

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE
PROPOSED ENHANCING CLIMATE RESILIENCE ON WATER
RESOURCES IN MKONDOA CATCHMENT IN KILOSA, GAIRO, AND
MVOMERO DISTRICTS - MOROGORO REGION**

PROPONENT

**UNITED REPUBLIC OF TANZANIA
MINISTRY OF WATER**



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EXECUTIVE SUMMARY

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED ENHANCING CLIMATE RESILIENCE ON WATER RESOURCES IN MKONDOA CATCHMENT IN KILOSA, GAIRO, AND MVOMERO DISTRICTS - MOROGORO REGION

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INTRODUCTION

The Government of Tanzania, through the Water Resources and Basin Water Resources Agency (WRBWR), is working on the "Enhancing Climate Resilience of Water Resources in the Mkondoa Catchment Project," which is funded by the African Development Bank (AfDB). The primary objective of this initiative is to enhance the Mkondoa catchment's capacity to withstand and adapt to the adverse effects of climate change. This involves implementing a comprehensive strategy designed to enhance the catchment's capacity to cope with the immediate effects of climate variability, while also promoting long-term adaptation. By addressing the vulnerabilities within the Mkondoa Catchment, the project aims to develop a robust and resilient ecosystem that can thrive despite the challenges posed by a changing climate. Ultimately, this effort aims to ensure the sustainability of water resources and enhance resilience against future climatic uncertainties. The project consists of three key components: Component 1 focuses on strengthening hydro-meteorological monitoring stations; Component 2 is dedicated to climate-resilient infrastructure and ecosystem restoration; and Component 3 aims to institutionalize strengthening and ensure effective project delivery.

Specifically, Component 2 will support the restoration of the Mkondoa Catchment through river training and bank stabilization efforts along the Kisangata, Miyombo, and Mkundi Rivers. It will also involve rehabilitating existing dykes at the Mitaa of Behewa, Kichangani, and Mkwatani (within the Mbumi and Kasiki Wards of Kilosa DC), as well as the construction of new dykes at Mitaa of Mkadage, Kiyangayanga, Rose, and Mbwanjaji (in Magomeni Ward, Kilosa DC). Furthermore, the project will establish cattle troughs in the villages of Mvumi (Kilosa DC), Makuyu (Gairo DC), Matale, and Makuyu (Mvomero DC).

The targeted beneficiaries of these interventions will encompass various groups within the community, including farmers, women, youth, livestock keepers, community-based organizations (CBOs), water users, the Irrigation Commission, and local government authorities (LGAs), as well as the Tanzania Forests Services (TFS). The total investment cost for this initiative is estimated at 8 billion.

PROJECT DESCRIPTION

Project Location

Mkondoa Catchment is located in Morogoro Region, with a partial part of Tanga, Dodoma, and Manyara regions being covered, see (Figure 2- 1). Morogoro is located in the eastern part of the Tanzanian mainland at 6.8278°S latitude and 37.6591°E longitude. With an area of 73,039 square kilometers (km²), it occupies 7.73 percent of the Tanzanian mainland. It is bordered by Manyara, Pwani, Ruvuma, and Iringa in the north, east, south, and west, respectively.

Mkondoa Catchment is located between latitude 50 49' 17" to 70 36' 15" South and longitude 360 39' 19" to 370 41' 24" East (Figure 2- 2). The approximate catchment area of Mkondoa is 12,960 Km². The catchment has a summit elevation of 2259 m.a.s.l., while the lowest point is 340 m.a.s.l., and the mean altitude of the basin is 757 m. This catchment covers the Gairo, Kilindi, Kilosa, Kiteto, Kongwa, Morogoro, Mpwapwa, and Mvomero Districts partly. Kilosa District occupies the largest part of the catchment. However, the project components will be implemented in three districts: Kilosa DC, Gairo DC, and Mvomero DC. The Mkondoa Catchment encompasses the central areas of the Wami Sub-Basin. It is bordered to the west by the Kinyasungwe Catchment, to the east by the Wami Catchment, and to the south by the Rufiji Basin. This catchment area represents 19.3% of the Wami/Ruvu Basin.

Most project sites are located in the Kilosa District (see Figure 1). The sites for river training for the Kisangata, Miyombo, and Mkundi Rivers are located in Kisangata, Kivungu, and Dumila villages, respectively, all within Kilosa District. The sites for rehabilitation of existing dyke are in Mitaa of Behewa, Kichangani and Mkwatani. In contrast, the construction of a new dyke will be implemented at Mitaa of Mkadage, Kiyangayanga, Rose and Mbwamaji also all in Kilosa. Construction of cattle troughs shall be done at the Villages of Mvumi (Kilosa DC), Makuyu (Gairo DC), Matala and Makuyu (Mvomero DC).

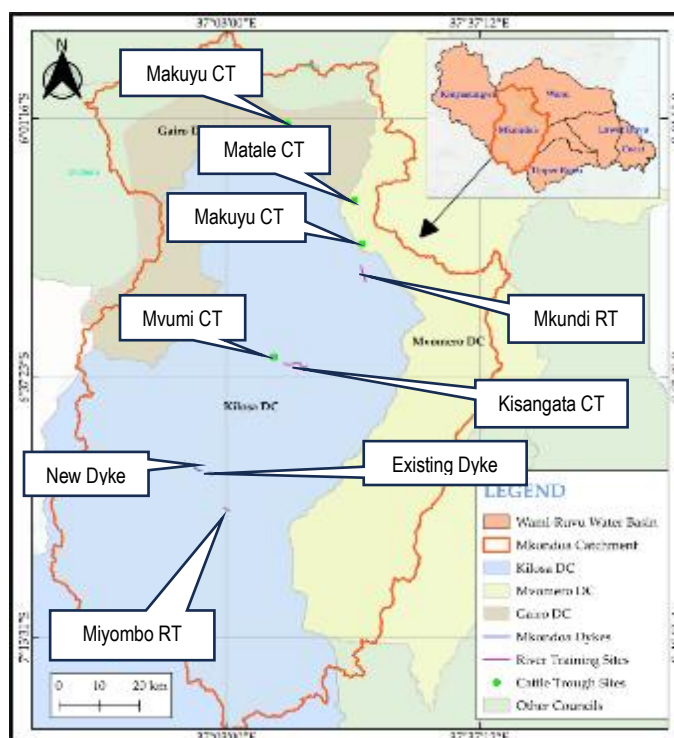


Figure 1: Base map of Mkondoa Catchment

Most of the sites for river training and dyke construction are located within the 60-meter watercourse buffer zone. In contrast, all sites for cattle trough construction are situated outside this buffer zone. These cattle trough sites have been voluntarily donated by community members and align with the respective village land use plans. All selected villages for cattle trough construction have approved land use plans in place, and each subproject under this component is consistent with these plans. Furthermore, proof of voluntary land donation, including signed letters of consent from landowners, has been attached (see appendix VII, VIII, IX, and X). This project will not involve any involuntary resettlement.

River Training and Bank Stabilization

The proposed interventions encompass the construction of revetments, gabions, and riprap to fortify riverbanks, channel realignment, and dredging to enhance flow efficiency and mitigate sediment deposition. Additionally, bioengineering techniques will include planting vegetation and using geotextiles to promote natural bank stabilization while fostering ecological benefits, particularly within the Kisangata River (6.3km), Miyombo River (1.3km), and Mkundi River (4km).

The overarching objective of these initiatives is to reduce flooding risks, prevent land loss, and ensure the sustainable management of water resources within the Mkondoa catchment areas by directing the river back to its original path.

i. River Training and Bank Stabilization at Kisangata River

The river in this area faces significant sediment buildup along its stretch, which measures nearly 6.3 km and is accessible via unpaved rural roads from Kilosa DC. During floods, the river often overflows its banks, causing the adjacent floodplains to become submerged. Due to the loose soil composition and heavy sediment load, the main channel is prone to shifting its course during flood events, depositing sediment in some spots while eroding the banks in others. To address this issue, the proposed solution involves constructing two nearly parallel dykes along the main channel, situated between the upstream and downstream stable areas within a 60-meter buffer zone from each bank. This design adheres to the country's regulations. The dyke system will be equipped with adequate flood protection on the upstream face, and the flood velocity between the dykes will be managed to reduce sediment deposition in this section. The crest elevations of the dyke system will be set at 410.9 m.a.s.l. on the upstream side and 392.3 m.a.s.l. on the downstream side. The proposed construction materials for the dyke consist of earth fill embankments made from GC material, with riprap protection applied on the water side. The total volume of earthwork required, along with the riprap, is estimated to be approximately 1,030,000 m³ and 61,000 m³, respectively.

ii. River Training and Bank Stabilization at Miyombo River

The river is currently facing significant sedimentation issues along this stretch, with its banks proving to be unstable and loose. This particular reach spans nearly 1.3 kilometers and can be accessed via unpaved rural roads from Kilosa DC. Floodwaters frequently overflow the riverbanks, inundating the adjacent floodplains. Due to the loose soil composition and heavy sediment load, the main channel tends to shift its course during flood events, depositing sediments in some areas while eroding its banks in others. To address this challenge, two nearly parallel dikes will be constructed along the main channel, positioned between the upstream and downstream stable sections and within a 60-meter buffer of the river's course on

either side. This dike system will be designed with adequate flood face protection. Additionally, the flood velocity between the dikes is engineered to minimize sediment deposition in this segment of the river.

iii. River Training and Bank Stabilization at Mkundi River

The Mkundi River Catchment (MRC) is situated on the upper slopes of the Mkondoa sub-basin, which is part of the Wami River basin. As one of its tributaries, the Mkundi River plays a significant role in the area. The sub-catchment spans an estimated 2,496 km² and features an altitude range from 2,060 meters above sea level (masl) at the higher points down to 360 masl on the lower floodplain, where it meets the main Wami River. The Mkundi River is fed by three primary tributaries. During flood events, the river often overflows its banks, inundating the surrounding floodplains. Given the loose soil texture and substantial sediment load, the main channel tends to shift its course, depositing sediments in certain locations while eroding its banks in others. To address these challenges, a proposed solution involves implementing river training measures through the construction of two nearly parallel guiding structures along the main channel. These structures will be built between stable upstream and downstream reaches, within a 60-meter buffer zone on either bank of the main channel, in compliance with the country's regulations. This river training system is designed with adequate protection at the flood face. Moreover, the flow velocity between these structures will be carefully managed to minimize sediment deposition within this stretch of the river.

Mkondoa Dykes at Kilosa

The proposed project entails the rehabilitation of the existing Mkondoa dyke (Site 1) in the Mbumi and Kasiki wards, along with the construction of new dykes (Site 2) upstream for flood control purposes in the Magomeni Ward, both located within the Kilosa District along the Mkondoa River. This initiative encompasses a drainage area of 18178.9 km², which channels through an outlet. The new dyke will be constructed ten meters from the river's edge. However, the design of the dykes does not accommodate pedestrian crossings, as all proposed structures are situated in a highly protected area, specifically designated to prevent human encroachment.

Cattle Troughs

The project also entails the construction of 4 cattle troughs in the Villages of Mvumi (Kilosa DC), Makuyu (Gairo DC), Matala, and Makuyu (Mvomero DC) to promote sustainable livestock keeping along the Mkondoa Catchment. The villages have land use plans that designate specific sites for livestock keeping, ensuring that all project areas comply with local regulations. The four designated project areas have been voluntarily donated by the villagers and are situated within approved livestock-keeping zones, with signs to indicate livestock keeping as shown in Table 1 below;

Table 1: Table showing Land donation information

Village	District	Land Donor	Number of Donors	Area Donated
Matala	Mvomero	Village	1	2 acres
Makuyu	Mvomero	Village	1	2 acres
Mvumi	Mvomero	Village	1	2 acres
Makuyu	Gairo	Village	1	2 acres

The details of these approvals are as follows:

- i. Mvumi village, located in Kilosa District, received approval in 2012, with a ten-year validity period.
- ii. Makuyu village in Mvomero District was approved in 2014 and has a duration that extends until 2024; however, an extension is currently in process.
- iii. Matale village in Kilosa District obtained approval in 2024, also for a ten-year duration.
- iv. Makuyu village in Gairo District was approved in 2020, with an expiration date set for 2030.

Each cattle trough site will cover a total area of 9,800 sqm, which is approximately 2 acres. Each site is designed to accommodate 40 livestock simultaneously within a ten-minute timeframe, allowing it to serve up to 3,000 cattle daily. The following components will be included in each site: Cattle Trough, Borehole, Water Pump, Pump House, Water Tank, Solar Panel and Structure, and a Perimeter Fence.

The communities of the villages which donate land are expected to get the following benefits associated with the presence of cattle troughs;

- i. Reliable availability of water especially during dry season for livestock and livestock keepers;
- ii. Eradicating conflicts between farmers and livestock keepers because livestock will not pass through farms looking for water as the cattle troughs shall provide water throughout the year;
- iii. Pastoralists will settle near the cattle troughs and hence become easy concentrate on develop themselves and their families (houses, schools etc) as compared to if they move from one area to another;
- iv. Training shall be provided to livestock keepers regarding the best livestock keeping methods and water uses.

INSTITUTIONAL AND LEGAL FRAMEWORK

Tanzania, in collaboration with AfDB, is committed to enhancing the Climate Resilience of Water Resources in the Mkondoa Catchment through this project. A few policies and legislation that have a close bearing on the water sector and the construction industry are; National Environmental Policy of 2021; National Water Policy (NAWAPO), 2002; The National Land Policy (1997); Agriculture and Livestock Policy (1997); Community Development Policy (1996); National Human Settlements Development Policy (2000); National HIV and AIDS Policy (2003); Construction industry Policy (2003); Health Policy (2007); National Employment Policy (2008); National Occupational Safety and Health Policy (2009); The Environmental Management Act (EMA) of 2004; The Water Supply and Sanitation Act, 2019; The National Irrigation Act, 2013; Regional and District Act No. 9 (1997); The Water Resource Management Act (Amendment) 2009; The Land Act Cap 113 R.E 2019; The Employment and Labour Relations Act CAP 366 R.E 2019; Public Health Act of 2009; Child Act of 2009 was revised in 2019; Environmental Management (Environmental Impact Assessment (Amendments) Regulations, 2018; The Environmental Management (Registration and Practice of Environmental Expert Regulations, 2021; African Development Bank's Environmental and Social Operational Safeguards (OSs); and Environmental, Health, and Safety (EHS) Guidelines. Table 2 shows the OSs which are relevant to this project, their requirements and their application in the project.

Table 2: Environmental and Social Standards (OSs) relevant to the project

OSs	Requirement	Relevance	Application
OS1: Assessment and Management of E&S Risks and Impacts	<p>OS1 requires Borrowers to identify, evaluate and manage the environmental and social risks and impacts of the project; adopt a mitigation hierarchy approach (avoid, minimise, reduce, mitigate, offset); adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities resulting from the project; utilize national environmental and social institutions, systems, laws, regulations and procedures in the assessment, development and implementation of projects, whenever appropriate; and to promote improved environmental and social performance, in ways which recognize and enhance Borrower capacity.</p> <p>The OS1 requires the mitigation hierarchy to follow; anticipate and avoid risks and negative impacts; where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels; once risks and impacts have been minimized or reduced, mitigate them; and where significant residual impacts remain, compensate for, or in the case of biodiversity and habitat losses</p>	Yes	<ul style="list-style-type: none"> ▪ The ESIA study responds to the requirement of OS1. The ESIA will prepare an Environmental and Social Management Plan (ESMP), ▪ The AfDB requires the WRBWB to assess, manage, and monitor the environmental and social risks and impacts of the project throughout the project life cycle, in a manner and within a timeframe acceptable to the Bank, in order to meet the requirements of the OSs. ▪ But also, to conduct an environmental and social assessment of the proposed Mkondoa project, including stakeholder engagement in agreement with OS10. ▪ Conduct monitoring and reporting on the environmental and social performance of the project against the E&S OSs.
OS 2: Labor and Working Conditions	<p>OS2 requires Borrowers to promote safety and health at work; promote the fair treatment, non-discrimination, and equal opportunity of project workers; protect project workers, with emphasis on vulnerable workers; prevent the use of all forms of forced labour and child labour; support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; and provide project workers with accessible means to raise workplace grievances.</p>	Yes	<ul style="list-style-type: none"> ▪ The Contractor will develop and implement written labor management procedures applicable to the project. These procedures will set out how project workers will be managed per the requirements of national law and this E&S OS. ▪ Where required by national law or the labor management procedures, project workers will receive written notice of termination of employment and details of severance payments promptly. ▪ Children under the minimum age of 18 years shall not be employed

OSs	Requirement	Relevance	Application
			<ul style="list-style-type: none"> ▪ A grievance mechanism will be provided for all direct workers and contracted workers. Such workers will be informed of the grievance mechanism at the time of recruitment and the measures put in place to protect them against any reprisal for its use. ▪ Measures relating to occupational health and safety will be applied to all project areas. The OHS measures will take into account the EHSGs as appropriate, the industry-specific EHSGs and other GIIP. ▪ The OHS measures will not be limited to (a) identification of potential hazards to project workers, particularly those that may be life-threatening; (b) provision of preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (c) training of project workers and maintenance of training records; (d) documentation and reporting of occupational accidents, diseases and incidents; (e) emergency prevention and preparedness and response arrangements to emergencies;¹⁹ and (f) remedies for adverse impacts. ▪ Project workers will be provided with facilities appropriate to the circumstances of their work, including access to canteens, hygiene facilities, and appropriate areas for rest. ▪ The WRBWB/contractor will make reasonable efforts to ascertain that third parties who engage contracted workers are legitimate and reliable entities and have in place labor management procedures applicable to the subproject that will allow them to operate per this OS ▪ The WRBWB/contractor will establish procedures for managing and monitoring the performance of such

OSs	Requirement	Relevance	Application
			<p>third parties in relation to the requirements of this OS while incorporating the requirements of this OS in the contractual agreement</p> <ul style="list-style-type: none"> ▪ The WRBWB/contractor will identify potential risks of child labor, forced labor and serious safety issues that may arise with primary suppliers.
OS 3: Resource Efficiency and Pollution Prevention and Management	OS3 requires Borrowers to promote the sustainable use of resources, including energy, water and raw materials; avoid or minimise adverse impacts on human health and the environment by avoiding or minimising pollution from project activities; avoid or minimise project-related emissions of short and long-lived climate pollutants, avoid or minimise generation of hazardous and non-hazardous waste; and to minimize and manage the risks and impacts associated with pesticide use.	Yes	<ul style="list-style-type: none"> ▪ This standard is relevant. Construction materials shall be extracted and used, and waste and materials shall be handled per the OS3 requirements, Good International Industrial Practice (GIIP), and the Environmental, Health, and Safety Guidelines. ▪ The WRBWB/contractor will consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention measures per the mitigation hierarchy and proportional to risk and impact associated with the projects ▪ To apply resource use efficiency to avoid adverse impacts on water quality and demand ▪ Adopt measures specified in the EHSGs and other GIIP to support the efficient use of raw materials, to the extent technically and financially feasible ▪ Avoid the release of pollutants or, when avoidance is not feasible, minimize and control the concentration and mass flow of their release using the performance levels and measures specified in national law or the EHSGs, whichever is most stringent. This applies to the release of pollutants to air, water and land due to routine, non-routine, and accidental circumstances, and with the potential for local, regional, and transboundary impacts ▪ where generated waste is considered hazardous, the WRBWB will comply with existing requirements for

OSs	Requirement	Relevance	Application
			management (including storage, transportation and disposal) of hazardous wastes including national legislation and applicable international conventions
OS 4: Community Health, Safety and Security	OS4 requires Borrowers to address the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable	Yes	<ul style="list-style-type: none"> ▪ The development of river training, stabilization and cattle troughs in the project area will likely pose risks to health, safety, and security in the community, and therefore, the OS4 is applicable. ▪ The WRBWB/contractor will evaluate the risks and impacts of the project on the health and safety of the affected communities during the project life cycle, including those who, because of their particular circumstances, may be vulnerable ▪ The design, construction, operation, and decommissioning of the structural elements of the subproject must be per national legal requirements, the EHSGs and other GIIP, taking into consideration safety risks to third parties and affected communities. The river training, stabilization and cattle troughs will be designed and constructed by competent professionals, and certified or approved by competent authorities or professionals ▪ The WRBWB/contractor will identify, evaluate and monitor the potential traffic and road safety risks to workers, affected communities and road users throughout the project implementation period ▪ The Contractor will identify and implement measures to address emergency events, such as explosions, leaks, or spills, which may occur for various reasons, including failure to implement operating procedures designed to prevent their occurrence, extreme weather, or lack of early warning.
OS 5: Land Acquisition,	OS5 requires Borrowers to avoid involuntary resettlement or,	Yes	<ul style="list-style-type: none"> ▪ Land for river training, stabilization and dykes if

OSs	Requirement	Relevance	Application
Restrictions on Land Use and Involuntary Resettlement	<p>when unavoidable, minimize involuntary resettlement by exploring project design alternatives; to avoid forced eviction; to mitigate unavoidable adverse social and economic impacts from the land acquisition or restrictions on land use; to improve living conditions of poor or vulnerable persons who are physically displaced through the provision of adequate housing, access to services and facilities, and security of tenure; to conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable displaced persons to benefit directly from the project, as the nature of the project may warrant; and to ensure that resettlement activities are planned and implemented with appropriate disclosure of information, meaningful consultation, and the informed participation of those affected.</p>		<p>extends beyond the river reserve, will be donated freely by legal owners who will sign the consent forms, allowing the village to acquire it for use by the project. Land for cattle trough construction was given by the village (evidence of consent forms is attached).</p> <ul style="list-style-type: none"> ▪ The project is not expecting resettlement. ▪ OS5 is applicable and The Land Acquisition Act Cap 118, The Land Act, CAP 113 of 2019; ▪ When land acquisition or restrictions on land use (whether permanent or temporary) cannot be avoided, the WRBWB will offer affected persons compensation at replacement cost and other assistance as may be necessary to help them improve or at least restore their standards of living or livelihoods ▪ Decision-making processes related to resettlement and livelihood restoration will include options and alternatives from which affected persons may choose. There will be disclosure of relevant information and meaningful participation of affected communities ▪ The WRBWB is not required to compensate or assist those who encroach on the project area after the cutoff date for eligibility, provided the cutoff date has been established and made public ▪ The WRBWB will ensure that a grievance mechanism for the project is in place, per OS10 as early as possible in project development to address specific concerns about compensation, relocation or livelihood restoration measures raised by displaced persons (or others) in a timely fashion ▪ Economically displaced persons who are without legally recognizable claims to land will be compensated for lost assets other than land (such as

OSs	Requirement	Relevance	Application
			crops, irrigation infrastructure and other improvements made to the land) at replacement cost
OS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	<p>OS6 requires Borrowers to protect and conserve biodiversity and habitats, apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could impact biodiversity, promote the sustainable management of living natural resources, support the livelihoods of local communities, and promote inclusive economic development through the adoption of practices that integrate conservation.</p> <p>OS6 recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support in a changing climate.</p>	Yes	<ul style="list-style-type: none"> ▪ A few trees and vegetation will be cleared along the riverbank, with minimal impacts on habitat and ecosystem services. Only necessary trees and vegetation will be removed. Removals will be done using light equipment and when it is dry to avoid habitat disturbance and biodiversity loss. Therefore, OS 6 is applicable. ▪ The environmental and social assessment as set out in OS1 will consider direct, indirect and cumulative project-related impacts on habitats and the biodiversity they support. This assessment will consider threats to biodiversity, for example habitat loss, degradation and fragmentation, overexploitation, hydrological changes, pollution as well as projected climate change impacts ▪ The assessment will include characterization of baseline conditions to a degree that is proportional and specific to the anticipated risk and significance of impacts. In planning and undertaking environmental and social assessments related to the biodiversity baseline conditions ▪ The WRBWB will ensure that competent biodiversity expertise is utilized to conduct the environmental and social assessment and the verification of the effectiveness and feasibility of mitigation measures. Where significant risks and adverse impacts on biodiversity have been identified, avoid or minimize impacts on modified habitat and implement mitigation measures as appropriate. ▪ Where a contractor is purchasing natural resource commodities i.e, aggregate and sand that are known to

OSs	Requirement	Relevance	Application
			<p>originate from areas where there is a risk of significant conversion or significant degradation of natural or critical habitats, the environmental and social assessment will include an evaluation of the systems and verification practices used by the primary suppliers</p> <ul style="list-style-type: none"> ▪ The WRBWB must establish systems and verification practices which will: (a) identify where the supply is coming from and the habitat type of the source area; (b) where possible, limit procurement to those suppliers that can demonstrate that they are not contributing to significant conversion or degradation of natural or critical habitats; and (c) where possible and within a reasonable period, shift the WRBWB's primary suppliers to suppliers that can demonstrate that they are not significantly adversely impacting these areas. ▪ This OS requires a differentiated risk management approach to habitats based on their sensitivity and values. The contractor and developer shall pay attention to this
OS 10: Stakeholders' Engagement and Information Disclosure	OS10 emphasizes stakeholder engagement throughout the project life cycle and requires a Stakeholder Engagement Plan (SEP). It encourages early identification of stakeholders, both project-affected parties and other interested parties. Under OS10, engagement must be proportionate to the nature, scale, risks, and impacts of the project and appropriate to stakeholders' interests. It specifies processes and criteria for information disclosure and meaningful consultation and requires an accessible and inclusive grievance mechanism proportionate to risks and impacts.	Yes	<ul style="list-style-type: none"> ▪ The proposed project covers areas of public interest. It has developed a Stakeholder Engagement Plan (SEP) to ensure the stakeholders receive timely, relevant, understandable, and accessible information. ▪ The developed SEP was adopted and used in stakeholder consultation during the ESIA study. ▪ WRBWB will engage with stakeholders throughout the project life cycle, commencing such engagement as early as possible in the project development process and in a timeframe that enables meaningful consultations with stakeholders on project design ▪ WRBWB will provide stakeholders with timely, relevant, understandable and accessible information, and

OSs	Requirement	Relevance	Application
			<p>consult with them in a culturally appropriate manner, which is free of manipulation, interference, coercion, discrimination and intimidation.</p> <ul style="list-style-type: none"> ▪ The WRBWB will identify those project-affected parties (individuals or groups) who, because of their particular circumstances, may be disadvantaged or vulnerable. ▪ The WRBWB will disclose project information to allow stakeholders to understand the risks and impacts of the project, and potential opportunities ▪ The WRBWB will continue to conduct stakeholder engagement per the SEP, and will build upon the channels of communication and engagement already established with stakeholders. ▪ The WRBWB will respond to concerns and grievances of project-affected parties related to the environmental and social performance of the project promptly ▪ The grievance mechanism is expected to address concerns promptly and effectively, in a transparent manner that is culturally appropriate and readily accessible to all project-affected parties, at no cost and without retribution ▪ The WRBWB will define clear roles, responsibilities, and authority as well as designate specific personnel to be responsible for the implementation and monitoring of stakeholder engagement activities and compliance with this OS

PROJECT ENVIRONMENT

The project will be implemented at various sites within the Mkondoa Catchment. The project environments are described below.

Kisangata River Training Section: The river section has an approximate width of 15 meters, with certain areas of its banks experiencing erosion due to heavy rainfall. Observations indicate that the curved sections of the banks contain deposits of sand and soil transported from upstream. Additionally, there is vegetation present, including cultivated crops such as maize and sunflower, as well as *Sorghum bicolor*, alongside naturally occurring plants such as Napier grass, rough cocklebur, guinea grass, country mallow, great leadtree, and African Bermuda grass, which enhance the landscape aesthetic. On either side of the river in a section, there is a constructed wall measuring 30 meters in length that serves to channel irrigation water while also protecting the riverbanks. The closest resident is located approximately 100m away.

Miyombo River Training Section: The current condition of the river significantly affects the local crops cultivated within the river buffer zone during periods of rainfall, as flooding is exacerbated by a decrease in riverbed elevation and the erosion of riverbanks. During rainfall events, residents, particularly students attending Zombo Secondary School across the river, face challenges in accessing essential social services, especially at the Changalawe Estate at the Kigunga hamlet. The Miyombo River in this area has widened, and its meandering nature further contributes to riverbank erosion. The notable vegetation in this landscape includes banana plants, Napier grass, maize, and various grasses.

