conduct. This commits them to support and develop systems that facilitate the implementation of this action plan and maintain a GBV free and child-safe work environment. These responsibilities include but are not limited to:

Mobilization

1. Establish a GBV and CAE Compliance Team (GCCT) from the contractor's and consultant's staff to write an Action Plan that will implement the GBV and CAE Codes of Conduct.
2. The Action Plan shall, as a minimum, include:
 - i. Standard Reporting Procedure to report GBV and CAE issues through the project Grievance Response Mechanism (GRM);
 - ii. Accountability Measures to protect confidentiality of all involved; and,
 - iii. Response Protocol applicable to GBV survivors/survivors and perpetrators.
3. Update the Action Plan to reflect feedback and ensure the Action Plan is carried out in its entirety.
4. Provide appropriate resources and training opportunities for capacity building so members of the GCCT feel confident in performing their duties. Participation in the GCCT will be recognized in employee's scope of work and performance evaluations.
5. Ensure that contractor, consultant and client staff are familiar with the GRM and that they can use it to anonymously report concerns over GBV and CAE.
6. Hold quarterly update meetings with the GCCT to discuss ways to strengthen resources and GBV and CAE support for employees and community members.
7. In compliance with applicable laws and to the best of your abilities, prevent perpetrators of sexual exploitation and abuse from being hired, re-hired or deployed.
8. Ensure that when engaging in partnership, sub-grant or sub-recipient agreements, these agreements a) incorporate this Code of Conduct as an attachment; b) include the appropriate language requiring such contracting entities and individuals, and their employees and volunteers to comply with this Code of Conduct; and c) expressly state that the failure of those entities or individuals, as appropriate, to take preventive measures against GBV and CAE, to investigate allegations thereof, or to take corrective actions when GBV and/or CAE has occurred, shall constitute grounds for sanctions and penalties.

Training

1. All managers are required to attend an induction manager training course prior to commencing work on site to ensure that they are familiar with their roles and responsibilities in upholding the GBV and CAE Codes of Conduct. This training will be separate from the induction training course required of all employees and will provide managers with the necessary understanding and technical support needed to begin to develop the Action Plan for addressing GBV and CAE issues.
2. Provide time during work hours to ensure that direct reports attend the mandatory Project's facilitated induction GBV and CAE training required of all employees prior to commencing work on site.
3. Ensure that direct reports attend the monthly mandatory refresher training course required of all employees to combat increased risk of GBV and CAE during civil works.

4. Managers are required to attend and assist with the Project's facilitated monthly training courses for all employees. Managers will be required to introduce the trainings and announce the self-evaluations.
5. Collect satisfaction surveys to evaluate training experiences and provide advice on improving the effectiveness of training.

Prevention

1. All managers and employees shall receive a clear written statement of the company's requirements with regards to preventing GBV and CAE in addition to the training.
2. Managers must verbally and in writing explain the company and individual codes of conduct to all direct reports.
3. All managers and employees must sign the individual 'Code of Conduct for GBV and CAE', including acknowledgment that they have read and agree with the code of conduct.
4. To ensure maximum effectiveness of the Codes of Conduct, managers are required to prominently display the Company and Individual Codes of Conduct in clear view in public areas of the work space. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
5. All posted and distributed copies of the Company and Individual Codes of Conduct should be translated into the appropriate language of use in the work site areas (ex. Kihwahili, English).
6. Managers will explain the GRM process to all employees and encourage them to report suspected or actual GBV and/or CAE.
7. Managers should also promote internal sensitization initiatives (e.g. workshops, campaigns, on-site demonstrations etc.) throughout the entire duration of their appointment in collaboration with the GCCT and in accordance to the Action Plan.
8. Managers must provide support and resources to the GCCT to create and disseminate the internal sensitization initiatives through the Awareness-raising strategy under the Action Plan.

Response

1. Managers will be required to provide input, final decisions and sign off on the Standard Reporting Procedures and Response Protocol developed by the GCCT as part of the Action Plan.
2. Once signed off, managers will uphold the Accountability Measures set forth in the Action Plan to maintain the confidentiality of all employees who report or (allegedly) perpetrate incidences of GBV and CAE (unless a breach of confidentiality is required to protect persons or property from serious harm or where required by law).
3. If a manager develops concerns or suspicions regarding any form of GBV or CAE by one of his/her direct reports, or by an employee working for another contractor on the same work site, s/he is highly encouraged to report the case using the identified reporting mechanism.
4. Once a sanction has been determined, the relevant manager(s) is/are expected to be personally responsible for ensuring that the measure is effectively enforced, within a maximum timeframe of 14 days from the date on which the decision was made.
5. Managers failing to comply with such provision can be in turn subject to disciplinary measures, to be determined and enacted by the company's Chief Executive Officer (CEO), Managing Director or equivalent highest-ranking manager. Those measures may include:
 - i. Informal warning
 - ii. Formal warning
 - iii. Additional Training
 - iv. Loss of up to one week's salary.

- v. Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
 - vi. Termination of employment.
6. Ultimately, failure to effectively respond to GBV and CAE cases on the work site by the contractor's managers or CEO may provide grounds for legal actions by authorities.

I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and CAE. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action.