Mkundi River Training Section: The river section has widened to about 500 meters due to increased rainfall upstream. There is a buildup of sand and soil along the riverbanks, and the height of the banks has decreased as this accumulation continues. A notable feature in the area is the Dumila Bridge, which connects the Morogoro and Dodoma regions by crossing the river. Recently, it has been observed that people are collecting this sand. Most of the surrounding land is cultivated with crops and vegetables, including maize, sunflowers, and a type of grass known as Napier grass. The closest settlement is situated 400m from the riverbank.

Existing Dyke Rehabilitation Site: The dyke is located on the left-hand side of the Mkondoa River, following the water flow. It is 1.1 km long, running from the railway bridge at Mbuni Village. Both sides of the access road of the dyke have vegetation cover, which includes naturally occurring and planted species, such as *Julbernardia globiflora*, *Pterocarpus angolensis*, *Syzygium quineense*, *Tamarindus indica*, as well as *Albizia*, *Saraca asoca*, *Tectona grandis*, *Terminalia*, and various *Diospyros* species. Currently, the dyke has suffered damage (erosion) due to excessive seasonal rains and human activities, such as livestock grazing.

Description of the Proposed New Dyke Site: The dyke will be constructed within the existing Mkondoa river embankment, spanning approximately 0.540 kilometers. The project involves elevating and stabilizing the embankment to a total height of 4 meters. Currently, the site is predominantly covered with grassland, shrubs, and trees, and the embankment has experienced erosion, resulting in the diversion of the river channel.

Mvumi Cattle Troughs Site – Kilosa DC: The site spans 2 acres at an altitude of 433 meters, located at latitude -6.573031 and longitude 37.156068. It is situated approximately 800 meters from the Mvumi river channel, bordered by a street road to the north and west, and bare land to the east and south. With nearby

buildings located 120 meters away, the area features a gentle slope that allows for easy access by livestock. The soil consists of red clay and sand, and the site remains undeveloped, lacking public utilities.

The level ground provides a stable base for the trough, which will be made from durable, weather-resistant materials to ensure longevity. A compacted earth pad will further minimize mud accumulation, while Napier grass, and shrubs, such as *Pterocarpus angolensis* and *Tamarindus indica*.

Makuyu Cattle Troughs Site - Gairo DC: The site covers 2 acres at an elevation of 961 meters. It is surrounded by farmland to the north, south, and east, with a seasonal stream located to the west. With buildings situated 50 meters away, the area has a flat landscape that facilitates easy access for livestock. The soil consists of a mixture of red clay and sand, and the site is currently utilized as pasture land while lacking public utilities.

The even terrain provides a solid foundation for the trough, which will be constructed from sturdy, weather-resistant materials to ensure durability. A compacted earth base will help reduce mud build-up, while plant species such as *Tamarindus indica* and *Albizia*, along with *Saraca asoca*, are present in the area.

Makuyu Cattle Troughs Site – Mvomero DC: The site spans 2 acres, situated at an elevation of 486 meters with coordinates at latitude 6.309898 and longitude 37.354286. It is located 250 meters from the Mkundi River and features a slight slope in its topography. The surrounding land is primarily undeveloped, with a neighboring village farm located 60 meters to the north, while the east, south, and west are bordered by untamed land. The soil composition comprises clay and soft stone, supporting existing land use for pasture. Shrubs and grasses, including species such as *Julbernardia globiflora* and various *Diospyros* species characterize the land cover. Existing facilities at the site include one building, a road, an electric line, and a dip tank for livestock management, with a total of 120m dips available for use.

Matale Cattle Troughs Site – MVOMERO DC

The proposed cattle trough site covers an area of 9800 m², located at latitude -6.208962 and longitude 37.336941, with an elevation of 665 meters above sea level. The topography features a slight slope that aids in drainage, while the soil comprises clay and soft stone, providing an adequate foundation and moisture retention. Bordered by undeveloped land in all directions, the site is isolated from human activities, enhancing its suitability for pasture, which is the existing land use. This location is ideal for establishing a cattle trough, supporting sustainable livestock management in the area. Notable species include shrubs and wooded vegetation such as *Tectona grandis*.

PROJECT STAKEHOLDERS AND THEIR INVOLVEMENT IN THE ESIA PROCESS

A thorough stakeholder consultation process was conducted, during which different categories of Interested and Affected Parties (IAPs) were identified and consulted. Simple methods such as networks and interviews were used in the stakeholder identification process. Stakeholders Engagement Plan (SEP), which includes the Grievances Redress Mechanism (GRM) have been prepared for the project to guide WRBWB and the contractor on stakeholders consultation and management of grievances during implementation and operation of the project.

Stakeholders Identification represents the organizations and individuals who may be directly or indirectly (positively or negatively) affected by the Project or who may influence how the Project is implemented. Stakeholders identified for inclusion in activities that meet one of the following criteria:

- i. Have an influence/interest in the Project; affected by the project (PAPs); and other interested parties (OIP),
- ii. Would potentially be impacted by the Project or have an influence on the Project (negatively or positively); or
- iii. Their roles and responsibilities

Table 3: List of the stakeholders consulted and their roles and responsibilities.

Government					
Stakeholder	Roles and responsibility	Level of Involvement	Interest	PAP/ OIP	Project Component
Ministry of Water	Oversee project implementation, provide technical assistance, capacity building and report to the Ministry of Finance	Lead implementer	High	OIP	1,2 &3
Ministry of Finance	Supports fund disbursements and broad advice on financial and economic issues for project implementation	Enabler in controlling the disbursement of the project and the financial management of the project	High	OIP	1,2 &3
Ministry of Community Development, Gender, Elderly and Children	Promotion of gender inclusion during project implementation, and Enforcement of policies and Acts	Support project implementation	Low	OIP	1,2 &3
Government Agencies					

Government					
Stakeholder	Roles and responsibility	Level of Involvement	Interest	PAP/ OIP	Project Component
Wami/Ruvu Basin Water Board	Coordinating the implementation of project activities, preparation of project documents, monitoring and evaluation, reporting to the Ministry of Water, AfDB and making relevant data available to stakeholders.	Lead implementing agencies under the Ministry of Water	High	OIP	1,2 &3
National Environmental Management Committee (NEMC)	NEMC will take the leading role as the technical advisor, coordinating and regulatory agency responsible for the environmental management and compliance issues, which aim to safeguard the environment and social.	Enable the implementation of project activities. Medium	Medium	OIP	1,2 &3
TMA	Will ensure standardization and coordination of meteorological activities eg installation of climate monitoring stations	Enabler in the implementation of project activities	High	OIP	1
Rural Water Supply and Sanitation	Supports management and ensure sustainability of water supply system for constructed cattle troughs	Enabler in project activities implementation	Medium	OIP	1,2 &3
Tanzania Forest Services	Supports conservation	Enabler in the implementation of	Medium	OIP	2 &3

Government					
Stakeholder	Roles and responsibility	Level of Involvement	Interest	PAP/ OIP	Project Component
	activities through provision of trees seeds, conduct training to local communities on procedures and techniques of nursery establishment and management	project activities.			
Tanzania National Road Development Agency (TANROAD) and Tanzania Rural Roads Agency (TARURA):	Provides technical advice during river training works and dyke construction.	Enabler in project activities implementation	High	OIP	2&3
Community-Based Water Supply Organizations (CBWSOs):	Responsible for the provision of technical support, maintenance of water infrastructure and ensure the sustainability of the project	Enabler in project activities implementation	Medium	OIP	2&3
Water User Association (WUAs)	Provide awareness on water resources management and conservation to local communities, manage water use conflicts and ensure proper use of water infrastructures for project sustainability	Enabler in project activities implementation	High	OIP	2&3
Local Government Authorities					
The Regional Level (RS):	Responsible for monitoring and evaluation, provision of technical backstopping and	Enabler in implementation of project activities.	High	OIP	1,2 &3

Government					
Stakeholder	Roles and responsibility	Level of Involvement	Interest	PAP/ OIP	Project Component
	capacity building to LGAs project implementation team.				
Respective LGA's: (Kilosa, Mvomero and Gairo DC)	Responsible for leading and coordinating project implementation activities within the area of their jurisdiction towards the achievement of intended objectives. They are also responsible for the engagement of diverse stakeholders.	Enabler in implementation of project activities.	High	OIP	1,2 &3
Local leaders (village and ward, Councilor's and Tarafa leaders)	Responsible for village and Ward administration including land administration, Organize villagers to participate in process and meetings, Provide local knowledge, Responsibilities for facilitating land acquisition process	General administration and coordination of socio-economic development at ward levels. Mobilization of local communities	High	OIP	1,2 &3
Communities					
General communities residing along the Project area	Project identifications eg. identification of sites Provide local knowledge and cultural insight Participate in the development of ESIA/ESMPs	They have a big stake in project implementation	High	PAP	1,2 &3

Government					
Stakeholder	Roles and responsibility	Level of Involvement	Interest	PAP/ OIP	Project Component
Landowners	Provide land for project implementation	They have a high stake in project implementation	High	PAPs	2 &3
Livestock keepers	Participate in project management and operation, Provide local knowledge and their experience during construction of cattle troughs	They have a high stake in project implementation	High	PAPS	1,2&3
Farmers and fish farming groups	Ensure sustainability of livelihood restoration activities, Provide local knowledge on best agriculture practices and fish farming methods, Participating in project implementation,	They have a big stake in project implementation	High	PAPS	1,2&3
Vulnerable Persons: Vulnerable people in the study area include but are not limited to: <ul style="list-style-type: none"> - Elderly people (over age of 65 yrs.) - Women and girls - Unemployed male youth/adult men - Orphans or women headed households 	Vulnerable groups may be affected by the Project activities by virtue of their physical disability, social or economic standing, limited education, lack of employment. Appropriate engagement practices and tools will be adopted to ensure adequate access to information and participation.	They have a rare stake in project implementation	Medium	PAPs	2 &3

Government					
Stakeholder	Roles and responsibility	Level of Involvement	Interest	PAP/ OIP	Project Component
<ul style="list-style-type: none"> - Children and Youths - Persons with disabilities - People living with prolonged diseases for instance, HIV/AIDs 					
Non- Government Organization					
Sustainable Agriculture Tanzania (SAT), AGRIWEZESHA and SHAHIDI WA MAJI	Supports conservation, farming activities, capacity building, advocacy and experience sharing on project implementation activities	Project partners and participants in project activities	High	OIP	1,2 &3
Private Sectors:					
Contractors and Consultants:	Provider of various services supporting project implementation	Enabler in project activities implementation.	High	OIP	1,2 &3
Sugar plantation and production company i.e. MKULAZI HOLDING:	Support conservation activities through Corporate Social Responsibilities.	Support project implementation	Medium	OIP	1,2 &3
Association of irrigation farmers: i.e UWAWAKUDA:	Support conservation activities and provide demo plots for tree nurseries	Support project implementation	Medium	OIP	1,2 &3
Development Partner					
African Development Bank (AfDB)	Through Climate Action Window ensure fund disbursement and capacity building for implementation of project activities	They have a big stake in project implementation	High	OIP	1,2 &3

Government					
Stakeholder	Roles and responsibility	Level of Involvement	Interest	PAP/ OIP	Project Component
Media	Responsible for disseminating information and raising awareness.	enhances stakeholder engagement and project outcomes	Medium	IOP	1,2&3

Consultation Agenda

Typically, the agenda for these consultations were

- Presenting the project,
- Confirmation of data/documents from the developer, and
- Obtaining from the stakeholders their environmental and socio-economic concerns and perceptions regarding the proposed Project.

During consultations, the team responded/clarified the project as required and collected stakeholders' concerns and advice.

KEY ISSUES RAISED

In general, stakeholders seem positive about the proposed project. They acknowledge the expected contribution of the proposed restoration interventions for the degraded catchment ecosystems along the Mkondoa catchment to the social and economic status of employees and the mitigation of flooding impacts. They also acknowledge the economic benefits of new direct and indirect business ventures expected to be created by the project. The summary is presented in Table 4.

Table 4: Issues Raised by Stakeholders' Consultations

S/N	Date & Location	Name	Institution	Issue/Recommendation	Remarks
1	17-03-2025 <i>Sokoine University of Agriculture</i>	Dr Emmanuel Ndetto (+255673271873)	Sokoine University of Agriculture	Higher learning institutions should be involved in the conservation of water resources and intervention in climate change issues	Noted
2	17-03-2025 <i>TANROADS Morogoro Office</i>	Eng. Batista Nyengo (+255787667450)	TANROADS	Construction of flood control facilities to regulate floods during high flow, such as; Intensive river training, strengthening river banks, and Dam construction	The recently affected bridges are located in Kiegeya and Mkundi, along the Dodoma road. TANROAD in the project is the main stakeholder largely affected by climate change impacts
3	17-03-2025 <i>RUWASA Offices</i>	Eng. Heka Bulugu (+255653900176)	RUWASA	The Basin Water Board is to conserve water sources to ensure a reliable water supply and invest in the construction of dams to store water during rain for consumption in the dry season.	Invest in storage facility to adapt climate change
4	17-03-2025 <i>TARURA - Morogoro Offices</i>	Regional Manager Eng. Emmanuel Ndyamkama (+255754770794)	TARURA	River training work should be done on all challenging segments of the Rivers, coupled with the provision of alternative income-generating activities to communities and demarcation of the rivers.	TARURA is among potential stakeholder who is highly affected by flood impact in the project area
5	18-03-2025 <i>DAS Office</i>	Said Nguya (+255742102913)	DAS (On Behalf of District Commissioner)	The Mkondoa Project will be based only on the Mkundi River. The Mbulumi and Diwale Rivers will have separate concerns in the future.	noted

S/N	Date & Location	Name	Institution	Issue/Recommendation	Remarks
6	18-03-2025 Mvomero DC Office	Eng. Maimuna Makutika (+255715683298)	Mvomero DC	<p>I. Awareness of water and environmental conservation should be provided to upstream users in order to reduce the amount of sediment generated.</p> <p>ii. Request support in preparation of VLUP for Kambala village, as there are a lot of livestock keepers and normally water their herds from the Mkundi river</p> <p>iii. Propose drilling of a borehole and construction of a cattle trough at Kambala village</p>	<p>Notable challenges upstream of Mkundi river are;</p> <p>i.Alluvial mining upstream of Mkundi river at Matara village</p> <p>ii.Cultivation within 60 m buffer at Dumila village</p>
7	18-03-2025 UWAWAKUDA Office	Mr.Wilbard Ulomi (Manager) (+255712766726)	UWAWAKUDA - Mvomero DC	It is proposed to have a small dam at Kwa Mhuzi village for feeding water to livestock so as to prevent their movement into the Wami River and to the UWAWAKUDA farm	UWAWAKUDA is large irrigation scheme which affected by periodic floods from the Mkundi and Wami River. Through the Mkondoa Catchment interventions, the challenges will be mitigated
8	18-03-2025 Mkulazi Holding Company Office	Eng. Iddi Makung'uto (+255783240012)	Mkulazi Holdings Company LTD	The proposed project aims to mitigate the problems experienced in both the dry and rainy seasons.	There is a low amount of water from aquifer as per geophysical studies hence no alternative water sources
9	18-03-2025 Kilosa DC – DED Office	Zakia Fande (Ag. DED) (+255719625001)	Kilosa District	<p>Floodwater from the Mkondoa River affects habitats in Kilosa.</p> <p>The river training and bank stabilization are required</p>	Livestock keepers degrade water sources

S/N	Date & Location	Name	Institution	Issue/Recommendation	Remarks
10	18-03-2025 <i>Kilosa DC Office</i>	Eng. Majid Shigongo (+255763452765)	Kilosa District	River training and bank stabilization in the Mkondoa River are required	The Mkondoa river experience encroachment, Siltation and meandering
11	18-03-2025 <i>Kilosa DAS Office</i>	Sabina Sugwa (+255714141103)	Ag. DAS	Stakeholders' consultation should consider covering a wide range from villages to high levels in order to increase awareness and project ownership.	The proposed intervention will minimize farmers' and livestock keepers' conflicts
12	19-03-2025 <i>Mvumi Village Office</i>	FGD With WUA & Village Council (Contacts as per attached attendance)	Mvumi Village- Kisangata water Users	-Awareness programs and alternative livelihood activities are required. Provision of water sources for livestock and cattle troughs	Abnormal floods is experienced from Kisangata The number of Livestock are above village carrying capacity
13	19-03-2025 <i>Dumila Ward Office</i>	FGD With Village Council (Contacts as per attached attendance)	Dumila Ward	A borehole and cattle trough are proposed for Mkundi Village.	Some small rivers which require intervention to reduce the Mkundi river effect are; <ul style="list-style-type: none">• Nyacha• Mawangala• Chamasi
14	19-03-2025 <i>Dumila Ward Office</i>	Mr. Douglas Mwigumila (Ward Councilor) (+255715560222)	Dumila Ward	Request of bank stabilization for small rivers which are tributaries to the Mkundi River; -Nyacha, Mawangala, Chamasi and Mtongolo	<ul style="list-style-type: none"> • Mostly covered by water during floods • Mkundi river meandering • The livestock route is not clearly indicated • Farmers' livestock keepers' conflict

S/N	Date & Location	Name	Institution	Issue/Recommendation	Remarks
15	19-03-2025 <i>Berega Ward Office</i>	Filemoni D. Maube (Ward Councilor) (+255687248171)	Berega Ward	Several interventions are required that including; -River Training -Check dams -Bridges -Cattle trough -Alternative economic activities -Tree planting	Dams can be constructed at confluences of rivers
16	19-03-2025 <i>Gairo DC – DED Office</i>	Anita Makota (+255754767737)	Ag. DED Gairo	Proposed construction of dykes to trap sediment and flood control Demarcation of Nguyami River Stakeholders' Consultation should be considered from the planning stage	Human activities along buffer zone requires appropriate measures to control.
17	19-03-2025 <i>DAS Office - Gairo</i>	Jeremiah A. Mapogo (+255784428481)	DAS (On Behalf of District Commissioner)	An awareness campaign is required for farmers and livestock keepers, together with the selection of proper alternative economic activities to replace those in the water sources area.	Noted
18	19-03-2025 <i>Chakwele Ward Office</i>	Asna Benjamini (+255759821927)	WEO – Chakwele Livestock Officer	The request of the construction of a cattle trough and borehole drilling is proposed to be at Kilimani village	Currently, the livestock are travelling from Kilimani to Makuyu for drinking water and vaccination

Table of Responses to Concerns Raised in Community Meetings (Village and Ward Level)

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
MBUMI WARD						
1.	20-03-2025 <i>Mbumi Ward Office</i>	Abramani Issa	Mbumi Ward	Ward councilor	<ul style="list-style-type: none"> ▪ The design for the proposed rehabilitation of the existing Mkondoa Dyke should be as strong as that constructed by the colonialists. ▪ It is important to increase the river's depth. ▪ Continuous education should be provided to the community to help mitigate climate change issues, particularly flooding. ▪ Cattle troughs should be built in the area, as human activities, especially livestock keeping, have significantly contributed to the destruction of the dyke. This measure will help ensure the sustainability of the project. Argues that there should be no bias, particularly gender bias, during workers recruitment during project implementation 	<ul style="list-style-type: none"> ▪ The proponent will ensure that ▪ Noted ▪ Noted ▪ Noted ▪ The proponent will ensure that the project implementation is bias-free.
					<ul style="list-style-type: none"> ▪ He is thankful for the proposed project in their area as proper 	<ul style="list-style-type: none"> ▪ Positive ▪ Noted. The design team will

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
					<p>implementation will benefit them</p> <ul style="list-style-type: none"> Due to poor construction method and materials of the previous dyke construction it resulted to easily destroyed by rain destroying his farm, hence argue for proper project implementation for the proposed project <p>Argue for the reestablishment of previously existing dams such as Kidete dam upstream to assist mitigating flooding impact downstream</p>	<p>be informed</p> <p>Noted</p>
2.	<p>20-03-2025</p> <p><i>Mbumi Ward Office</i></p>	Godfrey Mwega	Mbumi Ward	Village Member	<ul style="list-style-type: none"> Argues for design team and construction team to align with proper design ethics so as the proposed project to be sustainable He argues that livestock is the main contributor to the destruction of the proposed project, hence his argument for the construction of cattle troughs to mitigate animals' access to water sources. 	<ul style="list-style-type: none"> Noted Noted
3.	<p>20-03-2025</p> <p><i>Mbumi Ward Office</i></p>	Mahad Juma	Mbumi Ward	Village Member	<ul style="list-style-type: none"> Argues for the establishment of a significant number of cattle troughs in their village 	<ul style="list-style-type: none"> Noted

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
4.	20-03-2025 <i>Mbumi Ward Office</i>	Ali Mauma	Mbumi Ward	Village member	<ul style="list-style-type: none"> Argues that agricultural activities beneath the river are the cause of all these problems; hence, farmers should be educated also upstream 	<ul style="list-style-type: none"> Positive
5.	20-03-2025 <i>Mbumi Ward Office</i>	Fortunatus Emmanuel	Mbumi Ward	Village member	<ul style="list-style-type: none"> Thankful for the project; however, argues for the use of manpower from their ward rather than relying on other areas' people 	<ul style="list-style-type: none"> The contractor will be encouraged to prioritize the use of manpower from the ward
6.	20-03-2025 <i>Mbumi Ward Office</i>	Kagome Basha	Mbumi Ward	Village member	<ul style="list-style-type: none"> He is aware that the project shall have a positive impact on them, but asks when the project starts and what the project costs 	<ul style="list-style-type: none"> The project is at the design level once it is completed; details of cost will be disclosed. It shall commence once the EIA certificate is obtained and the bank approves it.
7.	20-03-2025 <i>Mbumi Ward Office</i>	Jovin Mtabuzi	Mbumi Ward	Village member	<ul style="list-style-type: none"> Poor supervision on construction of dyke The use of low-quality materials Cattle intrusion into water sources 	<ul style="list-style-type: none"> Formulation of committee at ward level to supervise all the construction activities plus quality check on material to be used. The village leaders, in cooperation with extension officers, to assist in advice livestock keepers to utilize their planned area according to VLUP and to minimize the number of livestock.
MVUMI VILLAGE & GONGWE VILLAGE						

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
8.	20-03-2025 <i>Mvumi Ward Office</i>	Kisia Ali	Mvumi Village	Village member	<ul style="list-style-type: none"> Argues for the continues provision of education to people regarding the impact of conducting human activities beneath to river streams 	<ul style="list-style-type: none"> Noted
9.	20-03-2025 <i>Mvumi Ward Office</i>	Mwanaharusi Matola	Gongwe Village	Village member	<ul style="list-style-type: none"> Thankful for the project as it will help them mitigate flood disasters in their areas 	<ul style="list-style-type: none"> Positive
10.	20-03-2025 <i>Mvumi Ward Office</i>	Suleman Kado	Mvumi Village	Village member	<ul style="list-style-type: none"> Thankful to the project but argues for community members to be the first security members to ensure project sustainability 	<ul style="list-style-type: none"> Noted
11.	20-03-2025 <i>Mvumi Ward Office</i>	Tanu Albert	Gongwe Village	Village member	<ul style="list-style-type: none"> Argues that the project is well received as it will impact them positively, particularly in flooding control 	<ul style="list-style-type: none"> Positive
12.	20-03-2025 <i>Mvumi Ward Office</i>	John Maneno	Mvumi Village	Village member	<ul style="list-style-type: none"> Asked for the project to commence as soon as possible, and they shall protect the project 	<ul style="list-style-type: none"> We are confidently pushing for the prompt commencement of the project.
DUMILA VILLAGE						
13.	19-03-2025 <i>Dumila Ward Office</i>	Edwin Mgai	Dumila Village	Village member	<ul style="list-style-type: none"> Grateful for the project but advocate for the construction of check dams upstream and effective riverbank reinforcement 	<ul style="list-style-type: none"> Noted

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
					from Dumila Bridge upward for at least 4-5 kilometers.	
14.	19-03-2025 <i>Dumila Ward Office</i>	Yahaya Ndunda	Dumila Village	Village member	<ul style="list-style-type: none"> The design team should be informed regarding the restoration of culverts so as to reduce water discharge to the river, particularly at Dumila Secondary School, Kwa Mzee and Dumila 	<ul style="list-style-type: none"> Noted
15.	19-03-2025 <i>Dumila Ward Office</i>	Douglas Mwigumla	Dumila Village	Ward Councilor	<ul style="list-style-type: none"> Argue for planting grasses in the 60 meters of the river reserve to mitigate erosions Also argue that the height of the embankment of the river should be considered access to water users. Other institutions should be informed to mitigate the impact of environmental degradation jointly 	<ul style="list-style-type: none"> Positive Noted Noted
MAGOLE WARD						
16.	21-03-2025 <i>Magole Ward Office</i>	Abdallah Seleman Mwinyikombo	Changarawe Village	VEO	<ul style="list-style-type: none"> The importance of giving information to the community on project activities and its progress and the starting time of its implementation. Grateful for the project as they are a mostly affected by floods that causes loss of life and damage to properties and 	<ul style="list-style-type: none"> Noted The proponent promised to implement the project on time and a very collaborative approach so as to achieve desired objectives

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
					infrastructure	
17.	21-03-2025 Magole Ward Office	Charles Andrew Mihayo	Changarawe Village	Member Village Council	<ul style="list-style-type: none"> ▪ A lot of livestock in the village ▪ There is designated livestock grazing area ▪ Cultivation along river bank causes degradation and siltation 	<ul style="list-style-type: none"> ▪ Awareness in water resources management and proper farming practices will be provided
18.	21-03-2025 Magole Ward Office	Rehema Rajabu	Changarawe Village	Community Member	<ul style="list-style-type: none"> ▪ Request the government to rehabilitate embankment in Miyombo river to avoid severe flood that damage properties and loss of life 	<ul style="list-style-type: none"> ▪ The issue was noted and will be share to high authorities
19.	21-03-2025 Magole Ward Office	Mwanabibi Makuti	Changarawe Village	Community Member	<ul style="list-style-type: none"> ▪ Accept the project and willing to voluntarily donate land for project implementation. They will also provide security in all phase of project lifecycle. 	<ul style="list-style-type: none"> ▪ Noted
20.	21-03-2025 Magole Ward Office	Sevelin Nikodem	Changarawe Village	Community Member	<ul style="list-style-type: none"> ▪ Accept the project and request the government to dredge Miombo river to reduce sediment and increase river depth 	<ul style="list-style-type: none"> ▪ It will be implemented at this project phase
					<ul style="list-style-type: none"> ▪ Commend the efforts made by the government ▪ Agree to collaborate at all phase of project implementation ▪ Women will participate in project activities 	<ul style="list-style-type: none"> ▪ Noted
					<ul style="list-style-type: none"> ▪ Request for employment opportunities for local people 	<ul style="list-style-type: none"> ▪ Noted ▪ Contractors will be guided to employ local communities for unskilled labors

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
					<ul style="list-style-type: none"> Eager to know the benefits of the project to people residing along Mkondoa River. 	<ul style="list-style-type: none"> They will be provided with livelihood enhancement activities
21.	21-03-2025 Magole Ward Office	Ismail Kidaile	Zombo Village - Kilosa	Village council member	<ul style="list-style-type: none"> The project is at right time as the Miyombo river change course which results to problem of water scattering along the river shore causing blockage of communication between Kigunga and Miyombo village, which results in an increase in the number of absent students from Kigunga village in Miyombo Secondary schools 	<ul style="list-style-type: none"> The problem is expected to be fixed after implementing of river training through Enhancing Climate Resilience in Water Resources in Mkondoa Catchment
22.	21-03-2025 Makuyu Ward Office	Vitalis Daud Chihongeka	Makuyu Village-Gairo	Village council member	<ul style="list-style-type: none"> Congratulate the opportunity of having a cattle trough project in their village, adding that both farmers and livestock keepers will be benefited 	<ul style="list-style-type: none"> Noted
23.	21-03-2025 Matale Village Office	Bakari H. Mgaza	Matale village - Mvomero	Village council members	<ul style="list-style-type: none"> Also, four hamlets surrounding matare river/mkundi namely Kisanga, Matare, Kilimanjaro and Nyamega *own a lot of cattles of which they also in need of cattle trough to protect the river on the other side 	<ul style="list-style-type: none"> Noted
24.	21-03-2025	Katouth Abijan Kikoti -	Makuyu village Chairperson	Village council members	<ul style="list-style-type: none"> Advice: Big livestock keepers are found in the other side of the river in Visaraka hamlet in Mkundi village.If possible, they should be 	<ul style="list-style-type: none"> Noted

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
	Makuyu Ward Office				considered for the same cattle trough in their area	
25.	21-03-2025 Makuyu Ward Office	Penford Adrian	Makuyu village	Village council members	<ul style="list-style-type: none"> Makuyu village have more than 60,000 cattles, Will this be sufficient for all cattle? 	<ul style="list-style-type: none"> The project will be implemented in phases to meet available water demand
26.	21-03-2025 Makuyu Ward Office	Peter Arobogast Kipilimba	Makuyu Village	Village council members	<ul style="list-style-type: none"> There is no reason to raise objection for the introduced project, the project is accepted for further stage 	<ul style="list-style-type: none"> Noted
ZOMBO WARD						
27.	21-03-2025 Zombo Ward Office	Salma Mohamed	Zombo Ward	Village member	<ul style="list-style-type: none"> At Miyombo Bridge (Kigunga), water deviates from the river; people fetch water here and use it for livestock. The Kiguga area and Nyaria experience river overflow due to shallow river depth. The Kiguga village area is problematic and it should be the starting point of the project as it experiences floods occasionally, for the proposed 1.3km, we are worried that other problematic sections will be left unattended The project should start at Kigunga and end at Miyombo village. 	<ul style="list-style-type: none"> The project shall train the river especially in meandering areas and plant trees to strengthen the banks

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
28.	21-03-2025 Zombo Ward Office	Hamis Abdalah	Zombo Ward	Village members	<ul style="list-style-type: none"> In Nyameni, floods wash away footbridges, cutting off access, and causing students unable to attend studies at Zombo Secondary School. Requesting the contractor to cooperate with leaders and community members. 	<ul style="list-style-type: none"> This section will be rectified and strengthen the crossing wood bridge The contractor shall be instructed to cooperate with local government during the implementation period
29.	21-03-2025 Zombo Ward Office	Samson John	Zombo Ward	Village members	<ul style="list-style-type: none"> Due to flooding in Miyombo river three deceased bodies were found in the river last year (2024) and in the past five years, 12 people have died (7 men, 5 women) where 2 children. Farmers face transportation and healthcare challenges due to the river separating villages forming Zombo ward There is enough security in the village, so the contractor will have area to store equipment and material. 	<ul style="list-style-type: none"> After project implementation in collaboration with village government, these tragedy events will be prevented The project shall consider improving local bridges to restore transport system This is positive comment and contractor will be advised to consider it
CHANGARAWA VILLAGE						
30.	20-03-2025 Changarawe Village Office	Abdallah Selemani	Changarawe Village	Village members	<ul style="list-style-type: none"> We accept that the proposed project and the infrastructure will be protected under the village government Currently, Livestock drink water directly from the river; it is a good idea to construct cattle troughs 	<ul style="list-style-type: none"> This is positive Positive comment

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
31.	20-03-2025 Changarawe Village Office	Matayo Mwalimu	Changarawe Village	Village members	<ul style="list-style-type: none"> There is a private dam that connects to the Miyombo River, causing flooding on farms and roads in the Changarawe hamlet 	<ul style="list-style-type: none"> The river will be trained and stabilized to control floods but also it will include planting trees. Farmers are advised not to encroach river boundary
32.	20-03-2025 Changarawe Village Office	Abdallah Selemani	Changarawe Village	Village members	<ul style="list-style-type: none"> The village receives many pastoralists with many flocks from other areas for pastures, and the allocated land for livestock is not enough. They take cattle to drink at the river We lack a formalized land use plan despite having conducted surveys; no official records exist 	<ul style="list-style-type: none"> The project will considered construction of cattle trough that should be allocated in grazing area if feasible This will be communicated to respective District council
33.	20-03-2025 Masanze Ward Office	Charles Mihayo	Masanze Ward	Community member	<ul style="list-style-type: none"> Farmers cultivate up to the riverbanks combining with livestock watering results to lowering riverbed and destabilize embankments 	<ul style="list-style-type: none"> The proposed project will address this matter
34.	20-03-2025 Masanze Ward Office	Antony Jonas	Masanze Ward	Livestock and farming officer	<ul style="list-style-type: none"> The area from Miyombo estate to the bridge experiences floods, which impact farms and residential areas No land disputes around the river; the area is village-owned. The whole river area is safe there is no crocodiles or hippos. 	<ul style="list-style-type: none"> The river training reaching 1.3km will address these issues Positive
MATALE VILLAGE						

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
35.	21-03-2025 <i>Matale Ward Office</i>	Halfani Juma	Matale Village	Community member	<ul style="list-style-type: none"> Due to geography, herders are scattered and Matale and Nyamwega sub-villages have more livestock, so one proposed cattle trough is not enough for the entire village which has four village. So Nyamwega and Kidodoma can have one centralized cattle trough and Kilimanjaro and Matale can have another cattle trough 	<ul style="list-style-type: none"> This alternative livelihood will be considered
36.	21-03-2025 <i>Matale Ward Office</i>	Thabit Amis	Matale Village	Community member	<ul style="list-style-type: none"> Herders from neighboring villages not in the project (Kilama and Gairo) normally close the river looking for pasture especially during dry season 	<ul style="list-style-type: none"> Noted
37.	21-03-2025 <i>Matale Ward Office</i>	Michael Ramadhani Mgaya	Matale Village	Community member	<ul style="list-style-type: none"> We welcome the project and request an additional cattle trough for the village division. Villages far from the project should continue using the river, as interim period. The village government should manage the prevention of riverbank deforestation. 	<ul style="list-style-type: none"> Cooperation with the village government is essential to ensure project success
MVOMERO WARD						
38.	20-03-2025	Abdallah Ngome	Makuyu Village	Agricultural officer	<ul style="list-style-type: none"> There is borehole drilled during PADEP projects (Chanika) but it lacked follow-up development. It 	<ul style="list-style-type: none"> Noted

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
	<i>Makuyu Ward Office</i>				<p>can be completed and used as cattle trough. Due to nature of the village one cattle trough is not enough</p> <ul style="list-style-type: none"> ▪ The proposed new cattle trough should be located where Mahange and Kibulunge hamlets can share ▪ Area for the new cattle trough in grazing land there is a high-voltage power line passing about 500 Meters, no permanent settlements, so a transformer would be needed. ▪ For the existing borehole that needs improvements the nearest electricity connection is 300 meters away from the project site ▪ We request that the project be fully implemented, as intended. 	
39.	20-03-2025 <i>Makuyu Ward Office</i>	Sadala Kibondo	Makuyu Village	Community member	<ul style="list-style-type: none"> ▪ Tree planting should be done at water sources. ▪ People mining gold in river channels should be supported with irrigation and fish farming initiatives as alternative. ▪ Representatives have accepted the project, and it will be successful. 	<ul style="list-style-type: none"> ▪ Planting trees will be part of the project ▪ These alternative livelihoods will be considered

PROJECT ALTERNATIVE

Consideration of project alternatives is crucial in ensuring that the developer and decision-makers have a broader base from which to choose the most appropriate option. The following alternatives are considered and have been examined in this ESIA Study:

No project alternative

The no project alternative entails retaining the current status quo (No construction of the new Dyke and Cattle troughs, no rehabilitation of Mkondoa dyke and no river training and bank stabilization at Kisangata river and Mkundi River). Adopting this option would mean avoiding most of the negative effects associated with this project's activities and missing all the positive benefits, such as flood control within the Mkondoa Catchment. The benefits that shall be missed includes employment opportunities, Flood control and prevention, Increase in crop production, Increased revenue to Gairo, Kilosa, Mvomero, Districts and the sub-basin as a whole, Reliable cattle watering points (cattle troughs), Increased pressure on social services and utilities, and Increased surface water runoff etc.

Alternative Site

The option of using another site apart from that of the proposed one was also considered. However, the proposed site was observed to have the following advantages over others;

- The site for Cattle Troughs construction has the potential to reduce land-use conflicts, minimize water contamination risks, potential to drill boreholes with high yield, and avoid ecologically sensitive zones.
- Sites for River Training have the potential to protect more critical areas and could enhance water retention and sediment control.
- Site for Construction of New Dyke has the potential to reduces displacement of people, avoids areas of high environmental sensitivity, and may provide better flood management in critical zones.

Energy Alternative

The use of other alternative energy sources apart from power from the National grid and a diesel generator for powering was considered. As is the case in most developing countries, the supply of electricity from national grids is not reliable as it mostly originates from hydroelectric power generators, which depend on rainfall frequency, intensity, and pattern. On the other hand, diesel generators, which are primarily used during power outages, emit a significant amount of greenhouse gases, especially when operated for extended periods. Solar energy was considered; however, the quantity of electricity required would require a large area for solar panels and is, therefore, not feasible.

Technology and Construction Material Alternatives

Construction technology involves the choice of construction materials and the techniques and means used to erect project component particularly the dykes and cattle troughs. As with the design process, cautious consideration of contextual conditions is crucial to developing appropriate construction technologies. In addition, any selected technology must be constantly reviewed and, if necessary, upgraded during the construction process. Several construction technologies were considered. The following criteria were used to select the most suitable technology options for this project;

- The use of locally available, low-energy-consumption construction materials, especially those produced with renewable energy sources;
- The use of materials from sustainable production chains (e.g., the avoidance of timber from savage deforestation);
- The use of non-toxic materials; and
- The use of materials that are easily dismantled (and recyclable as materials or energy sources).

Alternative dyke design

In the context of flood protection along the Mkondoa River at Kilosa, two alternative dike alignment designs were evaluated: the *setback dike* and the *waterside dike*. The setback dike, positioned farther from the riverbank, offers numerous ecological and operational advantages, including the preservation of natural wetland habitats, enhanced floodway capacity, reduced peak flood levels and flow velocities, minimized bank erosion, and lower long-term maintenance costs due to infrequent direct water contact. Conversely, the waterside dike, built directly adjacent to the riverbank, requires less land and can be constructed with existing spatial limitations, but typically faces higher maintenance demands and greater exposure to erosive forces. The selection between these alternatives was guided by factors such as environmental sustainability, land availability, flood management efficiency, and local site constraints.

IDENTIFIED ENVIRONMENTAL AND SOCIAL IMPACTS

The Proposed Enhancing Climate Resilience on Water Resources in Mkondoa Catchment is expected to be associated with several environmental and social impacts and risks. They may feature during the planning, construction, operation, and decommissioning phases of the project. These include:

A. Impacts identified to be associated with the mobilization and construction phase.

The following impacts were identified to be occurring during the project's construction phase.

Positive Impacts

- **Employment Opportunities and Skills Development** -During the project construction phase, employment opportunities will increase in villages within the project area, specifically in Kilosa, Mvomera, and Gairo District Councils, as well as at the ward and Village levels. About 200 people will be directly and indirectly employed as hired laborers during the construction of the proposed project.
- **Growth of local economy** - Local material suppliers will benefit from increased demand during the construction phase, which can lead to expanded production, additional sales, and the potential hiring of more staff to manage increased orders and logistics. Additionally, the construction phase will inject money into the local economy as workers and contractors spend their earnings on housing, food, transportation, and other goods and services in the surrounding area.
- **Increase of Government Revenue** -The proposed project's construction activities are expected to generate tax revenues for local governments through the issuance of permits, licensing fees, and property taxes associated with the project.

Negative Impacts

- **Impact on water Quality (surface and groundwater contamination)** - During the construction of the proposed barrage and river training works, surface water resources may get contaminated by

sediments, fuel and chemical spills, or by solid waste and effluents generated by the kitchens and toilets at the construction campsites.

- **Impacts on Terrestrial Flora-** Site clearance to pave the way for the project will definitely impact vegetation in the project area. The floral composition of the program site comprises trees, shrubs, and herbs. Most of the tree species comprise timber and horticultural species (e.g. mango, banana). Ecologically, these species are not very important; moreover, they have negative impact on human health.
- **Impacts on Wildlife-** Due to construction in this area, human disturbance to ecosystems, to the wild animals and birds especially. Many mammals and birds can be more disturbed by the presence of workers, loud noises and operational construction plants.
- **Impacts on Aquatic Flora -** The proposed revetment for the Mkundi, Miyombo, and Kisangata rivers can potentially affect the aquatic vegetation along the riverbanks. Some parts of the riverbank are covered with dense reeds that provide a nursing ground for birds and small fish.
- **Impacts on Aquatic Fauna** Various construction phase activities like; controlling the flow of water, construction of a barrage and river channelization wall to change water flow, will ultimately affect the aquatic life. Many studies have proved that the creation of barrages or dams in river channels affects the ecology of the river, especially fish.
- **Impact of Riparian Vegetation Removal on River Ecosystems-** The removal of riparian vegetation can significantly impact river ecosystems by increasing water temperatures and altering nutrient dynamics. Without this vegetative buffer, nutrients from adjacent lands flow unimpeded into rivers, potentially leading to eutrophication and degradation of water quality.
- **Impact on air Quality due to dust and Gaseous emissions-** Dust and air emissions will mainly be generated from earth movements (excavation, leveling, dumping), wheels of trucks and machinery moving /traveling along unpaved surfaces, handling and transport of soil, and from exposed surfaces.
- **Impacts due to Waste Generation-** Different types of waste are likely to be generated during the construction phase of the project. Construction waste may include excavated soil, sand, gravel, pieces of concrete, bricks, wood, metal pieces and electrical waste. All these, if left unattended, can become a source of nuisance and environmental pollution in the project area. Wastewater will be generated at the construction camps by the workers. If the generated wastewater is not properly treated or disposed of, this may contaminate the surface water sources apart from soil contamination.
- **Occupational Health, Safety and Security Risks-** Occupational Health and Safety (OH&S) related impacts will arise during construction phase activities including clearing of earth, leveling and compaction. Hazard of being hit by falling objects, major hand-arm and whole-body vibration hazards, skin and respiratory tract irritation from exposure to cement dust, overexertion and awkward postures etc. will be another impact.
- **Community Health, Safety and Security Risks** The construction activities and vehicular movement at construction sites may result in roadside accidents particularly inflicting local communities who are not familiar with the presence of heavy equipment. The quality of groundwater and surface water resources available in the nearby local communities may be affected due to the river training, construction activities, oil spillage and leakage, roadside accidents, etc. The proposed project will also have potential of air (dust pollution), noise and vibrational impacts on nearby community. The labor works with different transmittable diseases that may cause the spread of those diseases in the local residents. The construction areas located near the residential settlements may cause accidents for the people moving near to those areas.

- **Soil Erosion-** River training would accelerate erosion problems in most cut sections. Nevertheless, all cuts in the sloping grounds should be refurbished firmly and provided with the vegetation cover to reduce the effect of soil erosion. Inadequate compaction and resurfacing compounded by rain, trampling etc. may cause erosion and consequent sediment load in runoffs consequently affecting the rivers on which the project is undertaken.
- **Impacts due to Increased Noise and Vibration Levels -** Construction activities are highly expected to generate significant amounts of detectable noise levels and vibrations from vehicles and construction equipment. Noise will also arise from various construction machinery at the site and transportation of materials, which might have a significant impact on the project's neighbors.
- **Gender-based violence (GBV), rape and sexual harassment-** Due to labor influx to the project area on daily bases for this project, the acts of GBV, sexual harassment, and other sexual offenses such as rape might happen. Construction workers may engage in sexual fraternization with residents. In addition to this being a driver of HIV infection, it will lead to domestic conflicts, GBV, and domestic violence.
- **Gender inequity in employment-** During the construction phase at the site, the potential risk that may result in gender inequality may include unequal distribution of work, discrimination against women, and unequal pay for women, among others.
- **Impacts associated with Transmission of Vector Borne and Communicable Diseases-** The presence of an external workforce working on construction sites where interaction with the community is possible could lead to the increased transmission of communicable diseases within the ward. Communicable diseases are caused by viral, bacterial, parasitic and fungal pathogens that are airborne or that are transmitted through an infected person, animal or environmental source. Communicable diseases expected to be experienced at Kilosa, Gairo and Mvomero include Malaria, tuberculosis, gastroenteritis, pneumonia, acute respiratory infection, diarrhea, etc.
- **Impacts associated with Transmission of Sexually Transmitted Infections-**
- It is anticipated that during the construction period, the necessary workforce will comprise up to 50 people, who shall enter the project site and leave daily. The Project could result in increased transmission of STDs including HIV/AIDS during construction due to presence of a mainly male workforce, with higher incomes, who may engage in high-risk sexual activities with young girls at the project area.
- **Impacts on Labor and Working Conditions**
 - Worker Health and Safety- Bearing in mind the nature of the activities being undertaken during construction; worker health and safety is a key risk area with the potential for accidents that may result in injuries and potential fatalities as well as lost man- hours.
 - Worker Rights- the implementation of workers' rights is unlikely to be fully aligned with Tanzania and international workers rights requirements. Enforcement of laws is also often limited. There is therefore a risk that some subcontractors/ suppliers on the proposed project may not be fully compliant with Tanzanian legal requirements related to labour conditions. Forced labour and child labor are unlikely to occur in sub-contractor organizations but may occur in the supply chain, particularly in relation to the provision of food supplies.

B. Impacts Identified to be Associated with the Operation Phase

The following impacts were identified to be occurring during the operational phase of the project;

Positive impacts

- **Control of river bank erosion** - The intended river training on these rivers shall stabilize the bed and banks of these rivers and hence reducing soil erosion which to a great extent reduce the land area near the rivers, cause water pollution (turbidity) and contributes to siltation due to sediment movement.
- **Improved Flood Protection-** The embankment rehabilitation and reconstruction work envisaged under this project will cover 11.6km, and it will help avoid the losses caused by the repeated floods and will result in saving agricultural farms and crops and nearby settlements – the annual losses that are likely to take place caused by the flooding if no protective measures are undertaken.
- **Ecological Uplifting of Rivers-** The proposed river improvement and/or rehabilitation will contribute to the overall ecological improvement of the river. The proposed subprojects will be habitats for many birds and other animal. The food chain will naturally form, with some artificial species introductions, and the fauna will emerge.

Negative impact

- **Aquatic Weeds Formation in River Basin-**The condition of the proposed river will be ideal for the aquatic weeds formation because the aquatic weeds are ideal to form with a decrease in flow of river and trapped sediments in a favorable climatic condition. Due to aquatic weed formation, there will be negative impacts on rivers and its related ecosystems.
- **Loss of Access to River Water-** The construction of dykes along the riverbanks as part of the flood control and soil erosion project has an impact on the livelihoods of people and livestock, as these infrastructure projects create barriers to accessing water from the rivers.

ENVIRONMENTAL AND SOCIAL MANAGEMENT

The options to minimize or prevent the identified adverse social and environmental impacts, as well as a monitoring plan, have been suggested in this report and are contained in the ESMP. Many of them are based on sound engineering practices. The Environmental and Social Management Plan (ESMP) outlines the implementation schedule for the proposed mitigation measures addressing both environmental and social impacts, as well as plans for long-term monitoring activities. The ESMP also includes the associated environmental costs needed to implement the recommended mitigation measures, which are Tsh 260,000,000. WRBWB is willing to implement the proposed mitigation measures and other relevant guidelines to ensure project sustainability and environmental protection, as shown in the Table below.

ESMP Sub-Plans for the Project

Based on ESIA findings (baseline studies, impacts identified and proposed ESMP), during mobilization phase, the Contractor shall be required to develop additional independent safeguard tools to guide the implementation and supervision of environmental and social issues. These tools shall comply with national requirements and AfDB safeguards requirements. The proposed mandatory safeguard tools shall include a Health and Safety Management Plan (HSMP); Child Abuse Protection Plan (CAPP); Gender Based Violence and Protection Plan (GBVPP); a Grievance Redress Mechanism (GRM); Emergency Preparedness Plan (EPP); Code of Ethical Conduct (CEC); SEP and Chance Find Procedures (CFP).

Table 5: The proposed Environmental and Social Management Plan for the project

Identified Impact	Project Activities	Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
Mobilization and Construction Phase				
Employment opportunities	All construction activities	<ul style="list-style-type: none"> The contractor shall be encouraged to employ local unemployed yet willing-to-work hard manpower to the extent viable, subject to a minimum of 50% unskilled labor. This will ensure that local people benefit more from the project. Employment should be on equal opportunities for both genders, The employment procedures and arrangements should be in agreement with OS2 The contractor shall provide on-the-job training. 	Contractor/ WRBWB	3,000,000
Growth of Local Economy	Supply of raw materials, selling of food, employment, etc	<ul style="list-style-type: none"> The contractor shall buy most of the construction materials available locally from authorized suppliers. The contractor shall involve village government for notifying the public as per OS10 and labourers be recruited as per OS2. 	Contractor/ WRBWB	-
Increase of Government Revenue	Importation of Materials and Machines, Employment	<ul style="list-style-type: none"> Developer and contractor shall pay all the required taxes and duties promptly The employment procedures and remuneration should adhere to local laws and OS2 	Contractor/ WRBWB	-
Impact on Water Quality	Site Clearance, Works in the rivers, Washing of Machines, Works in Workshop, waste disposal	<ul style="list-style-type: none"> The contractor shall avoid the release of pollutants or, when avoidance is not feasible, minimize and control the concentration and mass flow of their release using the performance levels and measures specified in national law or the OS3, whichever is most stringent. The surface and groundwater reserves will be adequately protected by installing screens and barriers to protect the source of contamination such as construction and oily waste that will degrade its potable quality; Suspended sediments would be monitored in the downstream flow and in case of a sudden change for necessary measures; Wastes will be collected, stored temporarily and taken for disposal site. Similarly, if the sewage after treatment is to be discharged onto the land it will meet the requirements of the primary effluent quality standards (PEQS) for disposal of wastewater. Regular water quality monitoring according to determined sampling schedule; Spill kits shall be kept close to the construction sites in case there is an incidental spill off, so that it can be immediately cleaned up; Refueling, storage, servicing or maintenance of the equipment within 100 m of drainages, water courses, alluvial plains or other sensitive environmental resources will be strictly prohibited. If these activities have to be done at the construction site, all precautionary measures shall be taken to prevent leaks or spills from reaching the soil or nearby water courses; Ready-mix concrete trucks containing alkaline cement or residues of cement will 	Contractor/ WRBWB	50,000,000

Identified Impact	Project Activities	Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>not be allowed to enter any watercourse. Washout of the concrete trucks shall be performed at the concrete batching plant camp, where appropriate facilities will be provided. If the washout of concrete trucks were necessary at or near the construction site, this shall be done at distance greater than 200 m of any watercourse and never in a very high or high habitat sensitivity area. The washout area will be clearly signposted and drivers shall be aware of the designated locations for washout;</p> <ul style="list-style-type: none"> • Handling and storage of lubricants, solvents shall be properly organized as well proper usage of construction equipment; • Storage of substances that are harmful to soils and waters (e.g. fuels for construction machinery) on the construction site shall be minimized. All hazardous substances either products to be used or waste, shall be stored in adequate places, far from sensitive areas (e.g. water courses, habitats with a rich biodiversity) and adequately equipped to prevent any soil, surface water or groundwater contamination); • Undertake regular preventive maintenance of vehicles and construction machinery so as to reduce leakages of lubricants, motor oil and fuel 		
Impact on Biodiversity	Site clearance, Movement of machines and equipment, waste disposal	<ul style="list-style-type: none"> • For the trees to be removed for the proposed interventions, compensatory tree plantation will be carried out along the embankment. About 50 ha of land are available for this purpose along the priority reach, and a plantation plan will be prepared. The tree plantation will be carried out fully in compliance with the AfDB OS6. In addition to providing ecological service, embankment stabilization, and enhanced aesthetic value, this plantation will also prevent any encroachment over the embankment. A monitoring program will be initiated to track the regrowth of aquatic vegetation along the riverbank revetment. • Since most of the potentially negative impacts of riverbank revetment on the aquatic habitat are expected to be temporary in nature, and since the revetment is likely to provide habitat for some aquatic species, as stated earlier, no mitigation measures are needed for this activity. • Embankment slopes should be given along with the river. The slope is then planted with grasses, sedges and herbs. This will mitigate the permanent loss of habitat for the threatened species of freshwater turtle, among others. Planting on such bank slopes would increase the value of habitat by providing vertical structural diversity and would provide a compensation for the lost land-water interface for the movement of reptile and amphibian species. It also provides compensation for the clearance of vegetation along the banks of the river. 	Contractor/ WRBWB	30,000,000

Identified Impact	Project Activities	Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<ul style="list-style-type: none"> • Ten (10) trees against each fallen tree of similar floral function on both sides of the proposed alignment should be planted, which will help in rehabilitating the floral and faunal activities of the project area. • Forest restoration should be done with native species, e.g., <i>Acacia nilotica</i>. It will enhance the site value and in part will provide compensation for the lost habitat for the species; • The mobility of construction machinery should be planned to minimize the loss of habitat; • Incorporate technical design measures to minimize the removal of trees, if possible such as change in the alignment; • The construction camp management plan during the planning stage must consider fencing and gating to check the entry of animals in search of edible goods; and • Similarly, the waste management plan of the camps must be considered at the planning stage to prevent wild animals and birds. • Barrage and channelization works shall be properly designed to accommodate design flows; • Provision to control flood damages and provision of safety of embankments will be considered during the design of these arrangements; • Control of wastewater and sediment releases to the river; • Contractor will be required to implement the water quality management protocols; • Ensure the minimum ecological flow at downstream area; • Inspections by the fisheries officers should be facilitated to facilitate the proper implementation of relevant laws; • All vehicles, machinery, equipment and generators used during construction activities will be kept in good working condition and properly tuned to minimize the adverse impact on waterfowl habitat, by reducing noise, exhaust and land disturbance; • Communities are given awareness and are involved in the proper protection of the Biota inside and around the project area and • Proper monitoring to check the compliance of laws, regulations and standards will be carried out. • Hunting, poaching and harassing of wild animals shall be strictly prohibited, and Contractor shall be required to instruct and supervise its labor force accordingly and clear orders should be given in this regard; • Proponent must take NOC from the relevant department prior to construction phase; 		

Identified Impact	Project Activities	Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<ul style="list-style-type: none"> • After consultation with the Wildlife Department, site specific Wildlife Safety Plans should be developed; • Wildlife Conservation Act, 2009 will be followed for compliance; • Similarly, wastes shall be properly disposed of to prevent it being eaten by animals, as it may be hazardous to them. 		
Impact on air quality	Site clearance, movement of machines and equipment, extraction of construction materials	<ul style="list-style-type: none"> • Effective control of the potential by minimizing the total area of bare earth at the project site during dry periods. • Minimization of the movement of vehicles on unsealed surfaces and strict speed controls shall be implemented for all transport vehicles. • The contractor to ensure that all vehicle loads of soil/aggregates are well covered to prevent fugitive dust along the route. • Further, the contractor should cover surface treating soil / aggregate stockpiles and wet down bare earth areas in dry and windy conditions. • Workers on the site will be issued with dust masks during dry and windy conditions. 	Contractor/ WRBWB	5,000,000
Impacts due to Waste Generation	Domestic activities (cooking, bathing etc), waste management, site clearance, construction works.	<ul style="list-style-type: none"> • All waste/materials which can be reused at site as follows; <ul style="list-style-type: none"> ○ Salvaging easy-to-remove items like doors, hardware, appliances, iron sheets, and fixtures for reuse. ○ Wood cut-offs can be used for cripples, lintels, and blocking to eliminate the need to cut full length lumber. Scrap wood can be chipped on site and used as mulch or groundcover. ○ Brick, concrete and masonry can be recycled on site as fill, subbase material or driveway bedding. ○ The demolition materials which cannot be reused/ recycled shall be collected as garbage at the transfer station and disposed off at dump site • Identification and classification of the different waste types that could be generated at the construction site (due to the materials used and waste generated in different sections) according to the Environmental Management Regulations (Hazardous Waste Control), 2009; • Completely separate hazardous from non-hazardous waste streams at the construction site should be done; • Immediate removal of waste material (concrete, iron, rocks, etc.) waste from site • Collection and disposal of district solid alike waste generated in the construction site and camps (food, beverages, packaging waste such as paper, bottles, glass, etc., glass bottles) according to national legislation (separation of recycling waste materials from the waste stream that will be disposed at authorized dumpsite). 	Contractor/ WRBWB	20,000,000