For the Employer

Signed by _____

Title: _____

Date: _____

Appendix VI: COVID -19 Contingency Plan

**UNITED REPUBLIC OF TANZANIA
PRESIDENT’S OFFICE - REGIONAL
ADMINISTRATION AND LOCAL GOVERNMENT**

NGARA DISTRICT COUNCIL

Phone: 028 2226016
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Email:ded.ngara@kagera.go.tz



Health Department
P.O. Box. 30.
**NGARA
KAGERA.**

**NGARA PUBLIC HEALTH EMERGENCIES CONTINGENCY PLAN
MARCH, 2020/2021**

Aidan J. Bahama
DISTRICT EXECUTIVE DIRECTOR
NGARA

Executive Summary

Corona viruses are large family of viruses. There are several known human coronaviruses that usually only cause mild respiratory disease, such as the common cold. However, at least twice previously, coronaviruses have emerged to infect people and cause severe disease. The severe respiratory syndrome (SARS) of unknown etiology among people was first reported on 31st December 2019 in Wuhan City (population of 19 million), capital of Hubei Province (population of 58 million), southeast of China; of which 7 were reported as severe cases. This COVID19 is the different from SARS-Corona Virus of 2003 and MERS- Corona Virus of 2013. 94 countries were reported of COVID19 the entire world like China, Japan, South Korea e.tc. The incubation period is about 1 – 14 days. The sign and symptoms are fever, cough, sore throat, nasal congestion, malaise, headache, and muscle pain or malaise. There is no current evidence from RCTs to recommend any specific anti-COVID19 treatment for patients with suspected or confirmed, but can treat the sign and symptoms. The transmission can be occur either by directly contact of respiratory secretions and droplets. Standard precautions include hand hygiene; use of PPE to avoid direct contact with patients' blood, body fluids, secretions (including respiratory secretions) and Use a medical mask if working within 1-2 meter of the patient.

Acknowledgments

The Ngara District Council wishes to express its gratitude to all experts who participated in developing this Contingency Plan for Public Health Emergency of COVID19. Special gratitude goes to the Ministry of Health, Community Development, Gender, Elderly and Children (MOHCDGEC) for Public Health Emergency Preparedness and Response for the strategic guidance in the development of this Plan and provided Infection Prevention and Control (IPC) and Clinical Management of Novel Corona Virus (nCoV) Pneumonia. Specifically, valuable contributions from Districts Executive Director are also appreciated.

I would also like to acknowledge the team of technical experts from different Health Departments specifically from Curative Services team, Preventive Services team, Health Quality Assurance, Emergency Preparedness and Response and Disease Control, Environmental Health and Sanitation, Health Promotion, who worked tirelessly and contributed to the successful completion of this plan.

Finally but not the least, I would like to extend sincere appreciation to the World Health Organization through Ministry of Health, Community Development, Gender, Elderly and Children (MOHCDGEC) with Regional, for facilitating assessment on District operational readiness for COVID19 response.

Abbreviations

DMO	District Medical Officer
COVID19	Corona Virus 2019
HIDTU	Highly Infectious Disease Treatment Unit
IDSR	Integrated Disease Surveillance and Response
WHO	World Health Organization
IEC	Information, Education and Communication
IHR	International Health Regulations
IMS	Incident Management System
IPC	Infection Prevention Control
LGA	Local Government Authorities
MOHCDGEC	Ministry of Health Community Development Gender Elderly and Children
NGO	Non-Government Organization
POE	Point of entry
PPE	Personal Protective Equipment
RMO	Regional Medical Officer
RRT	Rapid Response Team
SOP	Standard Operating Procedure
TOT	Training of Trainers
WHO	World Health Organization
DHO	District Health Officer
DED	District Executive Director
DC	District Commissioner

Key Concepts

The following glossary is from the Tanzania Disaster Management Act (2015) and United Nations International Strategy for Disaster Reduction terminology on disaster risk reduction (2009 version).

Disaster

An occurrence or series of occurrences, whether natural or man-made, man-made calamity that causes or poses a significant disruption or threat to the functioning of a community, causing widespread human, natural, economic or environmental losses which exceed the capacity of that community to cope with the disaster using its own resources.

Disaster response

Any measure taken immediately prior to or following a disaster impact that is directed towards saving life, protecting property and the environment or dealing with the immediate damage and other effects caused by the disaster.

Emergency management

It is also used, sometimes interchangeably, with the term disaster management, particularly in the context of biological and technological hazards and for health emergencies. While there is a large degree of overlap, an emergency can also relate to hazardous events that do not result in the serious disruption of the functioning of a community or society.

Hazard

A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihood and service, social and economic disruption or environmental damage.

Preparedness

The knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters.

Response

Actions taken directly before, during or immediately after a disaster to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Introduction

Ngara district is among of eight district of Kagera region, 4 Division, 22 Wards and 75 Villages with 34 streets of Mainer Township.

Ngara District is exposed to a number of natural and man-made hazards that impact livelihoods, destroy infrastructure, disrupt the provision of essential services and claim lives. Primary risks are linked to hazards such as road accidents and health epidemics.

For many years now, Ngara is threatened by a number of public health risks which causes a number of deaths, morbidity to affected people and economic disruption. These include; Malaria, road accidents, Ebola, Corona Virus.

The ultimate objective of this Public Health Risk Emergency Response Plan is to consolidate capacity to support response by ensuring that all those charged with tackling the disease (i) know their role; (ii) are competent to carry out the tasks assigned to them; (iii) have access to available resources and facilities; and (iv) work together as a partnership. Therefore, the Plan aims to bring order to the response operations. Additionally, it is concerned with providing a framework for management, coordination and control within which a team of responders can go about their work at times of a major emergency

Background Information

1.1. Geophysical features

Ngara (334,939 people in 2012) is located in northwestern Tanzania near the borders of Rwanda and Burundi. Its elevation is approximately 6,000 feet (1,800 m) and is considered to be in the highlands of Tanzania.