Identified Impact	Project Activities	Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>Recyclable waste shall be given to an authorized recycling company;</p> <ul style="list-style-type: none"> • Signing a contract with the company for waste collection (registered by NEMC) and transportation for the collection and transport of the hazardous waste generated at the construction site to authorized dumpsite; • Ensuring that the contracts signed with the companies dealing with waste recycling and recovery will take delivery and acceptance of the waste streams is performed on a frequent basis so that the construction sites remain clean at any time; • Reusing excavated soil and construction waste as much as possible; • The separate collection of possible hazardous waste (motor oils, vehicle fuels) and sub-contracting an authorized collector and transporter to transport, recovery or finally dispose the hazardous waste; • Establishing the Temporary Hazardous Waste Storage Points according the national legislation on handling, labelling, storage and management with hazardous waste; • Establishing and following the hazardous waste management procedure; • Ensuring that the hazardous waste is packaged and labelled showing the R and S phrases (risk and safety statements of the hazardous waste) and it is temporary stored on safety storage facility equipped with adequate ventilation, fire resistant conditions especially if there are VOC emissions, mercury containing lamps, asbestos materials form demolition works (if any); • Ensuring that the access to these temporary hazardous waste storage points be only allowed for trained and equipped staff, and entrance prohibited for untrained workers and public; • Promptly cleaning up All waste spills; • Making available for inspections full records of the type of waste stream generated, quantity composition, origin, disposal destination and method of transport for all different waste streams; • Contractors shall cooperate with Village leaders for smooth collection of solid wastes from the project area • Undertaking the selective removal and storage of top soil; • The removal of topsoil from the soil surface so as to serve for reuse in the restoration of disturbed areas not occupied by the proposed project; • The reuse of topsoil to restore cuttings; • Burning and burying of wastes shall be strictly prohibited 		
Occupational	All Construction	<ul style="list-style-type: none"> • Providing basic medical training to specified work staff and basic medical service 	Contractor/	10,000,000

Identified Impact	Project Activities	Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
Health and Safety Risks	activities	<p>and supplies to workers;</p> <ul style="list-style-type: none"> • Complying with the safety precautions for the construction workers as per International Labor Organization (ILO) Convention No. 62, as far as applicable to the Project Contract and requirements of OS2 and OS4; • Training of workers in construction safety procedures, environmental awareness, equipping all construction workers with safety boots, helmets, gloves and protective masks, goggles, shields and monitoring their proper and sustained usage; • The Proponent, through the Contractor, is committed to adherence to the occupational health and safety rules and regulations stipulated in the Occupational Safety and Health Act, 2003. • Appropriate working gear (such as nose, ear mask and clothing) and good construction site management shall be provided. • The contractor will ensure the provision of medicines, first aid kits, ambulances etc. at the camp site; • Work areas will be cordoned off where necessary; • Contractors will instruct their staff to use Personal Protective Equipment (PPE) (e.g., wire containment, displaying warning signs along the work site, and communicating warnings to mats) to enhance safety; • Safety lookouts will be built to prevent people and vehicles from passing at the time of hot or cold work; and • An emergency management plan must be devised by the contractor in close coordination with the emergency services. • A well-stocked First Aid kit (administered by first aider) shall be maintained at each farm area and construction site. The first aider shall also be responsible for the primary treatment of ailments and other minor medical cases as well as providing some health education to the workforce. 	WRBWB	
Community Health, Safety and Security Risks	Transportation of construction materials, influx of labour	<ul style="list-style-type: none"> • The laborers with different transmittable diseases will be restricted within the construction site; • Ensure that the site is restricted from the entry of irrelevant people, particularly children; • Training of workers in the construction safety procedures, environmental awareness, and equipping all construction workers with safety boots, helmets, gloves, ear plugs, and protective masks, and monitoring their proper and sustained usage; • Provision of proper safety and diversion signage, particularly in urban areas and at sensitive/accident-prone spots; 	Contractor/ WRBWB	5,000,000

Identified Impact	Project Activities	Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<ul style="list-style-type: none"> • Setting up speed limits in close consultation with the local stakeholders; • The mitigation measures provided for air and noise shall be adopted to reduce the air pollution, noise pollution and vibrational impacts on nearby community; and • The GRM will be prepared and communicated to all workers and the community in line with OS1 and OS10 and reduce this impact. 		
Impacts due to Increase of Noise and Vibration level	Transportation of construction materials, Operation of machines and equipment, extraction of construction materials	<ul style="list-style-type: none"> • Equipment should be maintained in accordance with the manufacturer's instructions and specifications, training to equipment operators on equipment operational guidelines and standards with dos and don'ts such as" shut off the engine when not in use". • Restricting noisy construction activities to normal working hours (8 am - 5 pm). • Wherever possible, all construction equipment will comply with the requirements of the Tanzania Bureau of Standards (TBS) on noise emission in the environment by equipment for use outdoors. All the equipment shall bear the TBS marking and the indication of the guaranteed sound power level and shall be accompanied by TBS declaration of conformity; • All vehicles and machinery used at the construction sites will be subject to regular maintenance. The vehicles and machines that are excessively noisy due to poor engine adjustment or damaged noise control devices shall not be operated until corrective measures have been taken; • The location of noisy equipment will be chosen as far as possible from sensitive receptors (dispensary, hospital, school, offices). When near sensitive receptors, construction works will be scheduled and provided with the necessary resources so that the time of exposure is as short as possible; • The contractor shall adhere to OS3, which requires observing pollution prevention and energy efficiency technologies. • The Earth moving equipment shall be operated as far away from vibration sensitive areas as possible • Earth moving and ground impacting operations shall be phased so as not to occur in the same time period because vibrations are additive. • Night time activities shall be avoided as people feel more vibrations during night time hours. • Dynamic compaction. A smaller falling weight will produce smaller vibrations; • Avoid vibratory rollers and packers near sensitive receptors. • Monitoring of vibrations during the performance of critical work processes will be undertaken in buildings which are within a distance of 20-30 meters from the area where the these works take place. 	Contractor/ WRBWB	2,000,000

Identified Impact	Project Activities	Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
Soil Erosion	Extraction of construction materials, cut and fill during construction, works during rain season	<ul style="list-style-type: none"> • There shall be no construction activities on the ground during rainy season • The contractor shall deliberately re-cover exposed soils with pavements for smooth operations and unpaved area shall be covered with grass to overcome erosion by moving water in the area. • Proper drainage channels shall be provided to direct water to designated area. • Proper grading to promote sheet flow and minimize flow concentration on unconsolidated soil. 	Contractor/ WRBWB	8,000,000
Gender based violence (GBV), equity, rape and sexual harassment	Influx of people for employment	<ul style="list-style-type: none"> • All workers, community and stakeholders will be educated on preventing and responding to sexual harassment, SEAH, and GBV ahead of any project-related work as per OS4. • Workers shall be provided with identification cards and shall put on uniforms all the time while at the site • The community within the vicinity of the college where construction will take place will also be educated on gender-based violence and sexual offences such as sexual harassment, rape and defilement in the context of labour influx and the prevention and response measures. • Strategies such as male involvement will be employed in preventing and responding to GBV and sexual harassment • Partnerships will be established with relevant government agencies and NGOs to ensure survivors of GBV and sexual offences access survivor-centered services such as medical care, psychosocial support, legal redress, safety, etc, as and when necessary • Impose zero tolerance on sexual harassment, all forms of gender-based violence, and discrimination at all phases of the project 	Contractor/ WRBWB	5,000,000
Gender inequity in employment	Employment of project workers	<ul style="list-style-type: none"> • WRBRB and contractor shall ensure that women get adequate employment opportunities during recruitment and job postings. • The contractor shall carry out regular sensitization and awareness campaigns for workers to promote gender equity in employment during the construction works and during operation • During programme inception, contractor shall disclose standard operating procedures, guidelines and management systems established to ensure the promotion of gender equality and social inclusion • Programme staff and trainers need to include male and female representatives from diverse ethnic groups. They will need to receive training on gender equality and social inclusion within the context of the programme. • The contractor shall provide gender disaggregated data, separate bathing, 	Contractor/ WRBWB	2,000,000

Identified Impact	Project Activities	Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		changing, sanitation facilities for men and women		
Impacts associated with Transmission of Vector Borne and Communicable Diseases	Influx of people to seek employment, site clearance (creation of ponds), Waste generation and disposal	<ul style="list-style-type: none"> Workers should receive training as part of their induction and then at least every 6 months on potential high risk communicable and vector borne diseases, symptoms, preventative measures and transmission routes as well as treatment options. This will be particularly important for diseases with which non-local workers are unfamiliar and in case of any emerging disease outbreaks. A Worker Code of Conduct should be developed providing a site code of behaviour including worker-worker interactions, worker-community interactions and development of personal relationships with members of the Community. This would apply to all Project workers and visitors to the construction site. In the event of a new disease, increased transmission or outbreak compared to the baseline, the Project should interact with local health care facilities and workers to ensure there is an appropriate response in place. This involves community education and awareness, training of health care workers etc For all contractors and sub-contractors, at worker sites the following will be implemented at a minimum in order to minimize disease transmission: <ul style="list-style-type: none"> Providing workers with appropriate sanitary facilities which are appropriately designed to prevent contamination. Developing a robust waste handling system to avoid the creation of new vector breeding grounds or attracting rodents to the area. Implementing measures to reduce the presence of standing water onsite through environmental controls and source reduction to avoid the creation of new breeding grounds. Ensuring the construction site is kept clean and free from any accumulation of wastes as well as supplied with clean potable water. Ensuring appropriate food preparation and monitoring measures are in place. Monitoring to ensure that all standards are being met by the relevant departments. The workforce will be provided with access to treatment at health facilities near the site. Access to health care should include direct employees, sub-contractors and employees of the supply chain working on based on site. The Project should implement TB prevention measures including testing and referral for treatment for all personnel working on the Project. This approach should be explained clearly to the workforce along with making it clear that there are no consequences for their employment. The Project should monitor the emergence of major pandemics through World Health Organization (WHO) alerts and in the event of a pandemic review 	Contractor/ WRBWB	5,000,000

Identified Impact	Project Activities	Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		mobilization and demobilization of ex-patriate Project personnel and/ or implement appropriate control measures and Emergency Response Plans.		
Impacts associated with Transmission of Sexually Transmitted Infections	Influx of people to seek employment	<ul style="list-style-type: none"> An HIV/AIDS training course and on-going education on transmission of HIV/AIDS and STDs, to employees, through workshops, posters and informal information sessions; Encouragement of employees to determine their HIV status; Supply of condoms/ femidoms at the construction site(s) and Development of a comprehensive Construction Site Management Plan, including rules for on-site behavior, entrance and exit policies and prohibition of sex workers on site. As part of STD Management Plan, information should be provided to workers on STD prevalence rates in Tanzania as well as the expectations of local communities if a women is made pregnant by a worker (e.g., marriage, financial implications etc.). Workers should have access to confidential health care for the treatment of STDs through medical facilities/ health care at Project site. The Project should partner with other NGOs and CBOs to support the provision of information, education and communication campaigns around safe sexual practices and transmission of STDs. 	Contractor/ WRBWB	30,000,000
Impacts on Labour and Working Conditions	<ul style="list-style-type: none"> Contractor and sub contractors compliance to labour laws 	<ul style="list-style-type: none"> The Project should priorities the recruitment of workers and procurement of goods and services from within the Morogoro region then to national companies. This will not apply to the provision of highly technical equipment. The Project should develop a fair and transparent employment and procurement policy and processes to avoid any potential for nepotism or favouritism. The policy should be shared with the Ward and Village Leaders. Contractor will notify District Council, Ward and Village leaders of the specific jobs and the skills required for the Project, prior to the commencement of construction phase. This will give the local population time to prepare and apply for the available job opportunities on time. This is mainly applicable to unskilled and semi-skilled workers who will be locally sourced. Employment and procurement opportunities will be publicly advertised in appropriate newspapers, District Offices and Ward and Village offices and in all relevant languages in a timely manner, to allow fair competition. There will be no requirement for applicants to make payments for applying for, or securing, employment on the proposed Project. The Project will ensure that recruitment procedures are transparent and monitored to ensure that those recruited present their actual experience, geographical location, health status, and age and that requirements for local 	Contractor/ WRBWB	5,000,000

Identified Impact	Project Activities	Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>employment are being met.</p> <ul style="list-style-type: none"> • The Project will develop and implement a program of up-skilling, training and development for workers to assist them in accessing opportunities associated with the Project and in finding work following completion of their contracts. • The Project will provide training on health and safety and quality standards required by the Project for provision of goods and services to the Project to ensure that local businesses have the opportunity to benefit. • The Project will ensure that contracts are unbundled to allow a number of small businesses to provide goods and services rather than the supply being monopolized by one larger sub-contractor. • Provision of clear and understandable information regarding rights under national labour and employment law, and any applicable collective agreements, including those related to hours of work, wages, overtime, compensation, etc. • Provision of reasonable working conditions and terms of employment. • Provision of employment, compensation/remuneration and working conditions, including working hours, based on equal opportunity and fair treatment, avoiding discrimination on any aspects. • Provision of adequate welfare facilities on site. • Implementation of a grievance mechanism for the Project workers. • Adoption and implementation of a sexual harassment policy. • Adoption of open attitude towards freedom of association. • Contractor should ensure no employee or job applicant is discriminated against on the basis of his or her gender, marital status, nationality, ethnicity, age, religion or sexual orientation. • All workers (including those of subcontractors) should, as part of their induction, receive training on worker rights in line with Tanzanian legislation to ensure that positive benefits around understanding labour rights are enhanced. This process should be formalized within the Code of Conduct that would be provided by Contractor. • All workers (including those of subcontractors and suppliers) should have contracts, which clearly state the terms and conditions of their employment and their legal rights. These contracts should be aligned with Tanzanian labour law, the ILO core conventions and the requirements of AfDB Occupational Health and Safety Guidelines. Contracts should be verbally explained to all workers where this is necessary to ensure that workers understand their rights. • The Project should put in place a worker grievance mechanism that should be accessible to all workers, whether permanent or temporary, directly or indirectly 		

Identified Impact	Project Activities	Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>employed. The worker grievance mechanism should be open to Contractor and the subcontractor workforce in the event that their grievance is not adequately resolved by their direct employer. Contractor would then have the authority to act to resolve this grievance.</p> <ul style="list-style-type: none"> All workers (including those of Contractor and the subcontractor) should have access to training on communicable diseases and STDs and community interactions in general. Contractor should undertake surveillance and assurance that no children or forced labour is employed directly, and to the extent possible by third parties related to the Project and primary suppliers where such risk may exist. 		
Subtotal 1				180,000,000
OPERATION PHASE				
Control of River Bank Erosion	<ul style="list-style-type: none"> River training and construction of dykes 	<ul style="list-style-type: none"> Planting trees along the riverbanks and beyond the boundary (buffer zone) Controlling agricultural activities to reach the river bank Avoiding watering cattle in the river 	WRBWB	10,000,000
Control of river bank erosion	<ul style="list-style-type: none"> River training and construction of dykes 	<ul style="list-style-type: none"> Planting trees along the riverbanks and beyond the boundary (buffer zone) Controlling agricultural activities to reach the river bank Avoiding watering cattle in the river 	WRBWB	5,000,000
Ecological Uplifting of Rivers	<ul style="list-style-type: none"> River training and construction of dykes 	<ul style="list-style-type: none"> Avoiding water pollution Preventing agricultural activities along the rivers 	WRBWB	5,000,000
Aquatic Weeds Formation in River Basin	<ul style="list-style-type: none"> River training 	<ul style="list-style-type: none"> Aquatic weeds can be controlled biologically by the introduction of various herbivorous species. Grass carp with common carp, turtles, Ducks and Geese are well known as aquatic weed feeders. The grass carp and turtles are very effective in controlling aquatic weed because they feed directly on these weeds. The common carp feed on bottom-dwelling plants and sediments and are important to root out of these plants; The above measure will be very effective in controlling aquatic weeds although if the problem exists then mechanical aquatic harvester should be employed for cutting and removing all the weeds present in the river water body. 	WRBWB	10,000,000
Loss of Access to River water	<ul style="list-style-type: none"> Construction of dykes 	<ul style="list-style-type: none"> WRBWB shall work closely with RUWASA to provide clean water to the communities near the project 	WRBWB	50,000,000
Subtotal 2 (Operation Phase)				80,000,000
GRAND TOTAL				260,000,000

PROPOSED MONITORING AND AUDITING

Environmental monitoring and auditing shall form an essential component of this project. An Environmental Monitoring Plan has been prepared, providing a mechanism for monitoring the environmental impacts of a project during its execution to reduce their negative effects and to introduce standards of good practice to be adopted for all project works. It facilitates and ensures the follow-up of the implementation of the proposed mitigation measures in the EMP. The parameters identified for monitoring in the proposed project include water quality, air quality, waste generation, and occupational health and safety risks. The monitoring plan provides details of the attributes to be monitored, frequency, institutional responsibility, and estimated costs. These costs are only approximations and therefore indicative.

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 measuring parameters (performance indicators) during the establishment, operation, and decommissioning phases to detect and quantify environmental and social change that 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 compliance levels with standards and thresholds, e.g., for waste discharge and air pollution.
- **Mitigation monitoring** aims to determine the suitability and effectiveness of the mitigation programme, which is designed to diminish or compensate for the project's adverse effects.

This ESIA has adopted Baseline and Compliance Monitoring. Monitoring is essential to ensure that mitigation measures are properly implemented. Details of the attributes to be monitored, frequency, institutional responsibility, and estimated costs are provided. These costs are only approximations and, therefore, indicative. Costs that are to be covered by the developer should be included in the project cost.

Table 6: Environmental and Social Monitoring Plan

Environmental and Social Aspect	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimate (Tsh)
Pre-Construction Phase								
Biodiversity	Vegetation	Once	Project Site	m ²	Measurements/ Observations	River boundary	WRBWB	1,000,000
Air Quality	SOx	Once		mg/Nm3	Multi- Gas Detector	0.06-0.09		1,000,000
	NOx					<0.12		
	CO					<0.5		
Noise pollution	Noise level	Once	Project site	dBA	Noise Level Meter	<55 day <45 day		500,000
Water Quality	Turbidity	Once (during rainy season)	Mkodoa sub basin (Miyombo, kisangata, and Mkundi rivers)	NTU	Turbidity Meter	30	WRBWB	1,000,000
	pH			-	pH meter	6.5-9.0		
	BOD			Mg/l	Winkler method	<30		
	COD			Mg/l	Dichromate	<60		
Soil erosion	Extent of erosion	Once	Mkondoa subbasin rivers in project	Ha	Observation/ measurement	Zero	WRBWB	500,000
Construction Phase								
Biodiversity	Vegetation	Quarterly	Project Site	m ²	Measurements/ Observations	River boundary	Contractor	10,000,000
Air Quality	SOx	Quarterly		mg/Nm ³	Multi- Gas Detector	0.06-0.09		1,000,000
	NOx					<0.12		
	CO					<0.5		
Noise pollution	Noise level	Monthly	Project site	dBA	Noise Level Meter	<55 day <45 day		750,000
Water Quality	Turbidity	Once (during rainy season)	Mkodoa sub basin (Miyombo, kisangata, and Mkundi rivers)	NTU	Turbidity Meter	30	Contractor	1,000,000
	pH	Quarterly		-	pH meter	6.5-9.0		80,000
	BOD			Mg/l	Winkler method	<30		500,000
	COD			Mg/l	Dichromate	<60		
GBV, Rape and Sexual Harassment	GBV case	Twice a year	Project areas	Number of GBV Records	Inquiries and records	Zero cases of GBV	Contractor	3,000,000
Impacts Associated with Transmission of Sexually	Project Community and Contractor's	Twice a year	Project site	Number of workers who got ill from STDs	Review of medical records	Records Zero (0		2,000,000

Environmental and Social Aspect	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimate (Tsh)
Transmitted Infections	Workers						Contractor	
Impacts on Labour and Working,	Conditions of Contractor Workers -Signed contracts -Signed Code of Conduct --working conditions -Provision and use of proper PPEs -grievances	Daily	Project Site	Preparation and implementation of Human Resources Policy, Employment Plan and labour Management Plan	Records, Observations, interviews	Presence of the Plan and Enforcement. Zero grievances		1,000,000
Soil erosion	Extent of erosion	Quarterly, especially during rainfall	Mkondoa subbasin rivers in the project	Ha	Observation/ measurement	Zero	Contractor	Included in the construction budget
Flooding	Flood extent	Rainfall season	Meandering sections in the project area	-Flood levels	Observations Floods measurements	No flooding events	Contractor	Included in the construction budget
Health and safety	-Provision of HSE education -Provision of a safe working environment, -PPE Provision	Daily	Project site	- Training/sensitisation/toolbox records -Risk Assessment Report -PPE is provided and in use -	Observation and review of records Interviews	Zero accidents and incidents	Contractor	1,000,000

Environmental and Social Aspect	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimate (Tsh)
Grievances Redress Mechanism	Properly Working GRM - Grievance Logs -Nos. and nature of grievances Frequency	Quarterly	Project areas	Number and nature of Grievances received and resolved	Review of records Interviews Inspections	All grievances were collected and resolved on time	Contractor/ WRBWB	Included in the construction budget
Operation Phase								
Soil erosion	Extent of erosion	During the rainfall season	Mkondoa subbasin rivers in the project/cattle watering section	Ha	Observation/ measurement	Zero	WRBWB	8,000,000
Flooding	Flood extent	Rainfall season	Meandering sections in the project area	Level of damage	Observations Floods measurements	Zero flood events	WRBWB	
Grievances Redress Mechanism	Properly Working GRM - Grievance Logs -Nos. and nature of grievances Frequency	Quarterly	Project areas	Number of Grievances received and resolved	Review of records Interviews Inspections	All grievances collected and resolved on time	WRBWB	2,000,000
GRAND TOTAL								27,330,000

DECOMMISSIONING

Decommissioning is not anticipated shortly. However, if this happens, it may entail a change of use (functional changes) or demolition triggered by a change of land use. Because of this, specific mitigation measures about the environmental impacts of decommissioning works cannot be proposed at the moment with a reasonable degree of certainty. A detailed decommissioning plan that considers environmental issues shall be prepared by the developer prior to the decommissioning works. Should it be necessary, decommissioning may involve a change of use (functional changes) or demolition triggered by a change in land use.

CONCLUSION

It can therefore be concluded that the proposed Enhancing Climate Resilience of Water Resources in Mkondoa Catchment Project will deliver significant environmental, social, and economic benefits to the affected communities in Gairo, Mvomero, and Kilosa Districts, and to the broader ecosystems within the Mkondoa Catchment. The project's benefits in terms of strengthened climate resilience, enhanced water security, reduced flood risks, restored ecosystems, and improved livelihoods through infrastructure and ecosystem-based adaptation interventions will substantially outweigh the manageable, localized adverse impacts identified.

The ESIA has determined that the identified negative environmental and social risks are predictable, temporary, and can be effectively managed through the full and timely implementation of the Environmental and Social Management Plan (ESMP). The Wami Ruvu Water Basin Water Board (WRWB) has demonstrated a firm commitment to integrating environmental safeguards, gender considerations, stakeholder engagement, and alternative livelihood support into the project framework. With this commitment and the application of appropriate mitigation measures, the project is not expected to result in significant or long-term adverse impacts.

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ACRONYMS AND ABBREVIATIONS

AfDB	African Development Bank
AM	Ante Meridiem
BATNEEC	Best Available Technology Not Entailing Excess Cost
CDO	Community Development Officer
C-ESMP	Site-specific Environmental and Social Management Plan
CO ₂	Carbon dioxide
DAS	District Administrative Secretaries
dBA	decibels
EHSGs	Environmental Health and Safety Guidelines
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
ESIA	Environmental and Social Impact Assessment
ESMoP	Environmental and Social Monitoring Plan
ESMP	Environmental and Social Management Plan
FAO	Food and Agriculture Organization
GBV	Gender based violence
GHGs	Greenhouse Gases
GIS	Geographic information system
HWSD	Harmonized World Soil Database
ILO	International Labor Organization
JICA	Japan International Cooperation Agency
Kg	Kilogram
Km	Kilometer
MCM	Million Cubic Meter
MGWQL	Morogoro Water Quality Laboratory
NEMC	National Environmental Management Council
NGOs	Non-governmental organization
NLUFP	National Land Use Framework Plan
NO _x	Nitrogen oxides
OH&S	Occupational Health and Safety
OS	Operational Safeguards
OSHA	Occupational Safety and Health Authority
PEQS	Primary Effluent Quality Standards
PM	Post Meridiem
PPE	Personal Protective Equipment
RUWASA	Rural Water Supply and Sanitation Agency
SMU	Soil moisture units
SO _x	Sulphur oxides
TANESCO	Tanzania Electric Supply Company Limited
TANROADS	Tanzania National Roads Agency
TARURA	Tanzania Rural and Urban Roads Agency
TBS	Tanzania Bureau of Standards
TOR	Terms Of Reference

TRC	Tanzania Railways Corporation
TZS	Tanzania Shillings
UNEP	United Nations Environment Programme.
URT	United Republic of Tanzania
UWAWAKUDA	Ushirika wa Wakulima Wadogo Wadogo Kilimo cha Umwagiliaji Dakawa
WRBWB	Wami Ruvu Basin Water Board

CHAPTER ONE

1 INTRODUCTION

1.1 Background

The Wami/Ruvu Basin Water Board (WRBWB) is a government agency operating under Tanzania's Ministry of Water, identified by TIN 143-787-133. Its primary responsibility is to manage, conserve, and regulate water resources within the Wami/Ruvu Basin. WRBWB oversees the use, allocation, and protection of water to promote sustainable development and environmental conservation throughout the basin's catchments.

Tanzania's Mainland is divided into nine major river basins, one of which is the Wami/Ruvu Basin, located in the east-central part of the country, covering an area of 66,899 square kilometers. The Wami/Ruvu Basin comprises three sub-basins: the Wami, Ruvu, and Coast sub-basins. The Wami Sub-basin, spanning 44,233 km², is divided into three catchments: Kinyasungwe (16,538 km²), Mkondoa (12,960 km²), and Wami (14,735 km²). The Ruvu Sub-basin, covering 17,843 km², consists of the Upper Ruvu (7,663 km²), Ngerengere (2,913 km²), and Lower Ruvu (7,267 km²) catchments. The Coast Sub-basin, relatively smaller at 4,823 km², is managed as a single catchment. The basin spans six regions: Dar es Salaam, Pwani, Morogoro, Dodoma, Tanga, and Manyara, as well as 27 districts. Its climate is categorized as "other tropical areas," shaped by the seasonal migration of the Intertropical Convergence Zone (ITCZ). Mean annual rainfall ranges from 600 mm inland to 1,100 mm along the coast, with the highest rainfall in the Uluguru and Nguru Mountains. The coastal area experiences two rainy seasons, while inland areas have a single, unimodal rainy season.

The Government of Tanzania, through the WRBWR, is implementing "Enhancing Climate Resilience of Water resources in Mkondoa Catchment Project," which is financed by the African Development Bank (AfDB). The primary objective of the project is to enhance the resilience of the Mkondoa catchment to withstand and adapt to the adverse impacts of climate change. This involves implementing a holistic strategy aimed at enhancing the catchment's capacity to withstand the immediate impacts of climate variability and fostering its ability to adapt over the long term. By addressing vulnerabilities within the Mkondoa Catchment, the project aims to create a robust and adaptable ecosystem that can thrive despite the challenges posed by a changing climate, ultimately ensuring the sustainability of water resources and fostering resilience in the face of future climatic uncertainties. The project has three components, including;

Component 1: Strengthening of Hydro-meteorological Monitoring Stations

The component will focus on ensuring the availability of data through construction and rehabilitation of hydro-meteorological and water quality monitoring stations; Strengthen the capacity of data observers, field hydrometeorologist and technicians on data collection, processing and validation; and Integrating monitoring information into existing Early Warning System (EWS). This will improve the accuracy of flood and drought predictions, ultimately elevating the level of preparedness and readiness within society.