Ngara has four seasons: two dry seasons from June to September and January to February with two rainy seasons from October to December and from March to May. During dry seasons there are sometimes strong winds/hazy air and temperatures vary between 18 and 30 °C (64 and 86 °F), depending on the time of day or night. During the rainy seasons, sudden and heavy downpours may occur daily, lasting from a few minutes to several hours. The rain is sometimes associated with strong winds, floods, mud, fog and temperatures may range between 12 and 26 °C (54 and 79 °F).

Socio-economic issues

The primary occupation is subsistence farming and livestock rearing. Local crops include bananas, passion fruit, papaya, groundnuts, beans, coffee, maize, cassava and a variety of vegetables.

Language

The local language in Ngara is Kishubi and Kihangaza, which are very similar to Rundi and Kinyarwanda, the languages of Rwanda and Burundi. Although Tanzania's national and official languages are Swahili and English, usage in Ngara District is, however, rather limited to official functions, offices, institutions of higher learning and a few other places. Generally, English is understood on a limited scale in the market, and Swahili much more so.

District Public Health Risk management

The overall coordination of the epidemic control activities shall be undertaken within the existing framework of the Emergency Preparedness and Response for outbreak management. The Task force is responsible for designing/adapting strategies, planning, implementation, monitoring and evaluation of all epidemic control activities. The Task force within the district will be getting technical guidance from the National Task Force in terms of policy and strategic orientations, guidelines, etc.

The District Task force will be chaired by the District Medical Officer (DMO) will chair the Task Force at the district level.

The Task Force performs its activities through Technical Committees. Technical Committees are composed of experts in that arm of intervention. The committees are therefore responsible for the technical aspects of the control measures such as developing and designing strategies, planning, implementation, monitoring and supervision of activities.

The key pillars of technical committees include:

1. Coordination
2. Epidemiology/ surveillance
3. Case management and infection prevention and control
4. Laboratory
5. Community Mobilization and Health Promotion
6. Social mobilization/ Psycho-social support
7. Logistics

During preparedness shall hold meetings double within the month and during response shall hold daily, preferably at 2pm to review progress made in implementation of the planned activities and provide guidance. Proceedings of the Task force will be summarized by the end of each day to constitute a press report that will be shared by the media.

The District level subcommittee and Task Force will meet one day before the Rapid Response Team Meeting. The District Task Force will as well convene meeting one day before the Regional Task Force Meeting. This allows the flow of information from the subcommittee to the Regional Task Force.

The above intervention areas or pillars have also five respective objectives as follows:

- a. Ensure all efforts are coordinated and implemented in an efficient and timely manner
- b. Ensure implementation of highly sensitive, timely and coordinated surveillance systems
- c. Ensure effective response to manage cases of (re) emerging communicable diseases
- d. Enhance awareness and support especially for at-risk communities
- e. Ensure timely and effective logistical support for surveillance and response teams

Scope of the Public Health Response Plan

This Response Plan is a multi-disciplinary and multi-agency plan, and is intended combine responses from key government agencies, private organizations and partners within the Districts.

Response Plan cannot be 'fully comprehensive tool' that cannot be implemented for lack of resources. Despite its limitations, this Response Plan is expected to constitute a recognized emergency response framework for: (i) awareness-raising throughout the multi-disciplinary task force; (ii) developing training throughout the responders; and (iii) building partnership for a combined response.

Outbreak Response

In an outbreak, it is vital to know who is going to do what. The clearer the responsibilities and the decision-making processes are key elements for effective response. A brief description of the command structure to response to outbreak operations in Ngara District, with relevant responsibilities and authority is presented below.

Concept of operations

- ✓ In an event of a major outbreak overwhelming the District, the District Commissioner (Strategic level command) should declare the level and magnitude of the outbreak, while working with the Regional Task Force (Tactical Command) and District levels (Operational Command)
- ✓ This Response Plan is based on the concept that the emergency functions assigned to the various government departments and agencies and volunteer organizations will parallel their normal day-to-day functions as closely as possible.
- ✓ Those day-to-day functions that do not contribute directly to emergency operations may be suspended during the outbreak response. The efforts that would normally be required for those functions will be redirected to the accomplishment of outbreak response tasks.
- ✓ At every level of command, the chain of communication should be maintained and recognized. Final decisions should always be made and recognized at the coordination level, while always observing technical advice from the Subcommittee level.
- ✓ At any time of response to Health emergencies, the Rapid Response Team (RRT) will be responsible for assessment and verification of a case before dispatching an ambulance to take the patient to the HDTU. The RRT will be composed of a Clinician, Nurse, Surveillance Officer and a Laboratory staff.

Ngara District Council is high (refer figure 1 below).

LIKELIHOOD OF OCCURRENCE	Almost certain					
	Very likely					
	Likely				●	
	Unlikely					
	Very unlikely					
		Low	Medium	High	Very High	Severe
	IMPACT					

Figure 1: Risk Matrix.

Health System Structure and Services Provision

The District health system operates in decentralized organization of governance where by public and private health service delivery is primarily at Village level and specialized services are managed by Local government level.

The health system ensures public health risk management to outbreaks through mechanisms for indicator or routine based and community-based surveillance, care and treatment, Port health and social welfare services that are all linked to the above levels. There are three provisions Isolation Centre for COVID19 located in Kabanga, Murusagamba and Rusumo with bed capacity of 2. Out of 3 official point of entries, have mechanism and capacity to implement screening however Murusagamba has one official staff of Port health officer, and two non-official staff of Port health officer and no office.

Recent emergencies and disasters in Ngara District Council

Ngara District Council has been facing manmade emergencies. Recent Ngara District Council experienced fire explore at Rusumo Port of Entry during August 18th 2018 that affected a total of 7 cars and tractor 1 with 1 driver death.

COVID19 Response Coordination Mechanism

Coordination of COVID19 Response at different levels will follow the Incident Management System and will be guided by the concept of operations outlined in the All Hazard Emergency Response Plan (2020). During COVID19 response the District Medical Officer will appoint the District Incident Manager to coordinate District level response.

Triggers for action and activation levels

One suspected or probable case of COVID19 constitutes a public health emergency and therefore it will trigger the activation of the response to level II. Where by a confirmed case of COVID19 in the District will trigger activation to level III. The District PHEOCs, National PHEOC will function based on the level of activation to facilitate coordination of response as outlined in the All Hazard Emergency Response Plan.

The Overall command of the District emergency and disaster is under the District Disaster Management committee which is chaired by the District Commissioner

District Health Incident command

Committee	Members	Description of tasks
1.Coordination	<p>Chair: District Commissioner</p> <p>Members:</p> <ol style="list-style-type: none"> 1. District Executive Director 2. District Medical Officer 3. Chairman of District Council 4. District Administrative Secretary 5. All Head Department 6. All member of District Security and Defends Committee 	<ol style="list-style-type: none"> 1. Coordinates all operational aspects preparedness and response 2. Convenes meetings and keep all the minutes safely 3. Mobilizes and allocates resources for outbreak preparedness and response <ol style="list-style-type: none"> a. Prepares the Preparedness and response plan with participation of all the technical committees b. Monitors continuously the implementation of the plan c. Identifies and communicates resource gaps in timely manner d. Facilitates motivations e. Establish emergency operations centre and rapid response teams 4. Produces reports and communicates to higher authority and partners
2. Case management and Infection Control and Laboratory	<p>Chair : District Medical Officer</p> <p>Members;</p> <ol style="list-style-type: none"> 1. Medical Officer In charge of District Hospital 2. District Nursing Officer 3. Matron/Patron District Hospital 4. Pharmacist of District Hospital 5. District Hospital Emergency Coordinator 6. District hospital Laboratory manager 7. Emergency Nurse In charges District Hospitals 8. Medical Officer in charge of Lukole Health Centre 9. Matron/Patron of Lukole Health Centre 	<ol style="list-style-type: none"> 1. Ensure Quality 2. Train health workers on management including general infection prevention and control 3. Implements barrier nursing procedures and universal precautions 4. Provides care to patients 5. Initiates activities for safe reintegration of discharged patients in collaboration with psychosocial support team 6. Provides data from treatment facility to the surveillance committee 7. Performs any other duties assigned by the coordination committee. 8. Coordinate sample collection, packaging, processing, transportation and laboratory testing of specimens from suspected cases 9. Follows and receives laboratory results 10. Report laboratory results and sensitivity tests to case management committee 11. Reagent management (Ordering, supply and monitoring)
3. Epidemiology/ Surveillance	<p>Chair: District Health Officer</p> <p>Members;</p> <ol style="list-style-type: none"> 1. District Surveillance Officer 2. District Hospital Health Officers 3. District Vector Control Officers 4. All Environmental Health Officer 5. Data Officer 6. District Laboratory 	<ol style="list-style-type: none"> 1. Trains health personnel on surveillance 2. Establishes transmission chains 1. Manages outbreak data: analyses data regularly for trends and 2. Disinfects homes and environment 3. Provides data from treatment facility to the surveillance committee 4. Performs any other duties assigned by the coordination committee.

	<p>Technician</p> <ol style="list-style-type: none"> 7. Epidemiologist 8. IDSR Fco 9. In charges of Port Health Officer 10. District Veterinary Officer 11. Chair of District Driver 	
4. Social mobilization/ psycho social support	<p>Chair: District Community Based Health Care</p> <p>Members;</p> <ol style="list-style-type: none"> 1. District Social Welfare 2. District Communication Officer 3. Education Officer 4. District Community Development officer 5. Head of Religions 6. Director Manager of Radio Kwizera FM 7. Health Promotion and Education Officer 8. Traditional Healers Fco 	<ol style="list-style-type: none"> 1. Reviews and/or develops materials for social mobilization 2. Organizes sensitization of the community 3. Serves as focal point for preparing and verifying information to be released to the press by the Task Force 4. Liaises with the different sub-committees, local leadership and NGOs involved in activities on mobilizing communities 5. Provides psychological and social support to suspected/ probable/confirmed cases; affected families and communities 6. Provides psychological support to the response team 7. Prepares communities for reintegration of convalescent cases/ patients who have recovered 8. Performs any other duties assigned by the coordination committee
6. Logistics	<p>Chair: District Human Resource Officer</p> <p>Members:</p> <ol style="list-style-type: none"> 1. District Procurement Officer 2. Transport Officer 3. Treasurer Officer 4. District Pharmacist 5. Accountant of Health Department 6. Manager of RUWASA 	<ol style="list-style-type: none"> 1. Maps available resources for response and maintains updated inventory 2. Conducts projection of the logistics needs for response 3. Coordinates transport of the different field response teams 4. Provides supplies for the treatment centers and supports stock management

Reporting System

The District gets report from Community, borders and Health Facility. The Community Health Worker using Rumors book which collects within the community then submitted to the IDSR Fco. The Port Health Officer report to the RRT (DMO) if occur any suspect at port of entry. Also in charge of Hospital, Health Centre or Dispensary report to the RRT (DMO) if get any suspect from their facilities. The DMO after confirmed suspect is associated with Highly Infectious Disease like Corona Virus Disease report to the RMO.