Component 2: Climate-Resilient Infrastructure and ecosystem Restoration

This component aims to enhance climate resilience in the Mkondoa Catchment by increasing water storage, restoring 1,200 hectares of degraded ecosystems, and improving infrastructure to reduce flood and drought risks. Key interventions include developing two groundwater sources, riverbank stabilization, and dyke rehabilitation and construction in targeted villages. The project promotes ecosystem-based adaptation

practices such as agroforestry, fish farming, tree nurseries, and beekeeping to support livelihoods. It also supports integrated land-use planning in 10 villages and constructs four cattle troughs to reduce human-livestock conflict at water sources, with strong community involvement through Water User Associations and environmental groups.

Component 3: Institutional Strengthening and Project Delivery

This component aims to strengthen the Project Implementation Team (PIT) and key stakeholders for effective, climate-resilient water resource management. Activities include training on climate policies, finance, procurement, and contract management, along with a gender-sensitive manual for water managers. Two Water Users Associations and one catchment committee will be formed and strengthened. Capacity building will target technical staff and Community-Based Organizations, especially women and youth, to access climate finance. Financing models will support community-led water source protection. Environmental school clubs will also be supported to promote sustainable water and climate adaptation practices, enhancing resilience across the Mkondoa Catchment.

This Environmental and Social Impact Assessment (ESIA) study is conducted for the civil works initiatives aimed at protecting and conserving water sources, achieved through the restoration and preservation of the catchment ecosystem (Component Two). This study is limited to the following interventions;

- a) River Training and Bank Stabilization in Kisangata, Miyombo, and Mkundi Rivers,
- b) Rehabilitation of existing Mkondoa dyke at Mitaa of Behewa, Kichangani and Mkwatani (Mbumi and Kasiki Ward, Kilosa DC),
- c) Construction of new Mkondoa dikes at Mitaa of Mkadage, Kiyangayanga, Rose and Mbwamaji (Magomeni Ward, Kilosa DC) and
- d) Construction of cattle troughs at Villages of Mvumi (Kilosa DC), Makuyu (Gairo DC), Matale and Makuyu (Mvomero DC).

The targeted beneficiaries of the proposed restoration interventions for the Mkondoa Catchment Ecosystems include local communities, farmers, women, youth, livestock keepers, Community-Based Organizations (CBOs), water user associations, the Irrigation Commission, Local Government Authorities (LGAs), and the Tanzania Forest Services (TFS). These groups will benefit from improved water availability, reduced flood risks, better-managed grazing and farming areas, enhanced irrigation infrastructure, and strengthened catchment protection measures, all aimed at supporting sustainable livelihoods and environmental resilience within Kilosa, Gairo, and Mvomero Districts.

The ESIA study is conducted in accordance with the Environmental Impact Assessment and Audit regulations (2005) and its amendment of 2018, formulated after the Environmental Management Act No. 20 of 2004. It is also consistent with AfDB guidelines for ESIA studies. The Regulations give mandate to NEMC to oversee the EIA process, which culminates with an award of the EIA Certificate by the Ministry responsible for Environment. The EIA Certificate is among the prerequisite approvals required before the project takes off.

To comply with the legal requirements governing Environmental Management in Tanzania, WRWB commissioned George Joseph Kimaro (NEMC/PC/ EIA/2021/0030) to lead the study team conducting an Environmental and Social Impact Assessment for the proposed interventions.

1.2 Regulatory Requirements for EIA

Project brief submitted to NEMC for screening categorized the project to be under Type “B2” number 1 (b), Water Resources Development Projects (ii) floods control (command area (<200 to <50 Ha). Screening Decision by NEMC is, the project falls under “TYPE A” Projects which full EIA is mandatory (Screening Decision in appendix II). Therefore Scoping report and Draft Terms of references are submitted for review and approval.

1.3 Project Objectives

The primary objective of the proposed project is to enhance the Mkondoa catchment's capacity to withstand and adapt to the immediate impacts of climate variability. Specifically, this project aims to undertake river training and bank stabilization in Kisangata, Miyombo and Mkundi Rivers, Rehabilitation of existing Mkondoa dyke at Mitaa of Behewa, Kichangani and Mkwatani (Mbumi and Kasiki Ward, Kilosa TC), Construction of new Mkondoa dikes at Mitaa of Mkadage, Kiyangayanga, Rose and Mbwanamaji (Magomeni Ward, Kilosa TC) and Construction of cattle troughs at Villages of Mvumi (Kilosa DC), Makuyu (Gairo DC), Matala and Makuyu (Mvomero DC). These efforts are part of the solution for ecosystem interventions within the Mkondoa Catchment area in the Morogoro Region.

1.4 Justification and Rationale of the Project

The Mkondoa catchment, like many others, faces significant challenges in water resource management. These challenges include a rapid rise in water demand, increased vulnerability to droughts and floods, inadequate water infrastructure, and high erosion and sedimentation rates in rivers that compromise water flow and riverbed integrity. Additionally, uncoordinated agricultural practices lead to water pollution and negatively affect water quality within the sub-catchment.

The Wami/Ruvu Basin encompasses 233 water sources, including 116 rivers, 21 springs, 21 wetlands/swamps, 9 well fields, and 64 dams, which provide crucial water resources for domestic, industrial, and agricultural use in the area. The basin experiences an average annual surface runoff of around 4,085 million cubic meters (MCM), with significant fluctuations depending on dry and wet years, ranging from 1,400 MCM in dry periods to 6,800 MCM during wet seasons. Groundwater resources in the basin are estimated to be about 1,139 MCM, of which 875 MCM ultimately replenishes the rivers through springs and seepages. In total, the renewable water resources in the Wami/Ruvu Basin amount to approximately 5,127 MCM. However, on a per capita basis, the basin faces severe water scarcity, with an availability of just 484 m³ per person per year.

The region encounters pressing water management challenges, including water scarcity and over-extraction fueled by urban growth, industrial expansion, and agricultural activities. These factors strain available resources and contribute to land degradation caused by deforestation, overgrazing, and poor land-use practices that increase sedimentation and compromise water quality. Seasonal variability and prolonged dry spells further exacerbate water shortages. In addition, pollution from industrial effluents, agricultural runoff, and untreated wastewater poses significant threats to both human health and ecosystems. Climate change intensifies these issues by introducing rainfall variability, as well as an increase in floods and droughts.

The Mkondoa sub-catchment extends into parts of the Gairo, Kilindi, Kilosa, Kiteto, Kongwa, Morogoro, Mpwapwa, and Mvomero districts. According to the Wami/Ruvu Basin Climate Vulnerability Assessment, the communities within the Mkondoa sub-catchment are particularly at risk from the impacts of climate change. This area is marked by frequent flooding, high daytime temperatures, and low organic matter in the

soil. The Dumila Bridge area, especially along the Morogoro-Dodoma Road (B-127), has consistently experienced severe floods that lead to significant socio-economic losses, damaging productive agricultural land and critical road infrastructure vital for linking various regions in Tanzania and neighboring countries.

Currently, the government, in partnership with other stakeholders, including the African Development Bank (AfDB), is taking temporary measures to address the impacts of floods and drought on communities in the Mkondoa sub-catchment. Actions include river training work at identified hotspots along the Mkundi and Kisangata Rivers, de-siltation efforts at bridges, relocating affected households to safer areas, closing roads during critical flood times, and reinforcing road abutments through stone pitching. Moving forward, the project will focus on implementing permanent solutions in the identified hotspots for droughts, floods, and land degradation in the Kilosa, Gairo, and Mvomero Districts.

Specifically, the selection of sites for the cattle trough subprojects at Matale and Makuyu (Mvomero), Makuyu (Gairo), and Mvumi (Kilosa) is driven by the high concentration of livestock populations in these areas, which has led to excessive pressure on natural water sources, causing severe soil erosion and land degradation along riverbanks and water points. These locations have been prioritized due to the frequent conflict between livestock keepers and farmers over access to water, particularly during the dry season. The installation of cattle troughs at these sites will reduce the direct dependence of livestock on fragile natural water points, minimize water contamination, and support sustainable livestock watering practices, ultimately improving pastoral livelihoods and reducing environmental degradation.

Similarly, the implementation of river training, stabilization, and dyke construction subprojects has been strategically planned for the Miyombo, Mkondoa, Kisangata, and Mkundi rivers because these river stretches have been identified through hydrological studies, community consultations, and previous flood records as the most flood-prone, heavily eroded, and sediment-laden river sections within the catchment. These rivers regularly overflow their banks during peak rainfall, causing damage to farmland, settlements, roads, and public infrastructure. The targeted interventions in these rivers will help stabilize riverbanks, reduce flood risks, protect agricultural land, and safeguard downstream infrastructure, making them high-priority sites for intervention compared to other rivers in the catchment.

1.5 Scope of Work

This study entailed the following: -

- To describe the relevant parts of the project, including project location, design, components, and activities.
- Assemble, evaluate, and present baseline data on the relevant environmental and social characteristics of each project component area.
- To make initial consultation with Government agencies, local communities, and the private sector that the project activities may impact.
- To assess and quantify the potential environmental impacts resulting from the project implementation, especially within the zone of influence of the project.
- To develop an Environmental and Social Management Plan (ESMP) detailing actions and responsibilities for impacts mitigation and monitoring.

1.6 General Methodology

1.6.1 Desk Work Study

This entails a detailed study of relevant literature pertaining to the project area and proposed design. To mention a few, the following documents were reviewed: the design report (Engineering drawings,

Hydrogeological study), Wami Ruvu Interim II reports, Policies, Legislation, AfDB Operational Safeguards Standards, and the administrative framework of water bodies and the construction sector.

1.6.2 Field Survey

The field visits were essential to fully realize the scope of the project, the biophysical environment specific to the location, and the socio-economic conditions in the project area. A five-day visit to the project area was made from 17th March 2025 to 21st March 2025.

The team used the fieldwork to interview stakeholders and collect information on the state of the environment. The information collected includes site land use, water supply, river flows, solid waste management, and other indicators related to the environmental and socio-economic trends of the project areas and the surrounding areas. Other information was appraised through key informant interviews and experts' observations.

1.6.3 Stakeholders' Consultations

The following levels of institutions were consulted, not only to gather environmental and social concerns about the project but also to inform stakeholders about the intended plans to construct the cattle troughs, new dyke, rehabilitating of existing Mkondoa dyke and river training and bank stabilization at reaches of Kisangata River and Mkundi River;

- Gairo District Council, Kilosa District Council, and Mvomero District Council offices
- Chakwale Ward Office Dumila Ward Office, Magomeni ward, and Kibaoni, ward Offices
- Kilimani Village Offices, Kwambe Village Offices, Mvumi Village Offices, Miyombo Village Offices, Zombo Village Offices, Magole Village Offices, Dumila Village Offices, Nguyami Village Offices, Makuyu Village Offices, Matare Village Offices, Mbumi Village Offices, Kiyangayanga Village Offices and Mbwamaji Village Offices

Also the following institutions were consulted during the study;

- Tanzania Rural and Urban Roads Agency (TARURA);
 - Tanzania Electric Supply Company Limited -TANESCO;
 - Rural Water Supply and Sanitation Agency (RUWASA)- Morogoro;
 - Occupational Safety and Health Authority (OSHA); and
 - Fire and Rescue Forces- Morogoro
 - Mkulazu Holding Company
 - UWAWAKUDA – Mvomero
- Stakeholders Engagement Plan (SEP) which includes the Grievances Redress Mechanism (GRM) have been prepared for the project to guide WRBWB and contractor on stakeholders consultation and management of grievances during implementation and operation of the project.

1.6.3.1 Consultation Agenda

Typically, the agenda for these consultations was:

- Presenting the project,
- Confirmation of data/documents from the developer, and
- Obtaining from the stakeholders their environmental and socio-economic concerns and perceptions regarding the proposed Project.

During consultations, the team responded/clarified the project as required and collected stakeholders' concerns and advice.



Figure 1- 1: Photos during Stakeholder consultation at Mbumi Village and Magomeni Ward offices
Source: Consultant, 18th March 2025

1.6.4 Onsite Measurements

The onsite measurements conducted for this study include dust (particulate matter) measurements (ppm), ambient air measurements (in respective units), noise level measurements (dBA), and vibration measurements (vibrations per Second) to establish the baseline environment at the project area. Measurements were done by a consultant on 19th March 2025 as shown in Table 1- 1. Results of the measurements are presented in Chapter 4 of this report.

Table 1- 1: Sampling Days and Time

Date	Time	Measurements Done
19 th March 2025	8.00-12.00	Noise, Dust, Ambient Air Quality, and Vibration
	22.00-24.00	Noise

Source: Consultant, 2025

1.6.4.1 Selection and description of measured sampling stations

The monitoring stations were established based on per the Environmental Management (Air Quality) regulations of 2007. The criteria followed included: predominant wind direction (leeward and windward) at the areas during the study, workers'/operators' positions and nearest local communities as possible receptors, size of the areas to be covered, the areas where pollution was expected, as well as areas that pollutants from the project activities are likely to disperse to. Other criteria include areas that are easily definable and with easy future access in case of need for comparison measurements or another monitoring study. Moreover, the selection criteria for sampling stations considered point source emissions and nearby receptors (i.e., workers or operators at their working locations) that are likely to be affected by the proposed project. Table 1-2 and Figure 1-2 shows the location of the selected sampling points for onsite measurements.

Table 1- 2: Sampling Points for On-Site Measurements

Sampling Point	Remarks
Point 1	30m from Existing Mkondoa Dyke Site
Point 2	30m from New Dyke Site
Point 3	30m from Mvumi Cattle Trough Site
Point 4	30m from Matale Cattle Trough Site
Point 5	30m from Makuyu Cattle Trough Site
Point 6	30m from Makuyu 2 Cattle Trough Site
Point 7	At the Mkundi River, where the river training will be done
Point 8	At Kisangata River, where river training will be done
Point 9	At Miyombo River, where the river training will be done

Source: Field Visit Team, 2025

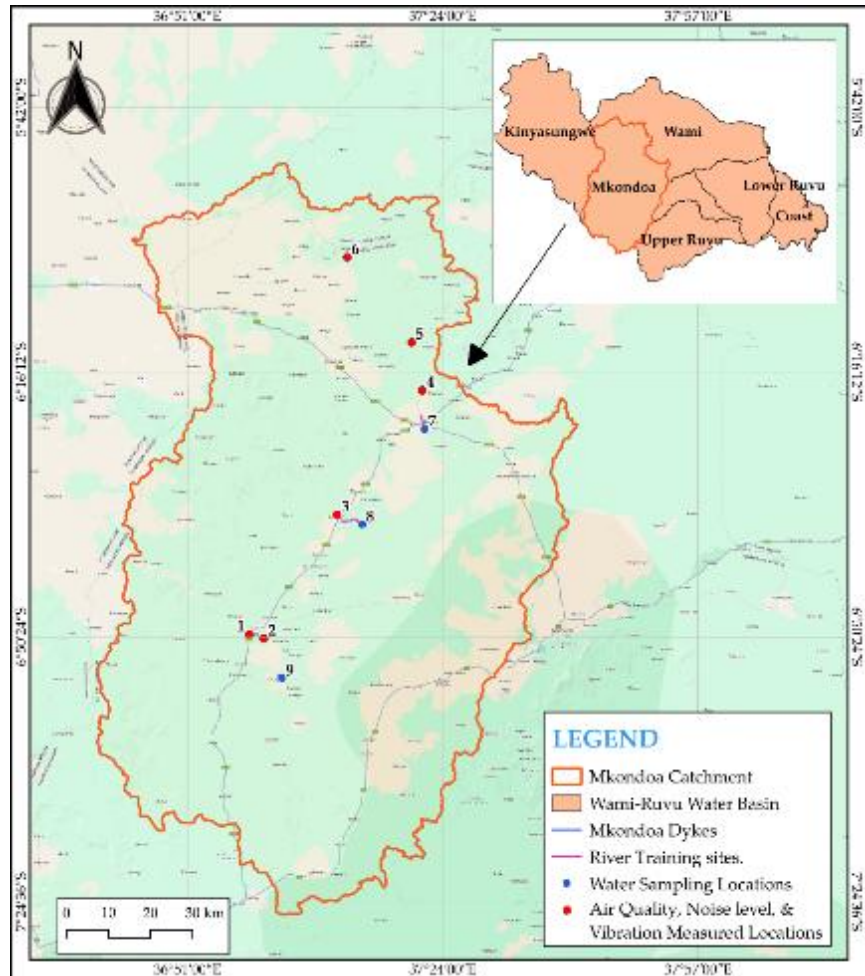


Figure 1- 2: Onsite Measurements Sampling Location

Source; Consultant, 2025

1.6.4.2 Dust (Particulate matter) concentrations in terms of PM10

Dust levels in terms of PM10 were measured using the Casella Micro dust Pro, which complies with the EMC Directive 89/336/EEC in accordance with the manufacturer's procedure and applicable local standards and/or international environmental guidelines. The device has been tested according to the standard delivery schedule and complies with the EN 50081-1:1992 and EN 50081-2:1993 standards. On taking measurements, the device was placed at a breath height of about 1.5 meters from the ground to monitor dust concentrations at each identified station. This position is assumed to be a relatively the breathing zone of the people at their respective locality or working environment. The recorded average values were compared with the prescribed available limit to check their compliance with both TBS standards, WHO standards.

1.6.4.3 Ambient Pollutant Gases Emissions

Levels of ambient pollutant gases were measured using Portable Multi Gas Detector-71-0028RK, in accordance with the manufacturer's procedure that meets ISO 9001:2008 protocol. The measuring device undergoes automatic calibration once it is switched ON by pumping in fresh air into the sensors to allow the toxic sensors to be set to zero. Three measurements were recorded periodically at each station and used to calculate the average value of each pollutant in each station. The average values were then compared with TBS-NES limits and World Health Organization (WHO) guidelines to check their level of compliance.

1.6.4.4 Noise Levels

Noise measurements were carried out using the sound level meter (model CEM DT-8852 data logger), with reference to the international standards, namely IEC 61672:1999, IEC 61260:1995, and IEC 60651, as well as ISO 19961:2003 and ISO 3095:2001. During testing, the digital sound level meter was set to the A-weighting scale to enable the meter to respond in the same manner as the human ear. The "A" scale is applicable for workplace compliance testing, environmental measurement, and workplace design. At each station, measurements were performed for 1 hour consecutively during the day and night.

1.6.4.5 Ground Vibration

Ground vibrations were measured by using an XTECH SDL-800 vibration meter data logger was utilized to quantify the ground vibration at the study area. A meter has an accuracy of $\pm 5\%$, acceleration of 200 m/s², and a wide frequency range of 10 Hz to 1 kHz for capturing almost all possible vibrations for workplace assessments. The XTECH vibration meter data logger is designed to measure vibration at the workplace according to EN 14253:2003 standard. At each identified station, vibration readings were recorded every 5 seconds three times, and their mean value was used to represent the vibration level at that particular station.

1.6.4.6 Water Sampling and Analysis

Water samples were collected on 20th March, 2025, from three different locations, namely, from the Mkundi River, from the Kisangata River, and from the Miyombo River, where the project activities will be done closer to water bodies. The samples were analyzed at the Morogoro Water Quality Laboratory (MGWQL). The analyses were done in accordance with Standard Methods (2007) for water and wastewater Analysis (APHA).

1.6.5 Project impact assessment

Superimposing project elements onto the existing social and environmental natural conditions made it possible to identify the potential impacts of the proposed construction of cattle troughs, and the new dyke, Rehabilitation of existing Mkondoa dyke and river training and bank stabilization at reaches of Kisangata River and Mkundi River. The checklist method was used to identify the impacts and mitigation measures. Further, the environmental impact matrix method was adopted in identifying impacts of major concerns. A key guiding assumption in this study is that the project components will be designed, constructed and operated with due care for safety and environmental matters using current and practical engineering practices and/or Best Available Technology Not Entailing Excess Cost (BATNEEC). The implementation schedule of the mitigation measures is summarized in the EMP.

The environmental assessment has been undertaken in close interaction with the design team. In this process environmental impacts have been evaluated for various alternatives. Several project alternatives were considered, including that of not implementing the project. The fundamental environmental protection strategy and environmental considerations influencing engineering design were incorporated. However, reasonable regard to technological feasibility and economic capability were taken into account. Inter alia, the assessment entailed the following:

Collection of Baseline Data

The collection of baseline data was conducted subsequent to defining the scope of the study. These data allow the study team to determine whether more detailed information on environmental conditions at the development site and its 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 (as explained in the previous section). Secondary data were obtained from various relevant sources of information such as education and health reports and many other official and non-official documents and the Internet.

Identifying Environmental Impacts

This was undertaken by using a checklist method which is a compilation of contender list of key impacts such as Soil erosion, habitat destruction, air pollution from dust, Water quality impact, sedimentation, ecosystem disruption, Noise pollution, traffic congestion, waste management etc.;

Predicting Environmental Impacts

This was done by using “best estimate” professional judgment of the experts and case studies as analogous or references. 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 secondary and tertiary consequences for the environment and the social aspects.

Determining the Significance of Impacts

The key activity was to evaluate the significance of impacts, the major criteria used was

- The level of public concern
- Scientific and Professional Evidence concerning
 1. Resource loss, Ecological damage
 2. Negative Social Impacts
 3. Resource use options etc.

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 have been proposed to prevent, reduce, remedy, or compensate for each of the adverse impacts evaluated as significant. The implications of adopting different alternatives were analyzed to assist in clear decision-making.

1.7 Report Structure

Chapter one contains the introduction on the background information of the proposed project, its development objectives, rationale and the proposed project implementation arrangements.

Chapter two contains the project description, which describes the location and relevant components of the project and their activities.

Chapter three illustrates the policy, legal, and administrative framework, which are the relevant National policies, acts, and AfDB operational safeguards applicable to the projects.

Chapter four contains baseline information relevant to environmental characteristics, which gives details concerning the Biophysical and socio-economic environment of the project area.

Chapter five describes the consultation exercise in the project area, detailing the list of stakeholders consulted and the issues raised.

Chapter six describes the positive and negative environmental impact of the project that are likely to be generated from the different phases (the planning and designing, construction, operation and maintenance and the demobilization phases).

Chapter seven gives the mitigation measure for the potential negative impact of the project.

Chapter eight presents the Environmental and Social Management Plan (ESMP).

Chapter nine presents the Environmental Monitoring Plan that contains the proposed institutions to carry out the monitoring activities, the monitoring indicators, time frame and the proposed budget for monitoring.

Chapter ten gives the cost-benefit analysis of the project.

Chapter eleven provides the decommissioning plan for the proposed project; however, decommissioning is not anticipated in the foreseeable future.

Chapter twelve summarizes the study's findings.

The appendices, containing some key primary information collected during the study, are attached at the end of this report. Generally, the report structure flows in conformity with that specified in the EIA and Audit Regulations of 2005, as amended in 2018, and AfDB requirements.

CHAPTER TWO

2 PROJECT DESCRIPTION

2.1 Location

Mkondoa Catchment is located in Morogoro Region largely, with partial part of Tanga, Dodoma and Manyara regions been covered see (Figure 2- 1). Morogoro is located in the Eastern part of the Tanzanian mainland at 6.8278°S latitude and 37.6591°E longitude. With an area of 73,039 square kilometers (km²), it occupies 7.73 percent of the Tanzanian mainland, bordered by Manyara, Pwani, Ruvuma and Iringa in the north, east, south and west respectively.

Mkondoa Catchment is located between latitude 50 49' 17" to 70 36' 15" South and longitude 360 39' 19" to 370 41' 24" East (Figure 2- 2). The approximate catchment area of Mkondoa is 12,960 Km². The catchment has a summit elevation of 2259 m.a.s.l., while the lowest point is 340 m.a.s.l., and the mean altitude of the basin is 757 m. This catchment covers the Gairo, Kilindi, Kilosa, Kiteto, Kongwa, Morogoro, Mpwapwa, and Mvomero Districts partly. Kilosa District occupies the largest part of the catchment. However, the project components shall be implemented in three districts, namely Kilosa DC, Gairo DC, and Mvomero DC.

The Mkondoa Catchment encompasses the central areas of the Wami Sub-Basin (Figure 2- 1) and is bordered to the west by the Kinyasungwe Catchment, to the east by the Wami Catchment, and to the south by the Rufiji Basin. This catchment area represents 19.3% of the Wami/Ruvu Basin. The primary characteristics and specifications of this catchment are articulated in this chapter.

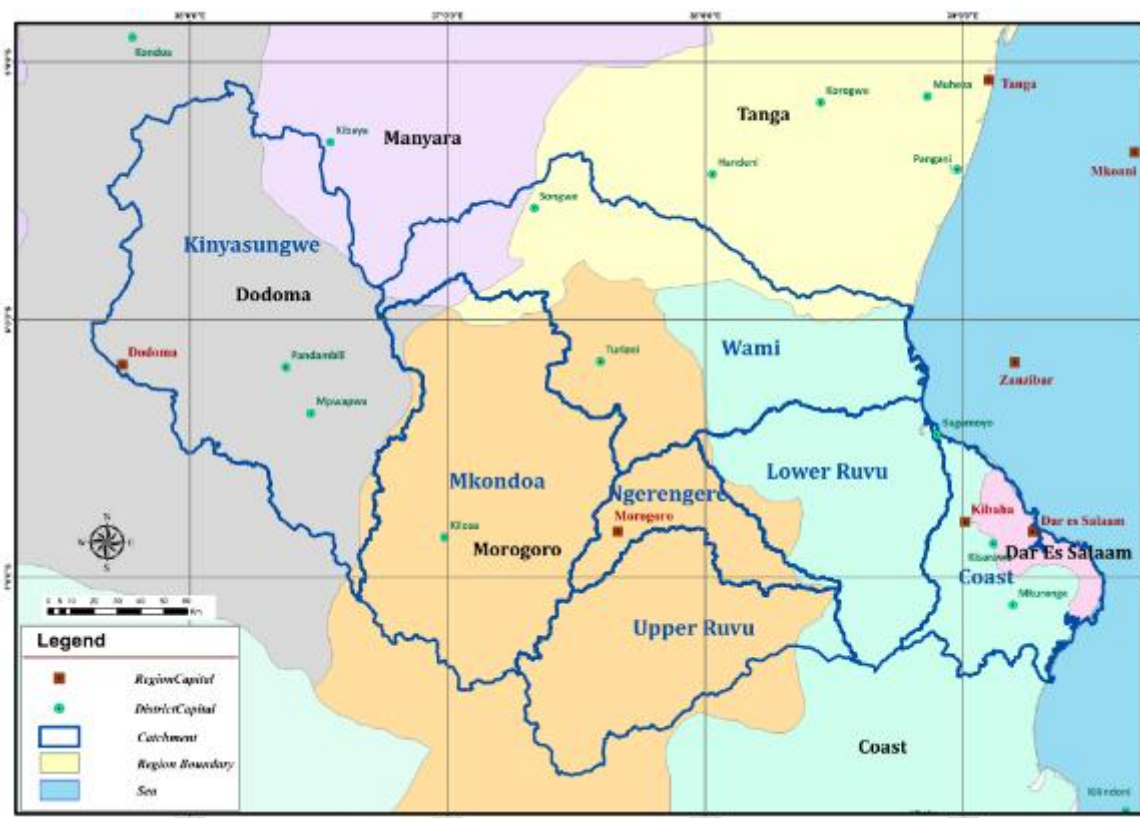


Figure 2- 1: The Seven (7) Catchments in Wami/Ruvu Basin

Figure 2- 2: Base map of Mkondoa Catchment
Source: Yekom, 2023

Most project sites are located in Kilosa District. The sites for river training for Kisangata, Miyombo and Mkundi Rivers are located in Kisangata, Kivungu and Dumila Villages all in Kilosa District respectively. The sites for rehabilitation of existing dyke are located in Mitaa of Behewa, Kichangani and Mkwatani while construction of new dyke shall be implemented at Mitaa of Mkadage, Kiyangayanga, Rose and Mbwamaji

also all in Kilosa. Construction of cattle troughs shall be done at the Villages of Mvumi (Kilosa DC), Makuyu (Gairo DC), Matale and Makuyu (Mvomero DC).