Scenario

The development of this Contingency Plan is based on the Likely Case Scenario that calls for rapid containment of the case. The scenario assumes a case of COVID19 being imported and detected by the surveillance system in all Point of Entry and Health Facilities of Ngara District Council.

Planning Assumptions

- a) An Suspect case was detected in one of a local health facility
- b) Contact tracing teams well trained and equipped to conduct the task
- c) All contacts have been identified and monitored
- d) Patients who meet the case definition have been isolated and treated in the designated HIDTU, even though was still not meet the case definition.
- e) Infection prevention and control measures are applied at health facilities and community level

Strategy

5.1 Mitigation Strategy

As described in the risk assessment, mitigation measures are important so as to ensure the health risk of COVID19 importation is addressed in order to avoid importation as well as spread of the infection in the District in case of COVID19 is imported. The risks which have been identified for mitigation includes; COVID19 case importation in the District, spread of COVID19 infection in the District and community fear. Table 1 outlines the health risks and planned mitigation measures per each technical area

Identified health risks	Mitigation measures
EPIDEMIOLOGICAL SURVEILLANCE (POE):	
Importation of COVID19 case(POE)	To ensure the PoE specific contingency plan and SoPs for high risk ground crossing are followed
	To ensure the SoPs for identification, notification, management and referral of COVID19 suspects are followed
	With the help of PoE, Engagement of different media and transport agency to convey messages on COVID19 to travellers for affected Countries
COORDINATION:	Mitigation measures
COVID19 cases importation	Secure resources for COVID19 preparedness and response
	Monthly cross sectoral syndication and coordination meetings
	Updated EVD/Marburg/COVID19 contingency plan
RISK COMMUNICATION AND SOCIAL MOBILISATION	Mitigation measures
Community panic towards importation of COVID19	Advocacy and sensitization messages distributed to the community by using ITC.
	Address personal behaviors and soci-cultural factors that influence transmission
Spread of COVID19 infection	Mobilise community mobilisers for community sensitization and awareness
	Conduct community awareness campaign to increase awareness and encourage adoption of preventive behaviors and actions
	Desribution material for social and behavior change communication
	To ensure message and materials dissemination trough media mix
	Train Health Promotion Coordinators and other mobilizers at District and community levels
	Community awareness for IPC at household level

Identified health risks	Mitigation measures
CASE MANAGEMENT & IPC	Mitigation measures
Spread of COVID19 infection	Strengthen Infection Prevention and Control Practices through additional measures for COVID19
	Ensure availability of equipped COVID19 isolation and treatment facilities in high risk Area
LABORATORY	Mitigation measures
Spread of COVID19 infection	Training of laboratory personnel on universal precautions and additional IPC measures for COVID19 and on specimen management to laboratory personnel and other HCW
	Map / identify and sensitize local couriers capable of transporting specimen immediately
	Disseminate SOP for COVID19 sample management
	Develop list of supplies for specimen management

5.3 Preparedness and Response Strategy

As described in the risk assessment, preparedness measures are important so as to ensure readiness to deal with COVID19 in the District. Preparedness measures that have been suggested are geared at improving capacity to respond to COVID19 with ultimate reduction of its impact in case an COVID19 case is imported. The preparedness measures varies with the identified health risks that determines response needs to be addressed by the District. The health risks that have been identified include: COVID19 imported cases, High transmissioin and spread of COVID19 infection as well as psychological trauma and fear, other risks include public panic and deaths due to EVD. The response needs for each health risks have been outlined as well as preparedness measures that are suggested for the respective response needs as shown in table 2

COORDINATION:		
Health Risk	Response need	Preparedness measure
COVID19 imported cases	Coordinate and monitor response activities	Conduct working session to finalize and disseminate ERP
		Conduct working session to review r PHEOC SOPs
		Conduct donor mapping
		Advocacy and sensitization to influential people at all levels.
		Conduct functional simulation exercise for PHEOC
Health Risk	Response need	Preparedness measure
	COVID19 Outbreak response plan	Conduct orientations of revised operational documents to high risk in District (ERP & its contingency plans, PHEOC SOPs including Sensitization & orientation of District Authorities about PHEOC)
		Update COVID19 contingency plan and disseminate at all levels
		Identify burial ground
		Develop ToRs & SOPs for RRT in response to potential COVID19 cases
	Supportive supervision for response activities	Develop ToR and checklist for supervision at District level
RAPID RESPONSE TEAMS		
Imported COVID19 Cases	Deployment of COVID19 RRT	Train RRT TOT at District level on COVID19 response
		Conduct training of RRT at District level with priority to high risk Area
	Rapid Risk/need Assessment conducted by RRT	Conduct a simulation exercise for RRT within 60 days if no COVID19 case
		Train multi-disciplinary RRT teams and update inventory, ToR at District level
	Provide COVID19 RRT GO kit	Develop list of items in GO kit for RRT

		Print Rapid Risk Assessment Manual
BUDGET		
	Operational & Staff welfare support	Develop operational budget
		Advocate for revisit of Workers Compensation Fund in relation to high risk assignments
	Provide risk allowance for COVID19 responders conducting high risk assignments	Advocate for risk allowance for COVID19 responders conducting high risk assignments
	Adequate resources for response	Advocate for increase in the emergency contingency fund and timely emergency fund release procedures
	Provide basic welfare needs for ETC	Develop resource mobilization package/strategy
PSYCHOSOCIAL SUPPORT:		
Health Risk	Response need	Preparedness measure
Psychosocial trauma and fear among survivors, individual families and community	PSS services to responders and affected i families, community and during burial	Dissemination PSS guideline,
		Identify and train a team of PSS service providers and volunteers at District level and high risk Area
		Map peer support groups, volunteers, and stakeholders that can support families during response in the community at high risk Area
		Assessment of community needs
		Prepare list of items for package with material support (food and non food items) for COVID19 survivals and families that lost relatives
		Establish communication linkage btn PSS team and other responders contact detels (ETC, EOC, Community Mobilizers, nutrition)
EPIDEMIOLOGICAL SURVEILLANCE:		
High transmission of	Early detection and reporting of	Operationalization of hotline or emergency number to manage alerts

COVID19 cases	COVID19 cases	Train technical experts at District level on alert processes and requests for information related to COVID19.
		Orient HCWs and IDSR FP at District on use of VHF database, use of COVID19 case definitions and completing case investigation forms in high risk Area
		Orient CHW volunteers, NGOs, traditional healers and community leaders on event based surveillance in high risk Area.
	Contact tracing	Identify contact tracing teams at Community levels (volunteers, NGOs, traditional healers and community leaders) and conduct refresher training on contact tracing and identify a local source of contact tracers for all areas
		Disseminate contact tracing SOPs, reporting SOPs and simplified case definitions for community use to all Areas
POE		
COVID19 imported case (POE)	Early detection, management and referral	Train emergency committees at PoE on IPC, detection, assessment, management and referral of any potential COVID19 cases
		Orient POE stakeholders (POE users, tax drivers, service providers, cleaners) on SOP for identification and notification
		Test PoE specific emergency contingency plan (simulation) for ground crossing at high risk Area
Health Risk	Response need	Preparedness measure
	Proper collection, management and timely reporting of traveller information	Equipped observation/isolation areas at PoE high risk Area
		Develop list of items, PPE, cleaning and disinfecting products and sanitisers at PoE.
		Develop service and maintenance plan for monitoring and data management equipment at PoE
		Disseminate a communication SoP between PoE and District's surveillance system for followup of travellers from affected country

		Conduct supportive supervision in collaboration with relevant stakeholders of PoE
RISK COMMUNICATION AND SOCIAL MOBILIZATION:		
Increased panic due to importation of COVID19 Case	Community awareness creation on COVID19 prevention	Train Mobilizers for sensitization and awareness rising
		Develop message tailored to targetted audience and disseminate them through media mix
		Conduct media orientation
		Conduct orientation to Health promotion coordinators and other social mobilisation stakeholders at high risk Area
Spread of COVID19 infection in the community.		To conduct assessment for socio-cultural factors (Myth, attitudes, misconception, beliefs, behaviors, practices etc) that influence COVID19 transmission.
		Implement communication plan that identify channel, responsible and message timing.
		Identify existing community social structures that can effectively support community engagement and awareness campaign.
CASE MANAGEMENT		
COVID19 case/s in the country	Isolation of COVID19 patients	Identification and equipping COVID19 isolation facilities and prepare items for surge capacity
	Povide care and treatment of patients	Dissemination and distribution of COVID19 guideline and SOPS/job aids for case management
		Formulation, training and equipping teams for case management and ambulance in District for designated ETC
		Develop plan and implement onjob orientation of all health workers at health facilities in high risk Area on COVID19 by using District TOTs
		Conduct a simulation exercise in case management (drill) at Lukole Isolation facilities in District

		Conduct operational readiness verification visit at the high risk Area (isolation facilities at District levels, IPC materials including PPE)
	Transportation of COVID19 patients	Identification of dedicated transportation facilities (vehicle) and SOPs for transportation
	Ensure 24/7 communication between the HIDTU, EOC and other teams	Develop and maintain contact details with manes, phone contacts of other responding teams
	Ensure provision of commodities, supplies and equipment for COVID case management and IPC	Develop list of minimum required essential COVID19 commodities and supplies and stockpile at the identified Isolation facility
	Maintain records of staff and other teams daily rosters for HIDTU, ambulance, decontamination, burial)	Develop templates of duty rosters of workers at the HIDTU and templates for reports
	Conduct supportive supervision and mentorship to health workers at the HIDTUs	Develop list/inventory of Districtl technical experts on COVID19 case management , TOR and checklists.
Health Risk	Response need	Preparedness measure
Spread of COVID19	Practice additional IPC measures for COVID19 in health facilities and HIDTU	Dissemination and distribution of HIDTU – IPC guideline and SOPs
		Prepare list of waste management facilities in designated HIDTU to be procured for designated health facilities
	Conduct decontamination of households and surroundings where patients or death due to COVID19s has occurred	Formulation, training and equipping the deconatmination teams for isolation facilities, vehicles and households
		Develop list of Items for decontamination of house holds to be procured for all high risk Area
	Identify/arrange transport that will be used by household decontamination teams to be linked with surveillance	
Ensure security at the HIDTU	Fencing of the HIDTU or designated health facility	

		Arrangement for security services for the HDTU
Deaths due to COVID19	Provide safe and dignified burial services	Dissemination SOP for Safe and dignified burials
		Identification and training of burial teams at the risk areas
		Identify and designate transport for burial services of COVID19 corpses
	Provide Equipments and supplies for SDB	Develop list of minimum required equipment and supplies for burial services and stockpile at the identified high risk areas
LABORATORY		
Stread of COVID19	Early confirmation of COVID19 case	Identify and Train personnel in Specimen management to be deployed to affected district during response
		Print and disseminate SOP for COVID19 sample management
		Relocate more laboratory staff to testing laboratory
	Transportation of specimen to testing laboratories	Re orientation of curriers at all levels
		Prepare list of required materials for packaging and transportation specimens to be procured and supplied to high risk Areas
Health Risk	Response need	Preparedness measure
	Protection of Laboratory workers against COVID19 infection	Develop list of items for protection of laboratory personnel (PPE etc)
	Sharing of Results	Develop Service and maintenance plan of laboratory quipment
		To prepare and disseminate laboratory linelist forms for COVID19 and report templates

Activation

Alerting

The Rapid Response Team When there is any information or rumor is alerted pending rumor verification.