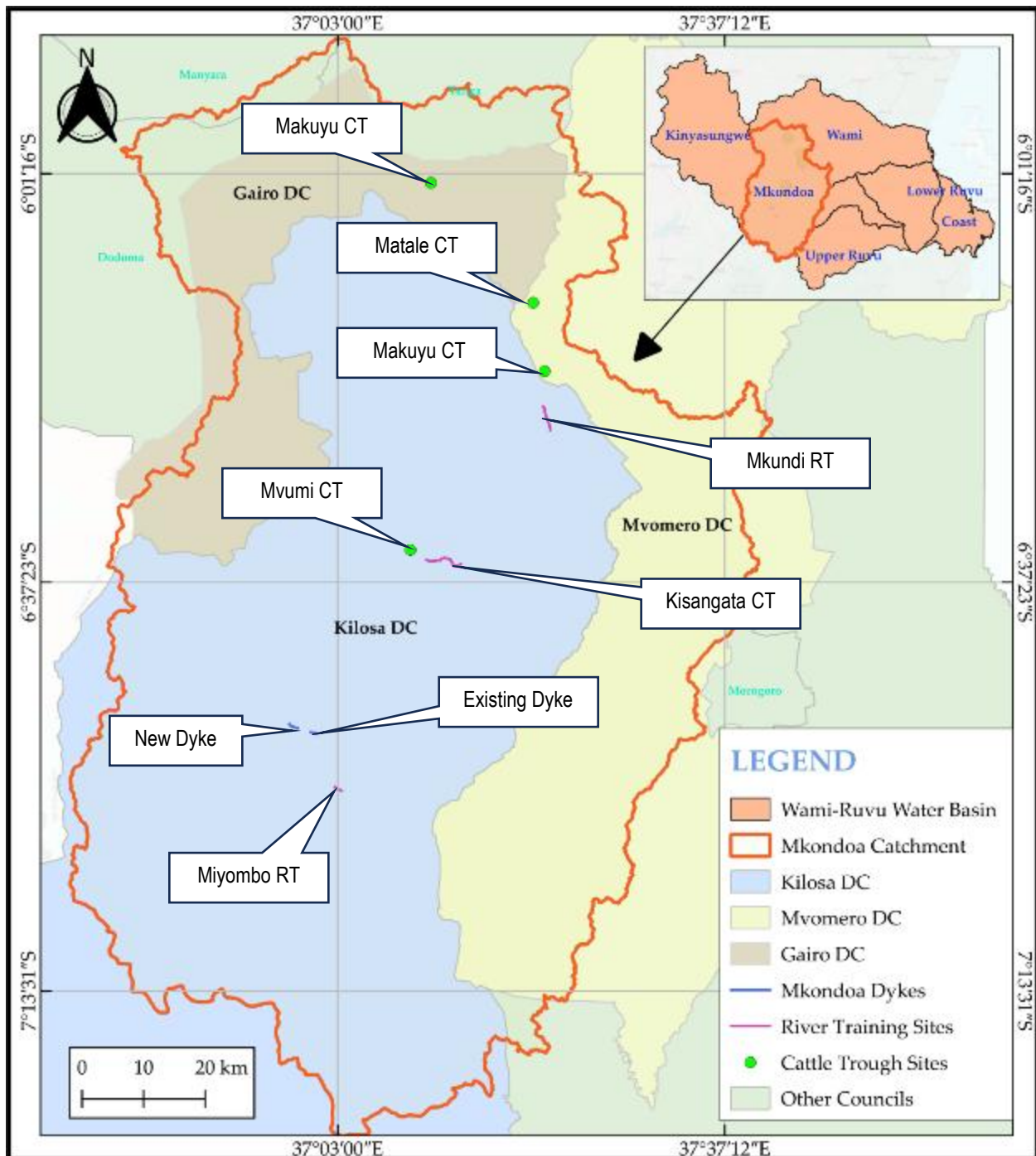


Figure 2- 3: Base map of Mkondoa Catchment
Source: Consultant, 2025

2.2 Land Ownership and Land Use

Most of the sites for river training and dyke construction are located within the 60-meter watercourse buffer zone. In contrast, all sites for cattle trough construction are located outside this buffer zone. These cattle trough sites have been voluntarily donated by community members and align with the respective village land use plans. All selected villages for cattle trough construction have approved land use plans in place, and each subproject under this component is consistent with these plans. Furthermore, proof of voluntary land donation, including signed letters of consent from landowners, has been attached (see appendix VII, VIII, IX, and X). This project will not involve any involuntary resettlement.

2.2.1 Procedures for acquiring land for cattle trough construction

The land donated for the project in each village is Village Land managed by the Village Council. It was given voluntarily and is free from any dispute on ownership; it is out of protected areas (national parks) and there are no sensitive ecosystems like wetlands, mangrove swamps, forests, and worshiping sites. Voluntary land donation provision resulted from consultations and sensitization sessions to the communities, including PAPs, which were conducted between February - April 2025. The land donation process was properly administered, and land owners (Village leaders) signed Free Land Donation Agreement Forms on behalf of the villagers, witnessed by a representative (Lawyer) from respective LGAs (Meeting Minutes and Free Land Donation Agreement Forms Attached as Appendix VII, VIII, IX, and X).

All selected villages have a Village Land Use Plan (VLUP), under which cattle troughs will be constructed in areas zoned for livestock keeping.

Currently, the project sites are covered by trees and grasses, with livestock keeping as the only economic activity, as shown in the pictures below;

2.3 Project Life Span

The envisaged lifespan of the project components is 50 years, contingent upon proper maintenance and rehabilitation of the project infrastructure.

2.4 Project Cost

The total project cost is estimated to be around TZS 8 billion.

2.5 Project Components and Design

The key components of the proposed degraded catchment ecosystem interventions project along the Mkondoa River in the Morogoro region are:

- a) River Training and Bank Stabilization in Kisangata, Miyombo and Mkundi Rivers,
- b) Rehabilitation of existing Mkondoa dyke at (Mkundi river) Mitaa of Behewa, Kichangani and Mkwatani (Mbumi and Kasiki Ward, Kilosa DC),
- c) Construction of new Mkondoa dikes at (Mkundi river) Mitaa of Mkadage, Kiyangayanga, Rose and Mbwanaji (Magomeni Ward, Kilosa DC) and
- d) Construction of cattle troughs at Villages of Mvumi (Kilosa DC), Makuyu (Gairo DC), Matale and Makuyu (Mvomero DC).

Description of each component and design is summarized below:

2.5.1 River Training and Bank Stabilization

The proposed interventions encompass the construction of revetments, gabions, and riprap to fortify riverbanks, channel realignment, and dredging to enhance flow efficiency and mitigate sediment deposition. Additionally, bioengineering techniques will include planting vegetation and using geotextiles to promote natural bank stabilization while fostering ecological benefits, particularly within the Kisangata River (6.3km), Miyombo River (1.3km), and Mkundi River (4km).

The overarching objective of these initiatives is to reduce flooding risks, prevent land loss, and ensure the sustainable management of water resources within the Mkondoa catchment areas by directing the river back to its original path.

2.5.1.1 River Training and Bank Stabilization at Kisangata River

Location

Location of the reach in Kisangata River which requires river training is shown in Figure 2- 4. The river experiences extensive sedimentation along this reach, and its banks are unstable and loose. The reach is almost 6.3 km long and accessible by unpaved rural roads from Kilosa DC.



Figure 2- 4: Kisangata River Training Reach
Source: Yekom, 2023

Design Data

In this reach, the soils are dominated with sand of non-to medium plasticity. The Liquid Limit (L.L) is 0 and Plasticity Index (P.I) is 0. These results indicate that the soil from Kisangata River reach is of non-plasticity. The free swell values for the soil in this reach are less than 50 % indicating that the soil has low swelling property which is non-critical. The Linear shrinkage values are between 0 - 12 % indicating that the soil has low shrinking property which is non-critical. Considering the rural nature of the surrounding area and the rural activities carried out in vicinity of the river in this reach, the design flood is considered the 25-year flood and the control flood is considered the 50-year flood. The flood magnitudes for different return periods in this reach of Kisangata River is presented in Table 2-1.

Table 2- 1: Flood Magnitudes for different return periods in Kisangata River

<i>Peak Discharge (m³/s)</i>					
<i>Q₂</i>	<i>Q₅</i>	<i>Q₁₀</i>	<i>Q₂₅</i>	<i>Q₅₀</i>	<i>Q₁₀₀</i>
54.1	111.9	120.1	158.8	187.5	216.0

Source: Yekom, 2023

The hydraulic of the river is simulated using HEC-RAS ver. 6.4.1. In this process 87 cross sections are considered along the reach. Considering the geometry and land cover of the main channel and the flood plains and based on recommended values in international handbooks and manuals, the manning coefficients for the channel and the floodplains are considered 0.03 and 0.035, respectively. The boundary condition is considered as Normal Depth with a slope equal to 0.003 based on the longitudinal profile of the main channel.

Proposed Interventions

The flood overflows the banks of the river and inundates the floodplains. Considering the loose texture of the soil and the heavy sediment load, the main channel intends to change its course through flood events as it deposits sediments in some places and cuts its banks in other places. The proposed solution is to construct two almost parallel dykes along the main channel between the upstream and downstream stable reaches and within the 60-meter buffer of river course, from each bank side of the main channel, according to the laws of the country. This dyke system is designed with appropriate protection on the flood face. Moreover, the flood velocity in between the dyke system is such that it minimizes the deposition of sediment in this reach. The proposed dyke cross section is shown in Figure 2-4. The crest elevations at upstream and downstream parts of the dyke system are 410.9 and 392.3 m.a.s.l., respectively. The proposed material for the dyke system is earthfill embankment with GC material with riprap protection on its water side. Accordingly, total earth work and riprap are approximately 1,030,000 m³, and 61,000 m³, Respectively. The plan view of the proposed dyke system and the longitudinal profiles of the left and right dykes are shown in Figure 2-5.

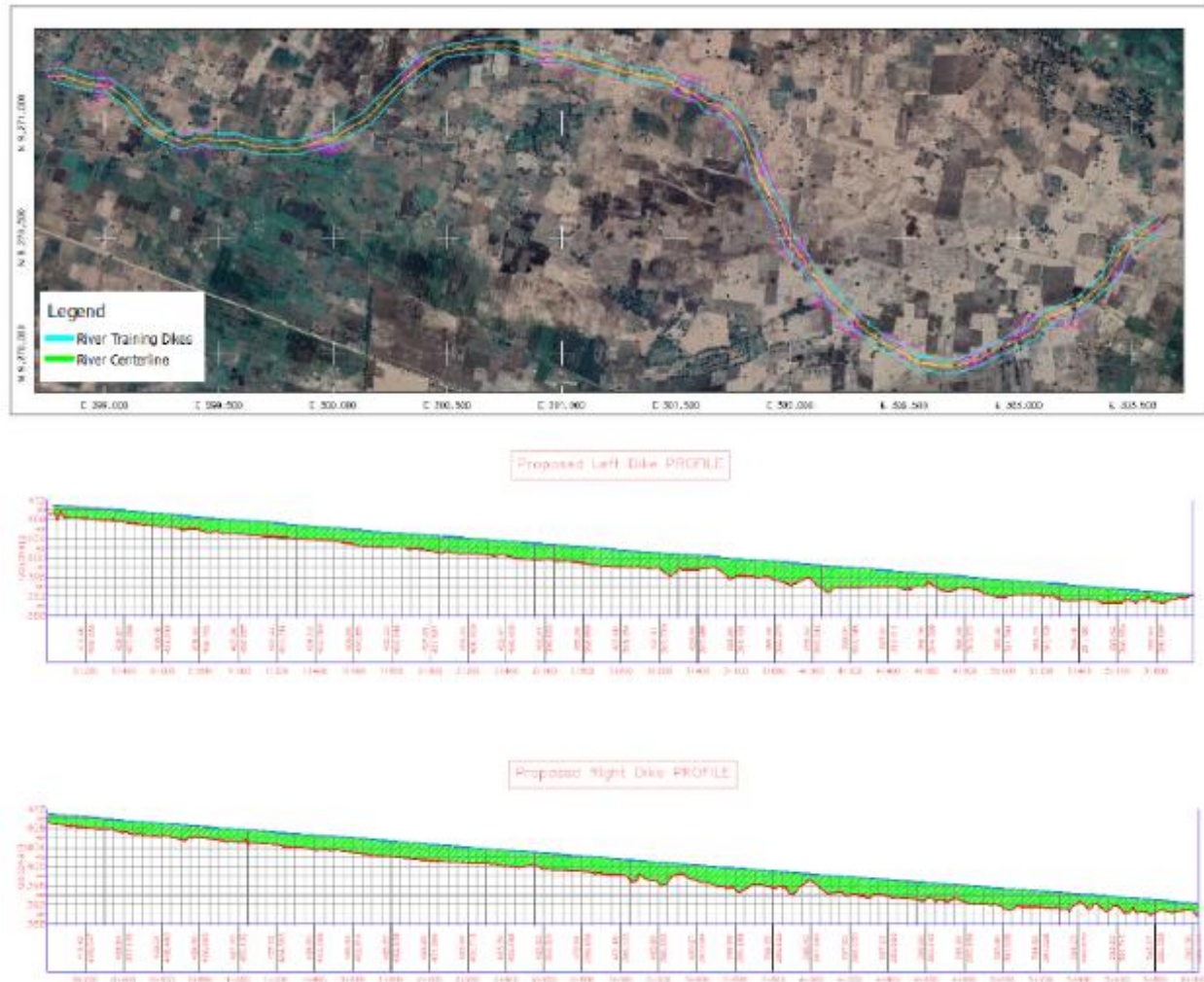


Figure 2- 5: Plan View and Longitudinal Profiles of the Dykes in Kisangata River Training
Source: Yekom, 2023

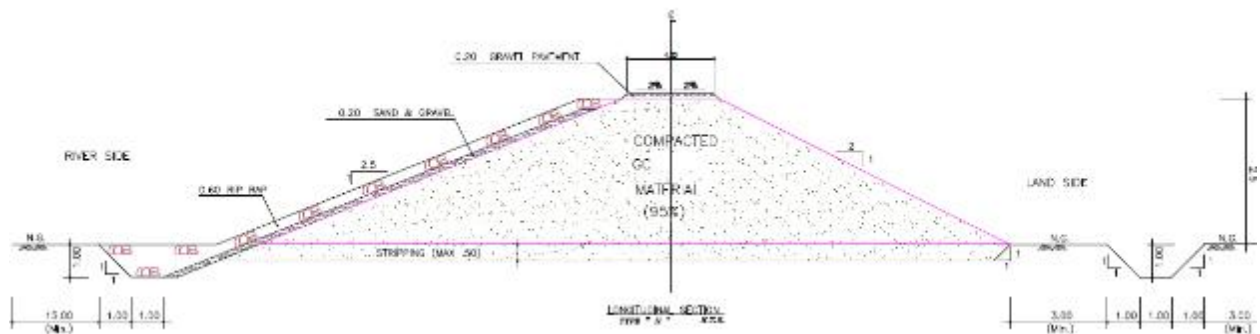


Figure 2- 6: Typical Section of the Dyke in Kisangata River Training
Source: Yekom, 2023

2.5.1.2 River Training and Bank Stabilization at Miyombo River

Location

The location of the reach in the Miyombo River which required river training is shown in Figure 2-7. The river is faced with extensive sedimentation along this reach and its banks are unstable and loose. The length of the reach is almost 1.3 km. The reach is accessible by unpaved rural roads from Kilosa DC.



Figure 2- 7: Miyombo River Training Reach

Source: Yekom, 2023

Design Data

In this reach, the soils are dominated with SAND of non-to medium plasticity. Considering the rural nature of the surrounding area and the rural activities carried out in vicinity of the river in this reach, the design flood is considered the 25-year flood and the control flood is considered the 50-year flood. The flood magnitudes for different return periods in this reach of Miyombo River is presented in Table 2-2.

Table 2- 2:Flood Magnitudes for different return periods in Miyombo River

Peak Discharge (m^3/s)					
Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}
14.5	19.4	22.6	26.7	29.8	32.8

Source: Yekom, 2023

The hydraulic of the river is simulated using HEC-RAS ver. 6.4.1. In this process 13 cross sections are considered along the reach. Considering the geometry and land cover of the main channel and the flood plains and based on recommended values in international handbooks and manuals, the manning coefficients for the channel and the floodplains are considered 0.03 and 0.035, respectively. The boundary

condition is considered as Normal Depth with a slope equal to 0.0019 based on the longitudinal profile of the main channel.

Proposed Interventions

The flood overflows the banks of the river and inundates the floodplains. Considering the loose texture of the soil and the heavy sediment load, the main channel intends to change its course through flood events as it deposits sediments in some places and cuts its banks in other places. The proposed solution is to construct two almost parallel dykes along the main channel between the upstream and downstream stable reaches and within the 60-meter buffer of river course, from each bank side of the main channel, according to the laws of the country. This dyke system is designed with appropriate protection on the flood face. Moreover, the flood velocity in between the dyke system is such that it minimizes the deposition of sediment in this reach.

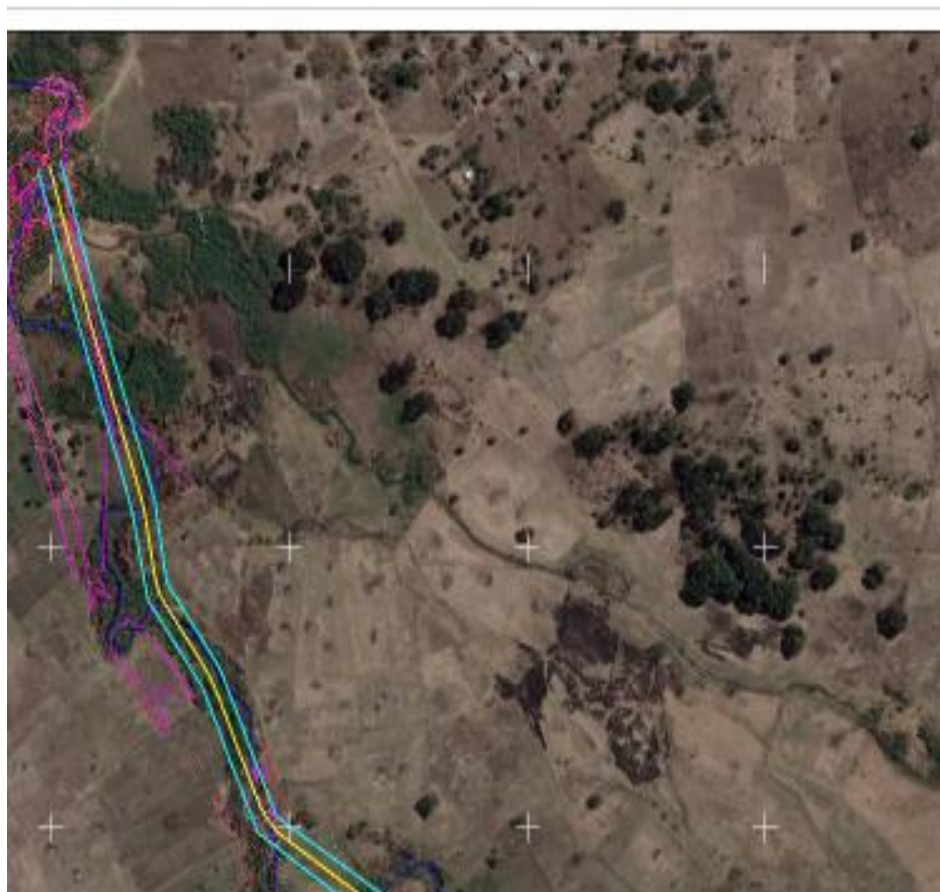


Figure 2- 8: Plan View of the Dykes in Miyombo River Training
Source: Yekom, 2023

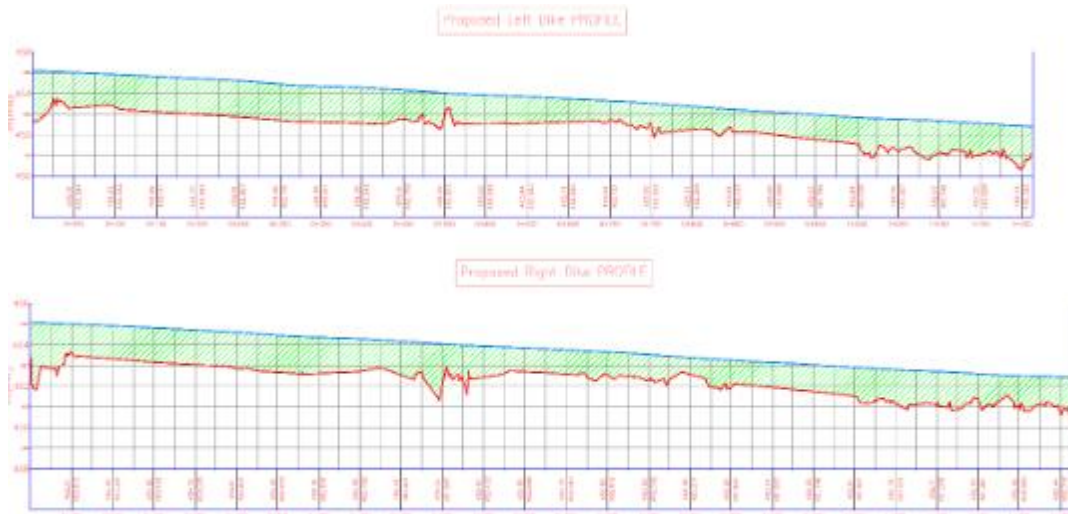


Figure 2- 9: Longitudinal Profiles of the Dykes in Miyombo River Training
Source: Yekom, 2023

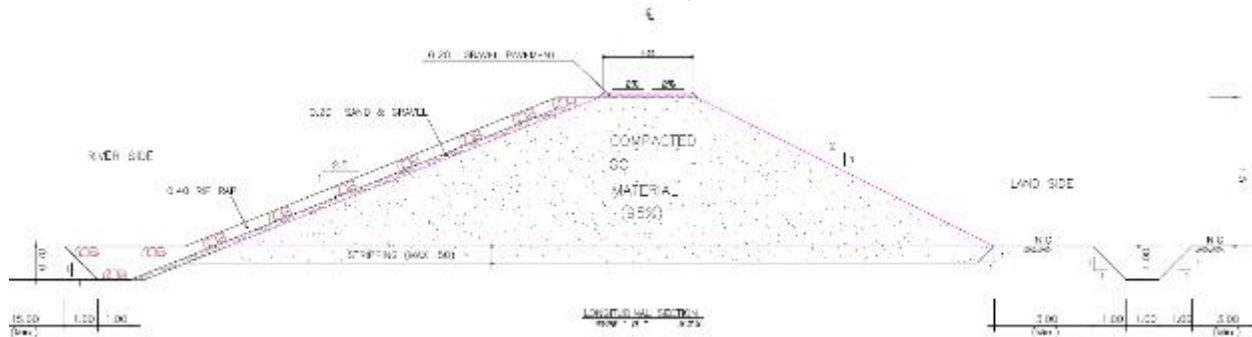


Figure 2- 10: Typical Section of the Dyke in Miyombo Dyke
Source: Yekom, 2023

2.5.1.3 River Training and Bank Stabilization at Mkundi River

Location

The Mkundi River Catchment (MRC) is located on the upper slopes of the Mkondoa sub-basin (Figure 2-11) in the Wami River basin. Mkundi river is one of the tributaries of the Mkondoa river. The sub-catchment has an estimated area of 2,496 km² with altitude ranging from 2,060 masl to 360 masl on the lower floodplain area at the confluence with the main Wami River. The Mkundi river has three main tributaries.

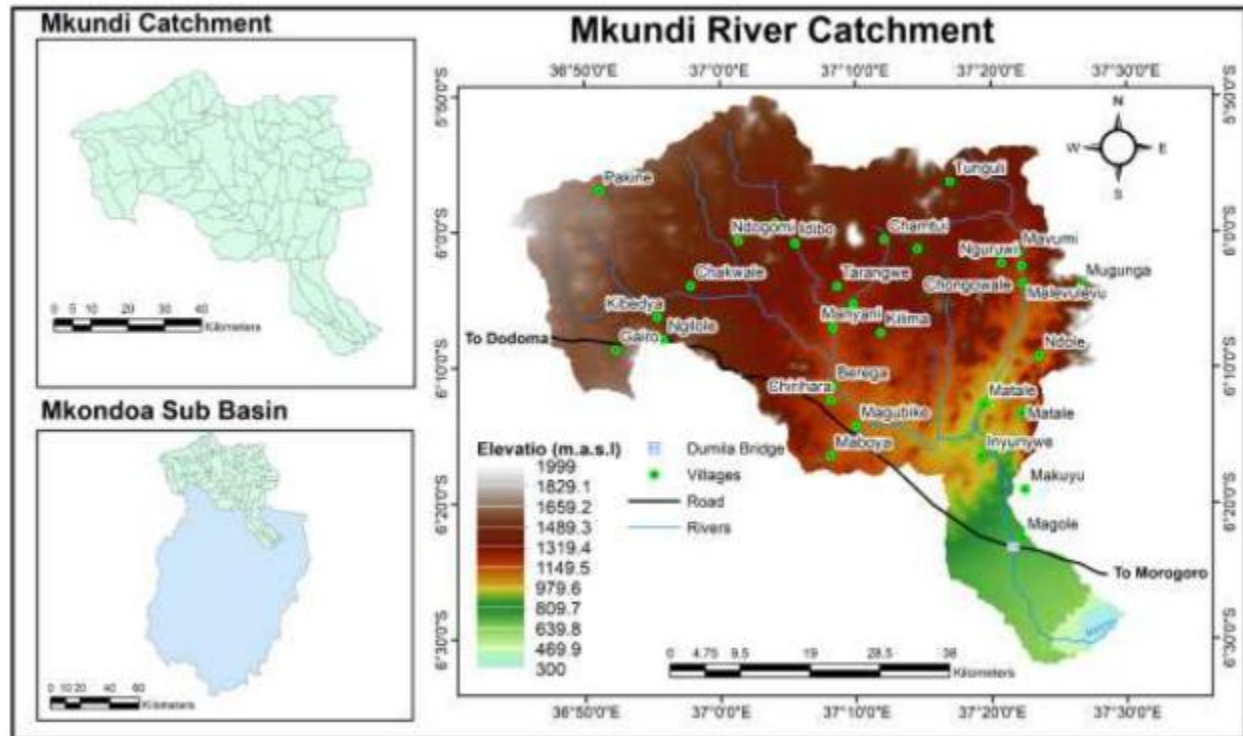


Figure 2- 11: Mkundi River Catchment

Source: WRBWB, 2024

Design Data

Site 1 is for proposed new dyke construction and River training work for four (4) km river reach- A to B. The soil samples are dominated by silt sand of non-to medium plasticity with a bulk density between 1.633 g/cm² to 1.943g/cm². A comprehensive hydrological and hydraulic analysis was conducted using a HEC-RAS 2-D a two-dimensional hydraulic modeling software ver. 6.4.1. to understand the river's flow patterns and the potential flood levels during a 1–100- year return period (Table 2-3) for robust flood protection of the surrounding communities and infrastructure. This analysis provided valuable data to determine the design flood discharge and the required dyke height to safely contain floodwaters.