Stand-by

When there is a confirmed case in any other District/Region/Country that makes Ngara to be in a high risk of being infected, the Rapid Response Team consisting of half of the full team will be mobilized in a standby mode at Lukole HIDTU. The standby rooster will operate 24/7 hours.

Activation (Full Mobilization)

When there is a suspect case that meets Standard Case Definition the Case management Team will be activated to Lukole HIDTU.

COVID19 Emergency Response Plan Activity Implementation

Pillar	Response needs	Action	Responsible
Social Mobilization	Ensure availability of printed materials awareness	Printing of IEC materials	Head of social Mobilization subcommittee Transport Officer
		Distribution and dissemination of IEC materials	
		Conduct media orientation	
	Strengthen community sensitization (Use of mobile vans, media, Pas)	Intensify Community sensitization using sound facility twice in monthly	Head Social Mob and DHS and TO
		Conduct Sensitize schools, colleges (meetings, school health programme and working areas)	Head of social Mobilization subcommittee
	Strengthen engagement of community stakeholders	Conduct meeting with influential people (Private sectors, religious leaders, local community leaders)	Head of social Mobilization subcommittee/DED/D MO
Coordination	Strengthen involvement of stakeholders (mapping and engagement in a response activities)	Conduct stakeholders mapping and develop list of stakeholders with their capacities	DMO/DED
		Conduct meeting with all potential stakeholders for their participation/support in their response (refreshment)	DED/DMO
	Strengthen implementation and monitoring of COVID19 response activities	Conduct regular meetings using the existing response forums	DMO
	Ensure availability of resources to implement response activities (human, financial, transport & logistics support)	Share the coasted plan with stakeholders	DMO
Consider reallocation of existing resources		DED/DMO	

		Recruit Staff who provide services at Lukole H/C and refreshment	DED
Case Management	Strengthen management of patients presenting with symptoms suggestive of COVID19	Print and Distribution of case management Guideline.	Head of District Case Management & Clinical Services Coordinator
		Orientation of healthcare workers on standard case definition and management	Head of District Case Management & Clinical Services Coordinator
		Procure Medical supplier like Glove, Masks, Aprons, googols, sprayer pump, sanitizer, Electronic Dispenser etc	Head of District Case Management & Clinical Services Coordinator
Surveillance & Laboratory	Strengthen use of surveillance data to guide response interventions	Orientation of surveillance officers for consolidation of surveillance data	Head of Surveillance (ie District Surveillance Officer)
	Strengthen adherence to laboratory protocols and testing guidelines for COVID19	Distribution of COVID19 testing guideline	District Laboratory Coordinator
Logistics	Ensure availability of essential commodities for COVID19 control	To ensure are all resource available at Lukole H/C	Chairman of Logistics Team
		To ensure availability all infrastructure which are needed at Lukole H/C	Chairman of Logistics Team
		To ensure availability of fuel for transport, follow up and monitoring of suspect and contacts cases	Chairman of Logistics Team

Appendix VII: Grievance Redress Mechanisms

GRIEVANCE REDRESS MECHANISMS.

Introduction.

Ngara District Council established a grievance mechanism in accordance with the World Bank Standards to receive and address specific concerns raised by affected communities, employees and other affected stakeholders as a result of the project activities. Methods for documenting and responding to complaints in a reasonable timeframe, explaining response and compensation procedures, and also including monthly reports back to the community on the system and complaint resolution. To ensure its effectiveness, this GRM has been prepared in Consultation with the local Community and timely resolution of complaints through an effective and transparent complaint mechanism will be enhanced for the satisfaction of the employees and the timely completion of the projects.

The Grievance committees will be formulated to include each stakeholder that will be affected by the project from the project levels to the local government level and district level:

The procedures for Grievance Redress Mechanism

In a situation where an affected community, employee, or any other stakeholder wishes to make a complaint about a project, the following process should be followed;

1. COMMUNITY LEVELS;

- ❖ Affected people / employees / communities must fill out a complaint form which shall be available at the local government offices and then complaint shall be registered by the village government officials.
- ❖ The Village Executive Officer shall convene a meeting of the Village Grievance Redress Mechanism committee to perform appropriate investigation. If deemed necessary, the investigation can include a risk assessment. The investigation shall include follow-up meetings between stakeholders and the contractors, where an impartial party is present without impeding access to any judicial or administrative remedies that may be available at the Ward Executive Officer and Ward Councils. Minutes are recorded and added to the grievance database then further be reported to the Contractor's Community Representative.
- ❖ The meeting shall be held by the Grievance Redress committees from each stakeholder i.e. the Village Committee and the Contractor Representatives to resolve the grievance.
- ❖ Once the reported grievance has not been resolved at that stage, it will be reported to the Ward level for further resolution processes and again if not resolved it will be transferred to the District Level Grievance Management Committee.
- ❖ Likewise, the District Executive Director (DED) shall convene the meetings consisting of the relevant District experts for further resolution process.
- ❖ For any resolved grievance, signed agreement to any resolution to a grievance shall be maintained in the archives. Appeals to any grievance shall be allowed in such context the signed agreement shall be revisited to establish the relevance of the appeals. If the grievance is unresolved the records shall remain unresolved and legal actions will be encouraged.