Table 2- 3: Peak Discharge for Design flood for Mkundi River training and dyke Subbasin

NO	SUBPROJECT	LOCATION	CATCHEMNT CODE	Peak Discharge(m3/s)					
	River training and dyke construction	Mkundi River at W590 Dumila		Q2	Q5	Q10	Q25	Q50	Q100
				23	36	44	63	88	102.3

Source: WRBWB, 2024

Proposed Interventions

The flood overflows the river's banks and inundates the floodplains. Given the loose texture of the soil and the heavy sediment load, the main channel is likely to shift its course during flood events as it deposits

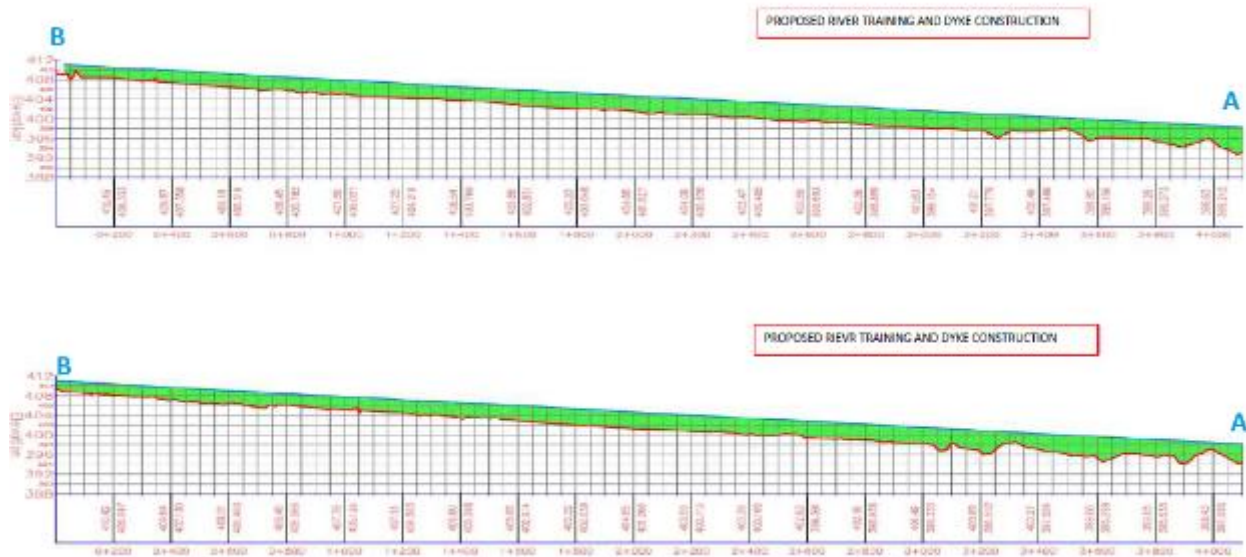


Figure 2- 13: Longitudinal Profiles of the Dykes in Mkundi River Training
Source: WRBWB, 2024

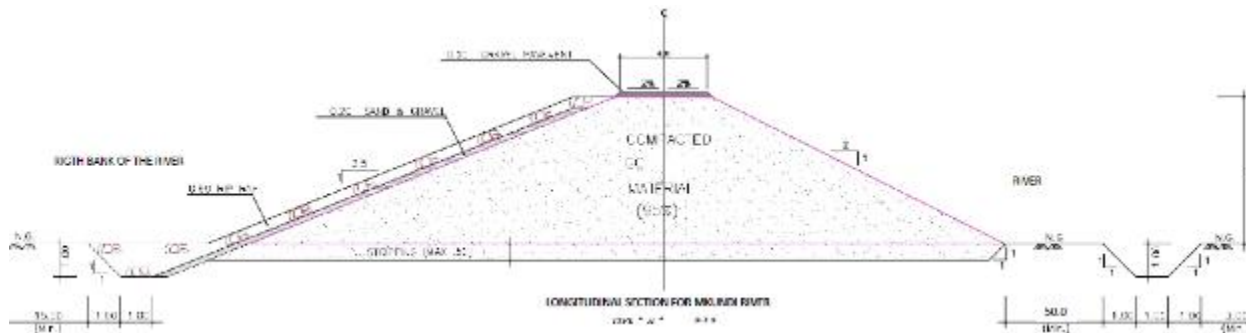


Figure 2- 14: Typical Section of the Dykes in Mkundi River Training
Source: WRBWB, 2024

2.5.2 Mkondoa Dykes at Kilosa

2.5.2.1 Location

The Project area has been selected based on riverine flood prone area, flood data availability, diverse socio-economic characteristics, and accessibility. In order to control floods Mkondoa River at Kilosa, it is important to build dykes. It should be noted that the term dyke as used herein is defined as an embankment or structure whose primary purpose is to furnish flood protection from seasonal high water and which is therefore subject to water loading for periods of only a few days or weeks a year. The flood protection works with high priority were selected considering importance of facilities for adjacent area and heavily damaged areas in the past.

The proposed project entails the rehabilitation of the existing Mkondoa dyke (Site 1) in the Mbumi and Kasiki wards, along with the construction of new dykes (Site 2) upstream for flood control purposes in the Magomeni Ward, both located within the Kilosa District along the Mkondoa River. This initiative encompasses a drainage area of 18178.9 km², which channels through an outlet as indicated in Figure 2-

15. The new dyke will be constructed ten meters from the river's edge. However, the design of the dykes does not accommodate pedestrian crossings, as all proposed structures are situated in a highly protected area, specifically designated to prevent human encroachment.

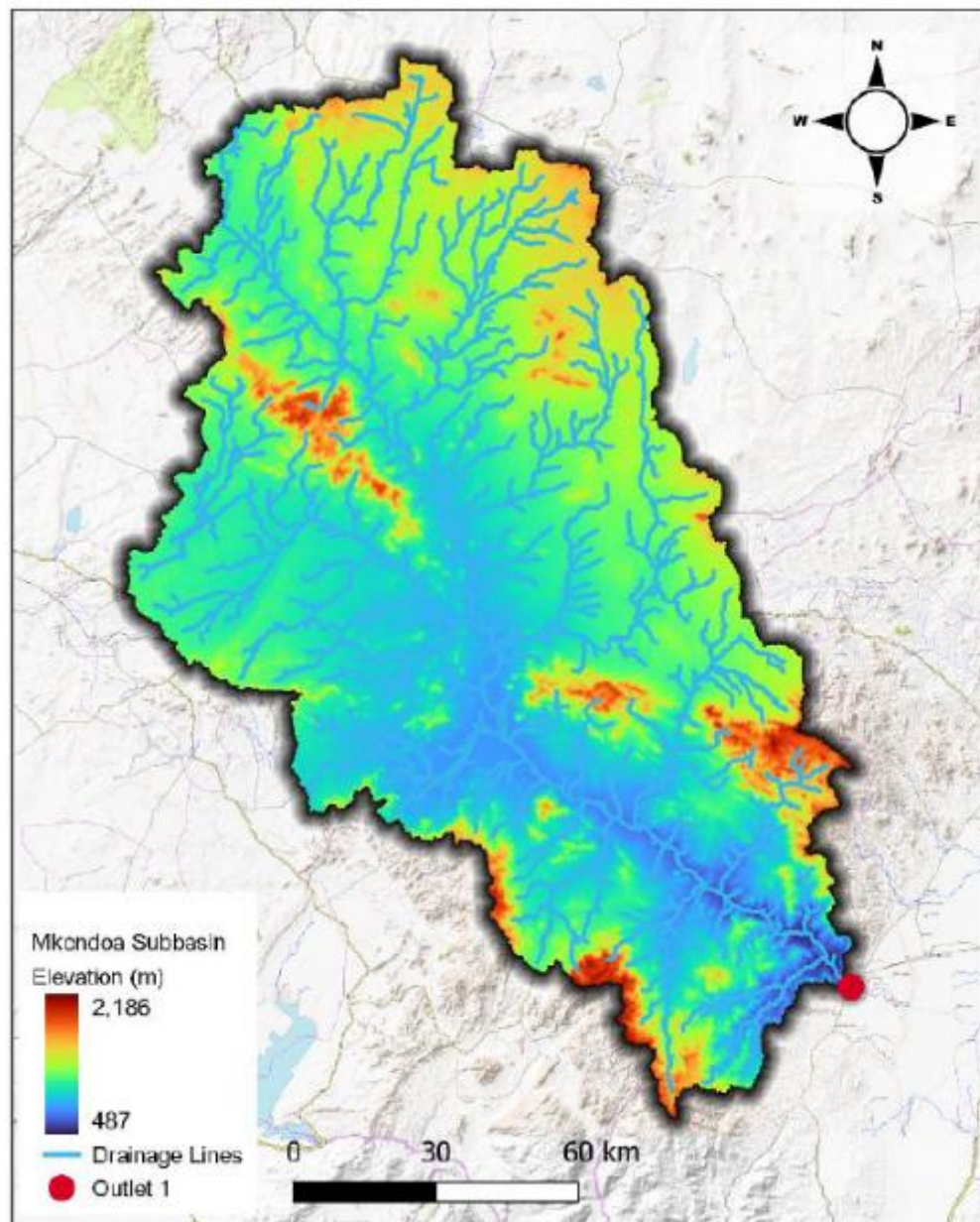


Figure 2- 15: Subbasin location for proposed dyke's subprojects
Source: Yekom, 2023

2.5.2.2 Design Flow

A comprehensive hydrological and hydraulic analysis was conducted to understand the river's flow patterns and the potential flood levels during a 1–100-year return period Table 2-4. This analysis provided valuable data to determine the design flood discharge and the required dyke height to safely contain floodwaters. The rehabilitation dyke Site 1, will have dike will have a total length of 1145 meters and Site 2, proposed

new dyke construction will have total length of 540 meters, designed to provide robust flood protection for the surrounding communities and infrastructure during 1–100-year flood event. The design includes the required height, cross-sectional configuration, materials selection, and other critical considerations to ensure the dyke effectiveness and long-term stability.

Table 2- 4: Peak Discharge for Design flood for Kisanga Stand Proposed Check Dam Subbasin

Subproject	Location	Catchment Code	Peak Discharge(m^3/s)					
			Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}
Rehabilitation and New Construction Dyke	Mkondoa Dykes at Kilosa	W580	33.0	55.0	69.6	88.0	101.7	115.3

Source: Yekom, 2023

2.5.2.3 Dyke Alignment

Based on the river survey, field investigation, discharge capacity analysis of river channel, inundation analysis, and interviews to the local community (irrigation committee needs, local governments, historical flood damage, etc...) a comprehensive evaluation was made. After that we selected two alignment options for flood protection measures. The alignment of the proposed new dykes along the Mkondoa River at Kilosa has been selected regarding to both setback and waterside requirements (Figure 2-16 and Figure 2-17), available land base for construction and site-specific local constraints such as sensitive habitats. However, the space permitting, a setback dike has numerous benefits when compared to a waterside dike, as outlined below:

- Maintains natural wetland habitat and is environmentally sustainable;
- Provides a wider floodway with increased flow capacity;
- Reduces peak flood levels;
- Reduces flow velocity and bank erosion; and
- Reduces long-term maintenance costs due to less frequent flows against the dike slope.

Prior to fill placement, the stripped surfaces of the foundation and existing dike shall be scarified. As well, the existing slope shall be benched to provide an interlock between the existing and new embankment materials. The new fills shall have at least the same degree of compaction as the existing dike fills on which it is constructed. Standard practice for the construction of new dikes would include overbuilding the dike cross-section and trimming back to ensure adequate compaction.

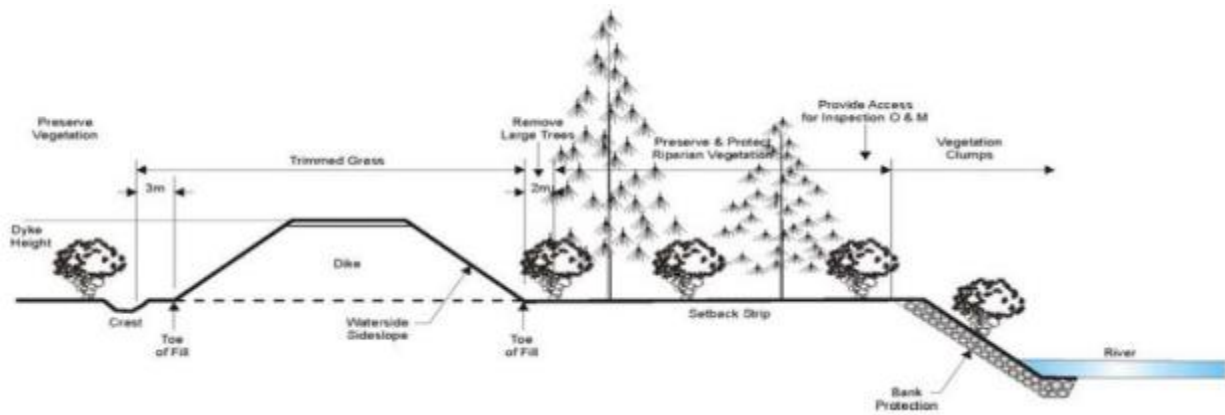


Figure 2- 16: Setback Dyke
Source: Yekom, 2023

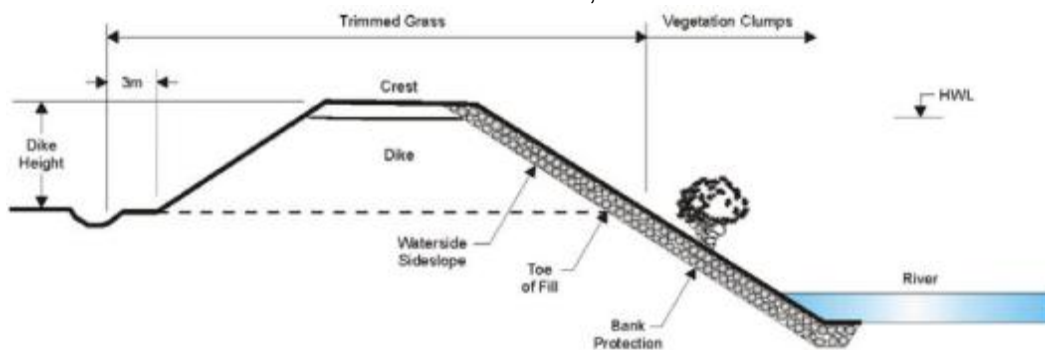


Figure 2- 17: Waterside Dyke
Source: Yekom, 2023

2.5.2.4 Design Topographical Survey

The topographical survey was carried out in selected places for the execution of structural measurements (Figure 2-18 and Figure 2-19). The preliminary design of control works was based on these topographical survey results.

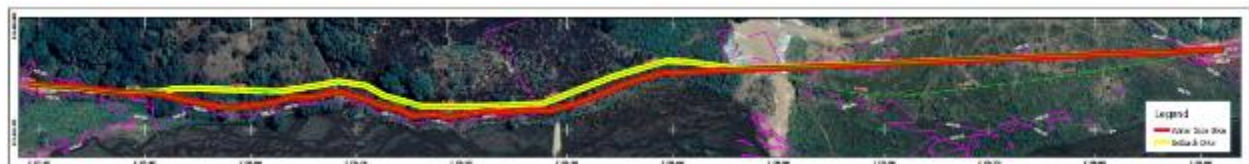


Figure 2- 18: Mkontoda Rehabilitation Dyke Plan at site 1
Source: Yekom, 2023

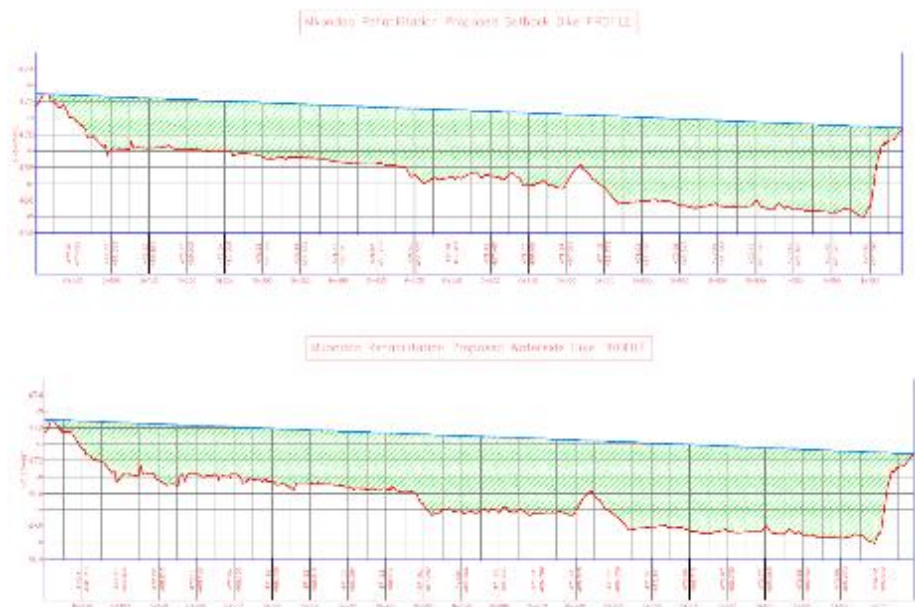


Figure 2- 19: Longitudinal profile for proposed rehabilitation dyke Mkondoa river at Kilosa site 1
Source: Yekom, 2023



Figure 2- 20: Mkondoa New Construction Dyke Plan at site 2
Source: Yekom, 2023

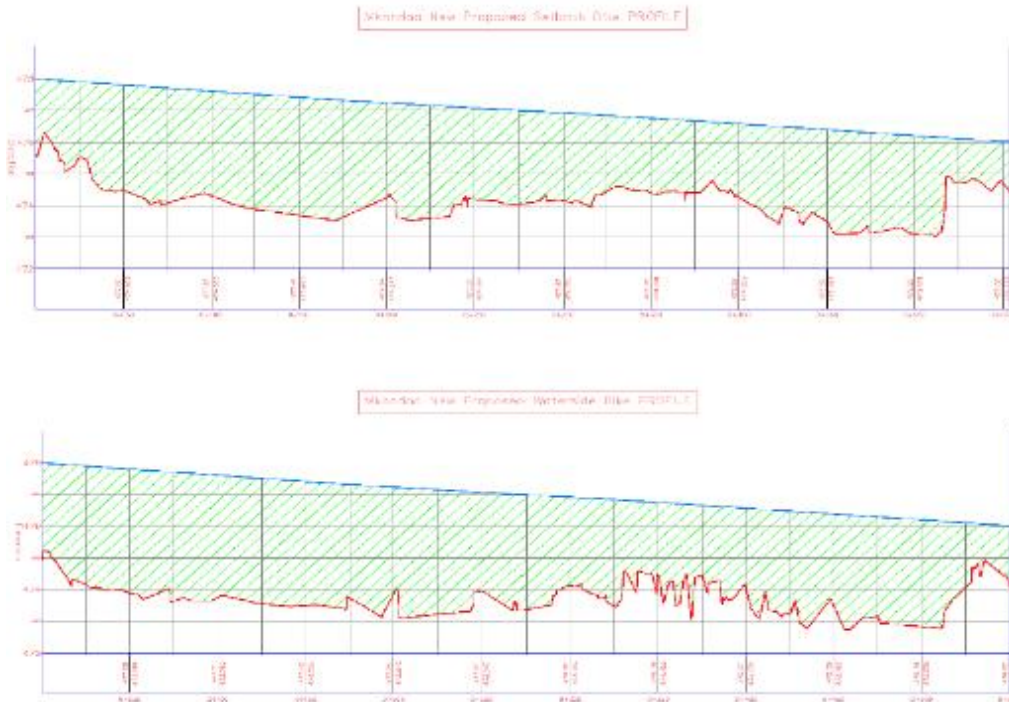


Figure 2- 21: Longitudinal profile for proposed new construction dyke Mkondoa river at Kilosa site 2
Source: Yekom, 2023

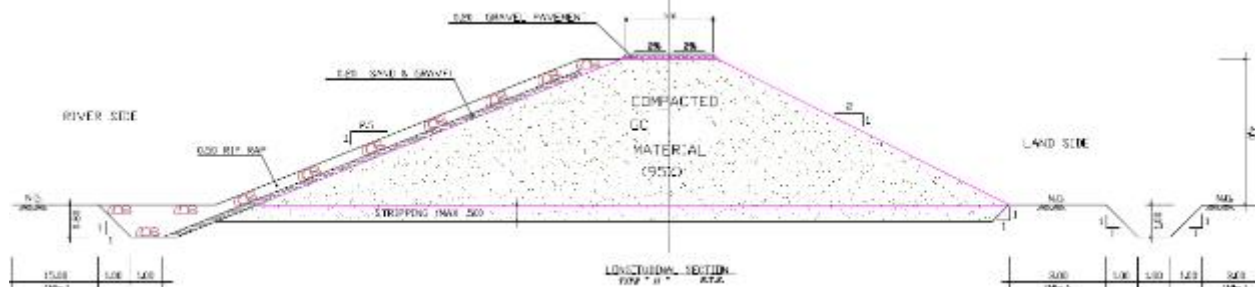


Figure 2- 22: Typical section of the proposed rehabilitation and new construction dyke Mkondoa river
Source: Yekom, 2023

2.5.2.5 Proposed Dykes Dimensions

The component for the rehabilitation of existing Mkondoa dyke and the proposed new site will be construction of the embankment strategically positioned to maximize its flood control capacity. The proposed material for the dyke system for both dykes is earthfill embankment with Gravel Clay (GC) material with riprap protection on its water side. Accordingly, total earth work and riprap for rehabilitation are approximately 49,000 m³, and 8,500 m³, respectively for new dykes are approximately 22,000m³ and 4,000m³ respectively. The dimensions of both dikes are provided in Table 2- 5 below.

Table 2- 5: Mkondoa dike dimensions at different alignment and material options

SN	Dimension	Existing Dyke	Proposed Dyke	Description
1.	Dike Length Setback	1145.2m	540m	▪ Strategically positioned to maximize its

SN	Dimension	Existing Dyke	Proposed Dyke	Description
	Alignment			flood control capacity.
2.	Dike Length Water Side Alignment	1136m	554.4m	▪ Strategically positioned to maximize its flood control capacity.
3.	Dike Hight Setback Alignment	4m	4m	▪ Strategically positioned to maximize its flood control capacity.
4.	Dike Hight Water Side Alignment	4.5m	4.5m	▪ Strategically positioned to maximize its flood control capacity.
5.	Crest Width	3.6m	3m	▪ Considering the dike stability when facing design overflows ▪ Width of the access road or that of local communication.
6.	Freeboard of the dike	0.8m	0.6m	▪ To prevent water overflow i.e water rise than the design discharge.
7.	Land side	2H:1V	2H:1V	▪ Gentler slope to reduce erosion risks with grass protection.
8.	Water side	2.5H:1V	2.5H:1V	▪ Reinforced with riprap for erosion protection
9.	Side drain	Top 3m, Bottom 1m, Slope 1H:1V	Top 3m, Bottom 1m, Slope 1H:1V	▪ Maintaining a safe and secure dyke embarkment

Source: Yekom, 2023

2.5.3 Cattle Troughs

The project also entails the construction of 4 cattle troughs in the Villages of Mvumi (Kilosa DC), Makuyu (Gairo DC), Matale, and Makuyu (Mvomero DC) to promote sustainable livestock keeping along the Mkondoa Catchment. The village has developed a land use plan that designates specific sites for livestock keeping, ensuring that all project areas comply with local regulations. The four designated project areas have been voluntarily contributed by the villagers and are situated within approved livestock-keeping zones, with signs to indicate livestock keeping as shown in Table below;

Table showing Land donation information

Village	District	Land Donor	Number of Donors	Area Donated
Matale	Mvomero	Village	1	2 acres
Makuyu	Mvomero	Village	1	2 acres
Mvumi	Mvomero	Individual	1	2 acres
Makuyu	Gairo	Individual	1	2 acres

The details of these approvals are as follows:

- a. Mvumi village, located in Kilosa District, received approval in 2012, with a ten-year validity period.
- b. Makuyu village in Mvomero District was approved in 2014, with a duration that extends until 2024; however, an extension is currently in process.
- c. Matale village in Kilosa District obtained approval in 2024, also for a ten-year duration.
- d. Makuyu village in Gairo District was approved in 2020, with an expiration date set for 2030.

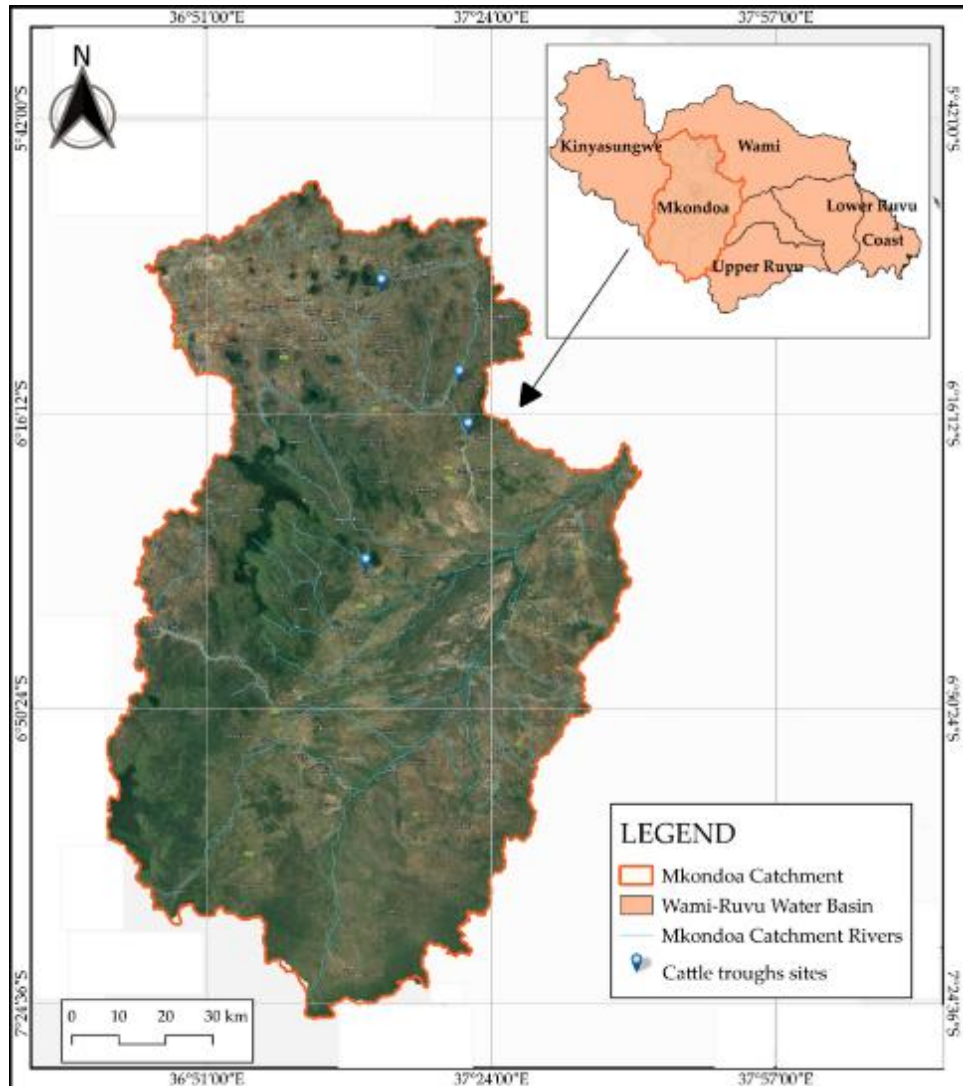


Figure 2- 23: Location of the Cattle Troughs
Source: WRWB, 2024

The communities of the villages which donate land are expected to get the following benefits associated with the presence of cattle troughs;

- e. Reliable availability of water especially during dry season for livestock and livestock keepers;

- f. Eradicating conflicts between farmers and livestock keepers because livestock will not pass through farms looking for water as the cattle troughs shall provide water throughout the year;
- g. Pastoralists will settle near the cattle troughs and hence become easy concentrate on develop themselves and their families (houses, schools etc) as compared to if they move from one area to another;
- h. Training shall be provided to livestock keepers regarding the best livestock keeping methods and water uses.

Each cattle trough site will cover a total area of 9,800 sqm, which is approximately 2 acres. This site is designed to accommodate 40 livestock simultaneously within a ten-minute timeframe, allowing it to serve up to 3,000 cattle daily. The following components will be included:

- **Cattle Trough:** A concrete water basin where livestock drink, designed for durability and ease of maintenance. The cattle trough shall have a total area of 20 sqm (20 m x 1 m).
- **Borehole:** A deep well drilled to access underground water, providing a reliable water source for the cattle trough. The hydrogeological survey indicates that the proposed borehole (BH) depth is 120m, with an estimated yield of 35 m³/hr.
- **Water Pump** – Submersible water pump shall be immersed to a depth to be determined by the hydrological survey for delivering the required amount of water to the cattle troughs.
- **Pump House:** This is a protective shelter that houses the water pump and control systems, safeguarding them from weather and vandalism. The pump house shall be founded by reinforced concrete so as to be able to carry the water tank.
- **Water Tank:** A plastic 10,000litres water tank shall be located on top of the pump house to store pumped water, to allow gravity flow to the cattle trough and ensuring continuous availability for livestock in absence of direct flow from the borehole (renovation etc).
- **Solar Panel and Structure:** Five solar panels, each with a capacity of 325 watts, will be installed for every cattle trough subproject. This renewable energy system will power the water pump, providing a sustainable and cost-effective source of water. The solar panels will be mounted on a sturdy steel structure.
- **Perimeter Fence:** A protective barrier around the pumping station to prevent livestock access and vandalism.