2. AT THE CONTRACTORS LEVELS.

Like in any countries, in Tanzania the labour laws recognise the workers' rights to form and to join workers' organizations of their choosing without interference and to bargain collectively, the Contractor will comply with national law.

CONTRACTOR'S Grievance Mechanism will work as follows:

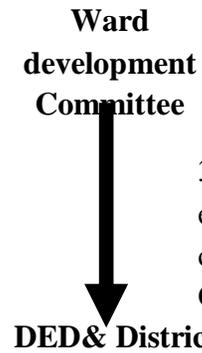
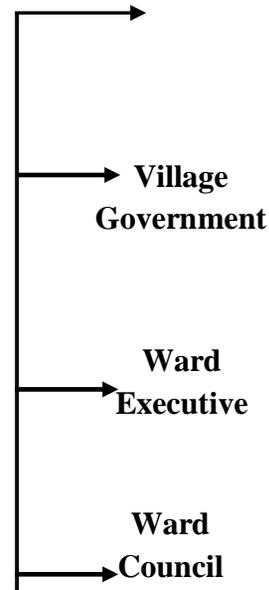
1. Contractor's complaint & suggestion boxes will be stationed at the contractor's camps and other strategic sites.
2. All complaints submitted in boxes will be investigated and resolved by the contractor's sociologist and human resource manager within 48 hours. In the event that the settlement does not follow the predetermined criteria, the case must be presented to management for review. And if unresolved, problem is shared with senior management
 - a) In the event of a serious complaint, the worker's complaints will be referred to the Confederation of Workers (TAMICO and project supervisory engineers).
 - b) The resolution process ends with a written agreement signed by the employee and contractor's management. If not resolved, it will be submitted to the company's environmental, social and health and safety committee. If it remains unresolved, legal action may be taken by an employee.
 - c) Throughout the process, the most important thing is that the documents (resolution agreements, appeals and investigation reports) will be kept in the Contractor's database.
3. Serious complaints will be resolved through the standing procedures described above in the "existing government complaints system"
 - a) "Serious" is defined as including actual or imminent injury (which Contractor will also report to the police), damage to property or crops, water or chemical contamination.
 - b) Complaints will receive an update on its resolution at least every two weeks until the issue is resolved.
 - c) Contractor will meet with the aggrieved individual confidentially to determine the best procedure under which the resolution agreement can be obtained if the complaint is serious and genuine and the group or individual who has posted the complaint chooses not to seek resolution through the standing government grievance system.
4. Resolution Reporting
 - a) All complaints and related resolutions will be reported Monthly to the World Bank and NELSAP and Ngara DC

Existing Government Grievance System

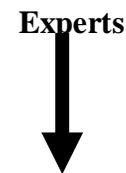
1. Villager makes complaint to village Government which calls meeting with CONTRACTOR'S with CONTRACTOR'S



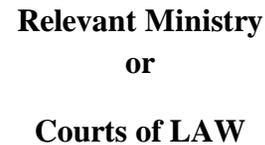
2. If no resolution, village Government elevates to Ward, which calls meeting



3. If no resolution, ward elevates to District which calls meeting with Contractors



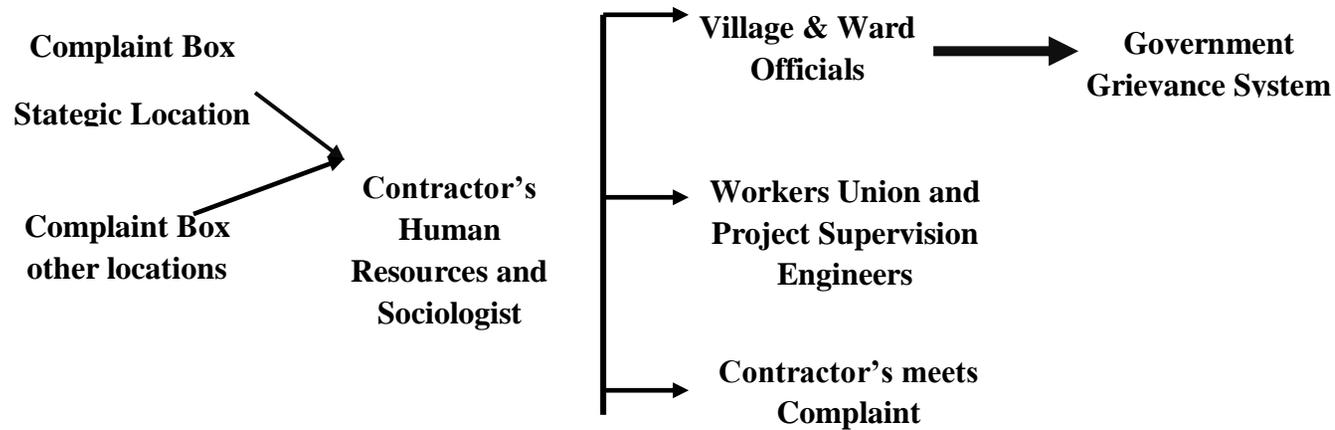
4. If no resolution, District refers to relevant Ministry or Courts



CONTRACTOR'S Employees Grievance Mechanism

1. Contractor's Sociologist/Human Resource Officer reviews box complaints within 48 hours

2. Serious complaints referred to government grievance system; labour issues to union; & confidential complaints met privately with appropriate CONTRACTOR'S Staff



Reporting

- *Complaints distributed to village & ward authorities biweekly*
- *Resolution reported at quarterly at World Banks, NELSAP and Ngara DC*