Figure 2- 24: Axonometric view of the proposed Cattle trough
Source: WRWB, 2024



Figure 2- 25: Plan of the proposed Cattle troughs
Source: WRWB, 2024

2.6 Project Activities

2.6.1 Planning Phase

Activities

This phase entails;

- **Topographical Survey** - Surveyors conduct topographical surveys to establish boundaries and ground levels.
- **Detail Engineering Designs**—Geotechnicians and engineers prepared Geotechnical Reports and structural drawings to provide drawings that fit the proposed plan.
- **Hydrogeological survey:** assessing subsurface geological conditions, groundwater availability, and quality to determine the optimal locations and specifications for borehole drilling.

- **Environmental and Social Impact Assessment (ESIA)**—This ESIA is being conducted following the 2005 EIA and Audit regulations, as amended in 2018 and 2024.

Duration

The duration of this phase is three (3) months (on going).

2.6.2 Construction Phase

Activities

The following are the main activities to be executed on the site during the construction phase are provided in Figure 2- 6;

Table 2- 6: Description of project activities and E&S issues during the Construction phase

SN	Activity	Description	Environmental/ Social Issue
1.	Site Clearance & Preparation	Removing vegetation, debris, and obstructions	<ul style="list-style-type: none"> ▪ Impact to water quality ▪ Waste Generation ▪ Soil erosion, ▪ Impact to biodiversity ▪ Impact to air quality ▪ Occupational health and Safety ▪ Community Health and Safety ▪ Noise Pollution
2.	Material Transportation	Transporting sand, cement, steel, and other materials to the site	<ul style="list-style-type: none"> ▪ Impact to air quality ▪ Occupational health and Safety ▪ Community Health and Safety ▪ Noise Pollution
3.	Material Storage	Storing construction materials (cement, steel, aggregates) safely on-site	<ul style="list-style-type: none"> ▪ Impact to water quality ▪ Impact to air quality ▪ Occupational health and Safety
4.	River Training & Bank Stabilization Works	This will involve dredging of the river bed and stabilization of river banks through river training.	<ul style="list-style-type: none"> ▪ Risk of floods ▪ Impact to water quality ▪ Waste Generation (sand) ▪ Soil erosion, ▪ Impact to biodiversity ▪ Impact to air quality ▪ Occupational health and Safety ▪ Community Health and Safety ▪ Noise Pollution
5.	Dykes Rehabilitation and Construction	<p>This will involve repairing old, damaged dykes and building new ones along riverbanks to stop rivers from flooding nearby farms, homes, and roads.</p> <p>The work will include filling weak spots, adding stones or concrete, and planting grass or trees to make the riverbanks stronger and safer</p>	<ul style="list-style-type: none"> ▪ Impact to water quality ▪ Waste Generation ▪ Soil erosion, ▪ Impact to biodiversity ▪ Impact to air quality ▪ Occupational health and Safety ▪ Community Health and Safety ▪ Noise Pollution

SN	Activity	Description	Environmental/ Social Issue
		during heavy rains.	
6.	Cattle Troughs Construction	Constructing water access points for livestock	<ul style="list-style-type: none"> Waste Generation Impact to biodiversity Occupational health and Safety
7.	Waste Management	Disposal of construction debris and waste	<ul style="list-style-type: none"> Soil and Water pollution

Source: Consultant, 2025

Duration

The duration of this phase will be Twelve (12) months

Types and Sources of Key Project Requirements

Table 2- 7: Types and sources of project requirements during the construction phase

Requirements	Type	Amount	Source
Raw Materials	Aggregates	300,000 – 400,000 tons	Morogoro (From Authorized Suppliers)
	Sand	240,000 – 340,000 tons	Mkondoa River
	Cement	2000 – 3000 tons	Morogoro (From Authorized Suppliers)
	Earth fills (Gravel Clay soil)	2,276,716m ³	Morogoro (From Authorized Suppliers)
	Water	100,000 – 150,000 m ³	Mkondoa River
	Steel	500 – 1000 tons	Morogoro (From Authorized Suppliers)
	Cement Blocks	400 – 1000 pcs	Morogoro (From Authorized Suppliers)
	Timber	1 – 5 tons	Morogoro (From Authorized Suppliers)
Manpower	Skilled	10	Contractor
	Unskilled	40	Local People at Morogoro
Energy	Electricity	TBD	National Grid
		TBD	Diesel Generator
Equipment's	Excavator	4	Contractor
	Bulldozer	4	Contractor
	Motor grader	2	Contractor
	Wheel loaders	2	Contractor
	Plate compactor	2	Contractor
	Tippers	12	Contractor
	Concrete Mixers	4	Contractor

Source: Consultant Analysis, 2025

Types, Amounts, and treatment/disposal of Wastes

Types, amounts, and treatment/disposal of wastes during the construction phase are shown in Table 2- 8

Table 2- 8: Types, amounts and treatment/disposal of wastes during the Construction phase

Waste	Types	Amount	Treatment/Disposal
Solid waste (degradable)	Biomass from vegetation clearance	800-1,000 tons	Wood will be given to villagers to be used as fuel source. Leaves will be left to decompose at site
	Remnants of timber.	3-4kgs/day	Given to villagers to be used as fuel source.
	Food remains, cardboards and papers	10kg/day (based on generation rate of 0.2kg/day/ person and 50 people)	To be collected in the large skip buckets at site ready to be disposed of at the authorized dumpsite at Kilosa DC, Mvomero DC or Gairo DC.
Solid Waste (Non-Degradable)	Plastics	0.5-1kg/day	Given to Recyclers
	Tins and glasses	1-1.5 kg/day	To be collected in the large skip buckets at site ready to be disposed at the authorized dumpsite at Kilosa DC, Mvomero DC or Gairo DC.
	Dredged Sand	300,000-500,000cbm	Sold to the general public for construction purposes
Solid Waste (Hazardous)	Scrap metals	5-6kg/day	To be sold to authorized hazardous waste collectors
Liquid waste	Sewage	16m ³ (Based on 50 people, water consumption rate of 40L/capita/day and wastewater discharge factor of 80%)	Contractor to use mobile toilets at the site and to dispose of them in the Septic Tank and soakaway pit off-site.

Consultant Analysis: 2025

2.6.3 Demobilization Phase

Activities

The main activities to be executed on the site during the demobilization phase are presented in Table 2- 9 below;

Table 2- 9: Description of project activities and environmental issues during demobilization

SN	Activity	Description	Environmental/ Social Issue
1.	Site Cleanup & Restoration	Removing temporary structures, restoring landscape	▪ Waste generation
2.	Waste Disposal & Management	Final waste collection and disposal	▪ Soil and water pollution

Source: Consultant, 2025

Duration

The demobilization stage will last for a period of one (1) month.

Types and Sources of Project Requirements

Types and sources of project requirements during the demobilization phase are shown in Table 2- 10.

Table 2- 10: Types and sources of project requirements during the demobilization phase

Requirements	Type	Quantity	Source
Manpower	Skilled	3	Contractor
	Unskilled	12	Local people from Morogoro
Equipment	Bull dozer	1	Contractor
	Motor grader	1	Contractor
	Plate compactor	1	Contractor
	Tippers	2	Contractor

Source: Consultant, 2025

Types, Amounts, and treatment/disposal of Wastes

Types, amounts and treatment/disposal of wastes during the demobilization phase are shown in Table 2- 11:

Table 2- 11: Types, amounts and treatment/disposal of wastes during the demobilization phase

Waste	Types	Amount	Treatment/Disposal
Solid Waste (Degradable)	Remnants of timber.	0.2-0.4tons/week	Shall be sold to recyclers
	Food remains, cardboards and papers	21kg/week (based on generation rate of 0.2kg/day/person and 15 people)	To be collected in the large skip buckets at site ready to be disposed at the authorized dumpsite at Kilosa DC, Mvomero DC or Gairo DC.
Solid Waste (Non-Degradable)	Scrap metals, Tins, and drums	25-50kg/week	To be given to Authorized Hazardous Waste Collectors
	Plastics	50-100 kg/week	Given to plastic recyclers
Liquid waste	Sewage	4.8m ³ / day (Based on 15 people, water consumption rate of 40L/capita/day and wastewater discharge factor of 80%)	Contractor to use mobile toilets at the site and to dispose of them in the Septic Tank and soakaway pit off-site.

Source: Consultant, 2025

2.6.4 Operation phase

Activities

Only periodic maintenance shall be river training and dykes while water troughs shall require day to day operations. The activities that are expected to be executed during the operational phase are presented in Table 2- 12

Table 2- 12: Description of project activities and environmental issues during operational phase

SN	Activity	Description	Environmental/ Social Issue
1.	Maintenance and Monitoring of infrastructure	Ensuring structural integrity of interventions through performing repairs, dredging and partial construction	<ul style="list-style-type: none"> ▪ Risk of floods ▪ Impact to water quality ▪ Waste Generation (sand) ▪ Soil erosion, ▪ Occupational health and Safety ▪ Community Health and Safety
2.	Daily operations of the cattle troughs	Daily supply of water from the borehole through tank to the cattle trough. Cleaning of the premises	<ul style="list-style-type: none"> ▪ Waste generation

Duration

The operational stage will last for a period of fifty (50) years.

Types and Sources of Project Requirements

Types and sources of project requirements during the operational phase are shown in Table 2- 13

Table 2- 13: Types and sources of project requirements during the operation phase

Requirements	Type	Quantity	Source
Manpower	Skilled (Monitoring)	10	WRBWB
	Unskilled	20	Local people from Morogoro
Energy	Electricity	0.2Mw	Solar power
Equipment	Water Pump	1	WRBWB
	Solar Pannel	4	WRBWB
	Batteries	12	WRBWB

Source: Consultant, 2025

Types, Amounts, and treatment/disposal of Wastes

Types, amounts, and treatment/disposal of wastes during the operational phase are shown in Table 2- 14.

Table 2- 14: Types, amounts and treatment/disposal of wastes during the operation phase

Waste	Types	Amount	Treatment/Disposal
Solid waste (degradable)	Cow dung at the cattle trough area	0.5cbm/day	Given to the community as manure
Solid Waste (Non-Degradable)	Dredged Sand	30,000-50,000cbm/year	Sold to the general public for construction purposes
Liquid waste	Waste water from the cleanliness of the cattle troughs	144cbm/year	Watering trees around the troughs

Waste	Types	Amount	Treatment/Disposal
Solid Waste (Hazardous)	Solar Pannels	20-30kg/ 4 years	To be given to authorized hazardous waste collectors
	Batteries	50-60kg/2 years	To be given to authorized hazardous waste collectors

Consultant Analysis: 2025

2.6.5 Decommissioning Phase

Activities

The decommissioning phase will involve the removal of temporary infrastructure, site clearing, waste disposal, and land rehabilitation after completion of construction and operational activities. The activities expected during this phase are presented in Table 2- 15.

Table 2- 15: Description of project activities and environmental issues during decommissioning phase

SN	Activity	Description	Environmental / Social Issue
1.	Dismantling temporary facilities	Removal of site offices, storage areas, signages, fences, and scaffolds	<ul style="list-style-type: none"> ▪ Solid waste generation ▪ Noise and dust ▪ Occupational safety risks
2.	Clearing construction debris	Collecting, sorting, and disposing of leftover materials like scrap metal, wood, plastics, and concrete	<ul style="list-style-type: none"> ▪ Waste management challenges ▪ Potential soil and water contamination
3.	Site rehabilitation	Backfilling, leveling disturbed land, and planting grass/trees	<ul style="list-style-type: none"> ▪ Soil erosion control ▪ Landscape restoration

Duration

The decommissioning stage will last for a period of 1–2 months after the completion of construction and operational works.

Types and Sources of Project Requirements

Table 2- 16: Types and sources of project requirements during decommissioning phase

Requirements	Type	Quantity	Source
Manpower	Skilled (Supervisory & Safety)	6	WRBWB
	Unskilled (Labourers)	20	Local community
Equipment	Excavators	1	Contractor
	Trucks	2	Contractor

Types, Amounts, and Treatment/Disposal of Wastes

Table 2- 17: Types, amounts and treatment/disposal of wastes during decommissioning phase

Waste Types	Amount	Treatment/Disposal
Solid waste (general)	10–20 tons per site	Disposed to licensed district landfills

Waste Types	Amount	Treatment/Disposal
Scrap metal	Approx. 5 tons	Sold to scrap dealers for recycling
Hazardous waste (oil containers, batteries)	1–2 drums	Collected by authorized hazardous waste handlers
Domestic waste	2–5 tons	Disposed at district waste management sites

2.6.6 Stormwater Management

Activities

Stormwater management measures will be put in place to control runoff, minimize flooding, and manage sediment during and after project implementation. The expected activities are outlined in Table 2- 18.

Table 2- 18: Description of stormwater management activities and environmental issues

SN	Activity	Description	Environmental / Social Issue
1.	Construction of drainage channels	Building lined drains along dykes, cattle troughs, and access roads	<ul style="list-style-type: none"> Control erosion and flooding Prevent waterlogging
2.	Regular maintenance of drainage structures	Desilting, clearing debris, and repairing damaged sections	<ul style="list-style-type: none"> Waste generation (silt and debris)

To be implemented concurrently with construction and maintained throughout the 50-year operational phase.

Types and Sources of Project Requirements

Table 2- 19: Types and sources of project requirements during stormwater management

Requirements	Type	Quantity	Source
Manpower	Skilled (Hydraulic Technician)	4	WRBWB
	Unskilled (Labourers)	10	Local people

2.6.7 Health and Safety

Activities

Health and safety measures will be integrated across all project phases — construction, operation, and decommissioning — to safeguard workers, communities, and visitors. The activities are presented in Table 2- 20.

Table 2- 20: Description of health and safety activities and related issues

SN	Activity	Description	Environmental / Social Issue
1	Provision of PPE	Supply of helmets, boots, gloves, masks, reflective vests	<ul style="list-style-type: none"> Worker safety Reduce injury risks
2	Installation of signage and safety barriers	Warning signs at work zones, restricted areas, and hazardous spots	<ul style="list-style-type: none"> Public and community safety
3	Emergency preparedness drills	Regular fire, flood, and injury response simulations	<ul style="list-style-type: none"> Community awareness and emergency readiness

SN	Activity	Description	Environmental / Social Issue
4	First aid and health monitoring	On-site first aid kits and health check-ups	▪ Timely response to accidents and illnesses

To be conducted throughout construction, operation, and decommissioning phases.

Types and Sources of Project Requirements

Table 2- 21: Types and sources of project requirements during health and safety management

Requirements	Type	Quantity	Source
Manpower	Health & Safety Officers	2 per site	Contractor
	First Aiders	1 per site	Contractor
Equipment	PPE Sets	30 per site	Contractor
	First Aid Kits	2 per site	Contractor

Types, Amounts, and Treatment/Disposal of Wastes

Table 2- 22: Types, amounts and treatment/disposal of waste during health and safety management

Waste Types	Amount	Treatment/Disposal
Used PPE (helmets, gloves, masks)	5–10 kg/month per site	Disposed with general solid waste
Medical waste (bandages, gloves)	Minimal	Collected in labeled clinical waste bins and sent to health facilities
Fire drill residues (ash, debris)	Minimal	Collected and disposed of through district waste services

CHAPTER THREE

3 POLICY, ADMINISTRATIVE AND LEGAL FRAMEWORK

3.1 Introduction

This section discusses the policy and legal framework relevant to water, environmental, land, and social standards for engagement, ensuring benefits for communities and stakeholders at local, national, and international levels. Different Stakeholders carry out various social and economic activities within the Mkondoa sub-basin in the Wami/Ruvu basin, which requires all stakeholders to adhere to various relevant policy and regulatory frameworks to ensure the sustainable use of water resources. Decision-making processes at different levels, both by the government and other stakeholders, require consideration and compliance to applicable relevant policy, legislations, and regulations.

3.2 International Conventions

Tanzania is a party to many international agreements related to environmental and social management. The most relevant to the assignment related to conservation and management of natural and cultural resources of international importance and critical to the study are reviewed: -

- African Development Bank's Environmental and Social Operational Safeguards
- Convention on Biological Diversity (CBD),
- United Nations Framework Convention on Climate Change and its Kyoto Protocol
- Other Multilateral Environmental Agreements

3.3 Convention on Biological Diversity

The Convention is an international, legally binding treaty whose main objective is to encourage actions that will lead to a sustainable future. The three main goals are conservation of biodiversity, sustainable use of biodiversity, and fair and equitable sharing of the benefits arising from the use of genetic resources. In implementing CBD, Tanzania agreed to promote the conservation of biological diversity as well as develop programmes/projects for biodiversity conservation. The Convention has four Strategic Goals that support the Project.

- Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use.
- Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species, and genetic diversity
- Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services
- Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building

3.4 United Nations Framework Convention on Climate Change and its Kyoto Protocol

The Parties to this Convention of which Tanzania is signatory "Acknowledges "that change in the Earth's climate and its adverse effects are a common concern of humankind, and are "Concerned "that human activities have been substantially increasing the atmospheric concentrations of greenhouse gases and that these increases enhance the natural greenhouse effect, and that this will result on average in an additional warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems and humankind.

The Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) urges each Party to the Convention to take further steps/measures achieving its quantified emission limitation and reduction commitments in order to promote sustainable development. This includes implementation and/or further improvement of policies and measures per its national circumstances, such as:

- Enhancement of energy efficiency in relevant sectors of the national economy;
- Promotion of sustainable forms of agriculture in light of climate change considerations;
- Research on, and promotion, development and increased use of, new and renewable forms of energy, of carbon dioxide sequestration technologies and of advanced and innovative environmentally sound technologies.

Based on the above analysis, it can be deduced that the project implementation in Mkondoa subbasin shall take into account and conform to the provisions and directives of the UNFCCC and its Kyoto Protocol.

3.5 Other Multilateral Environmental Agreements

Other Multilateral Environmental Agreements (MEAs) relevant to Tanzania to ensure environmental protection and conservation include:

- Convention of the Protection of the World Cultural and Natural Heritage, Paris (1972)
- United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, particularly in Africa (1994)
- Montreal Protocol on Substances that Deplete the Ozone Layer (1987)
- United Nations Framework Convention on Climate Change (1983);
- Vienna Convention for the Protection of the Ozone Layer;

The WRBWB shall ensure that the requirements of this agreement are observed.

3.6 Applicable National Policies

3.6.1 National Environmental Policy of 2021

The key objective of the National Environmental Policy (NEP) is:

- Strengthen the coordination of environmental management in sectors at all levels.
- To enhance environmentally sound management of land resource for socio-economic development.
- To promote gender consideration in environmental management.
- To ensure predictable, accessible, adequate, and sustainable financial resources for environmental management

Critically, the National Environmental Policy emphasizes the application of Environmental Impact Assessment studies to identify and propose mitigation measures for risks and impacts arising from development projects.

It encourages the development of sustainable regimes for soil conservation and forest protection, taking into consideration the links between desertification, deforestation, freshwater availability, climatic change, and biological diversity. This Environmental Impact Assessment (EIA) is in line with the NEP directives and provides mitigation measure that the developer (WRBWB), the Contractor and subcontractors are required by law to adhere and report annually, the implementation of mitigation measures through a prescribed Monitoring process to the National Environment Management Council. Failure to do so invites penalties.

3.6.2 National Water Policy (NAWAPO), 2002

The objective of the policy for Water Resources Management is to develop a comprehensive framework for promoting the optimal, sustainable and equitable development and use of water resources for the

benefit of all Tanzanians, based on a clear set of guiding principles. The specific objectives of water resources management are:

- To develop equal and fair procedures in access and allocation of the water resources.
- To ensure that social and productive sectors and the environment receive their adequate share of the water resources.
- To ensure the effectiveness and efficiency of water resources utilization.
- To promote the management of water quality and conservation.
- To improve the management and conservation of ecosystems and wetlands.
- To promote integrated planning and management of water resources.
- To raise public awareness and broaden stakeholder participation in the planning and management of water resources.
- To ensure financial sustainability and autonomy of Basin Water Boards,
- To promote regional and international cooperation in the planning, management, and utilization of water.
- To provide the basis for future institutional framework and legislation for water resources management.

3.6.3 The National Land Policy (1997)

This policy aims at developing a coherent and comprehensive framework that defines land tenure and enables proper management and allocation of land in urban and rural areas. Among other things, the policy advocates the protection of land resources from degradation for sustainable development. The policy addresses several environmental issues, such as land use planning, which takes into consideration the land capability, ensures proper management of land resources, promotes resource sharing and multiple land use techniques in areas of conflicting land use, and involves the community in resource management, land use, and conflict resolution. These proposed subprojects will abide by all requirements of the land law. The proponent will ensure the protection of land resources and proper disposal of wastes that will be generated by subprojects.

3.6.4 Agriculture and Livestock Policy (1997)

The policy recognizes that agricultural activities are critically dependent on environmental resources such as land, water, forest and air, among others. It emphasizes that the use of these resources can directly or indirectly affect other natural resources through dynamic and complex interrelationships existing in the natural systems. The Policy seeks to provide a framework for the promotion of integrated, sustainable use and management of natural resources such as land, water, soil and vegetation. As water supply is a critical factor for both crop cultivating and livestock raising the policy is relevant in the context of the water supply project.

3.6.5 Community Development Policy (1996)

One of the objectives of this policy is to educate communities on the importance of environmental conservation in pursuing social and economic development. Some of the areas of emphasis of the policy include public health and sanitation in rural and urban areas, water and environmental sanitation, appropriate technology for domestic energy use, in particular improved cook stoves, and improving rural and urban environment through programs such as planting trees and forests in households, villages and wards. In fulfilment of these policy goals, project proponent will provide education to the nearby communities particularly on water and environmental sanitation.

3.6.6 National Human Settlements Development Policy (2000)

The policy stresses the need to ensure that human settlements are kept clean and pollution effects of solid and liquid wastes do not endanger the health of the residents. It also advocates compliance with environmental quality standards of air and water. The proposed project will ensure that all requirements of this policy are considered because the policy recognizes the impacts of human activities near the proposed project area. Since the proposed project is implemented near human settlements, the project management team and other relevant stakeholders will be required to ensure environmental protection within human settlements.

3.6.7 National HIV and AIDS Policy (2003)

The objectives of the policy are prevention and control of transmission of HIV/AIDS; to enhance sectoral roles through participation and financial support; and to promote and participate in research on HIV/AIDS, including dissemination of scientific information and development of HIV vaccine. This policy is relevant to the proposed project because during project implementation of the project influx of people in the project area will accelerate the spread of the disease, thus, sub-projects will implement the proposed EMP particularly on those issues related to HIV/AIDS.

3.6.8 Construction Industry Policy (2003)

The objective of the Policy is to develop competitive construction industry with consideration of environmental responsibility in the implementation of construction projects. The aim is to promote the application of sustainable and environmentally friendly construction practices. This includes the application of technologies, products and practices that are not harmful to the environment, human health and safety; promoting education and training; and undertaking Environmental Impact Assessment (EIA) of projects. This project is in line with this policy, as ultra-modern technology shall be used during construction and its operation. The proponent shall give priority to local people, consultants and contractors. It will also use locally available materials and ensure the delivery of good quality materials for the development of subprojects.

3.6.9 Health Policy (2007)

This National Health Policy aims at improving the health and well-being of all Tanzanians with a focus on those most at risk. Under Section 2.1, which deals with the objectives of the Health Policy, universal access to safe and clean water is mentioned as one of seven (7) health service goals. Under the heading "Environmental Health and Sanitation" (Sub-section 3.5.2.5), monitoring of water quality and safety is mentioned as one of several activities that support the achievement of improved sanitation. This policy is also in line with the goals of Tanzania Development Vision 2025. Therefore, the implementation of these subprojects will improve and promote the health of the residents and water consumers.

3.6.10 National Employment Policy (2008)

The overall vision of this National Employment Policy is to have society engaged in decent gainful employment capable of generating adequate income to sustain it and reduce poverty as envisaged by the Tanzania Development Vision 2025 and the National Strategy for Economic Growth and the Reduction of Poverty as well as facing the challenges of labor market gaps in the globalized economy. The specific objectives of the policy include:

- Promote equal access to employment opportunities and resources endowments for marginalized and vulnerable groups, including women, youth and People with Disabilities (PWDs), and
- Safeguard the basic rights and interests of workers per international labor standards.

The policy is relevant for these subprojects because it will involve the hiring of personnel and workers.

3.6.11 National Occupational Safety and Health Policy (2009)

The main objectives of OHS Policy are to reduce the number of work-related accidents and diseases in Tanzania. This required the adoption and implementation of a culture to prevent OHS hazards in workplaces. The effective prevention of work - related accidents and ill- health will have enormous social and economic benefits. These include improvements in productivity and competitiveness and the quality of life of the working population. The effective management of many safety hazards will contribute to improved levels of public health and safety. The effective control at source in workplaces of hazardous substances will improve levels of public health and minimize environmental pollution. This EIA has assessed the provisions of this policy and developer shall comply with provisions of this policy during implementation of subprojects.

3.7 Relevant Acts

3.7.1 The Environmental Management Act (EMA) of 2004

The Environmental Management Act (EMA) of 2004 (CAP 191) and the Environmental Impact Assessment and Audit Regulations of 2005 is relevant to this project as it guides and affects decisions on the implementation of various socioeconomic activities or projects undertaken by different stakeholders within the Wami/Ruvu Basin which is an environmentally sensitive area. The Environmental Management Act (EMA) of 2004 Section 57 (1) and (2) states that no human activities of a permanent nature or which may, by their nature, likely to compromise or adversely affect conservation and, or the protection of ocean or natural take shorelines, river bank, water dam or reservoir, shall be conducted within sixty (60) metres.

3.7.2 The Water Supply and Sanitation Act, 2019

The objective of this Act is to promote and ensure the right of every person in Tanzania to have access to efficient, effective and sustainable water supply and sanitation services for all purpose by taking into account certain fundamental principles, (i) "Protection and conservation of water resources and development and promotion of public health and sanitation". Objectives of development of river infrastructure in Wami/Ruvu Basin need to take advantages of the provisions of the Act because its implementation will be done within a landscape where humans and their associated livelihoods require clean water and effective sanitation services. Section (20) of the Act further narrates the functions of Water Supply and Sanitation Authorities, which them include:

- Provide water supply for uses as are required by this Act or any other written law dealing with the management of water resources, water quality standards and the environment;
- Secure the continued supply of water for all lawful purposes by continuously treating the water and monitoring the quality of water supplied at such times and in such a manner as may be prescribed in the water quality standards or regulations made under this Act;
- Develop and maintain waterworks and sanitation works;
- Plan and execute new projects for the supply of water and the provision of sanitation.
- Educate and provide information to persons on public health aspects of water supply, water conservation, sanitation, and similar issues.

3.7.3 The National Irrigation Act, 2013

To protect farmers from the growing stresses of extreme weather and climate change, Tanzania's parliament passed a law to promote better use of irrigation, intending to improve food security and reduce poverty. The National Irrigation Act, 2013, Sec. 36 refers to the Provision of Land Act and Village

Land Act governing land withdraw or surrender of land that shall apply in relation to any holder of a plot who breaches the conditions for ownership or occupations of plot in irrigation schemes or who wishes to surrender the plot as the case may be. Section 37 of the Act explains the power of the commissioner to prescribe good agricultural practices, irrigation methods and farming systems in the irrigation area to be practiced in consultation with irrigators and respective local government authority.

In order to protect ecological systems and biodiversity which, together, are important part of sustainable water resources system the following will be undertaken.

- Water for the environment, in terms of quantity and quality, and levels, and for both surface and groundwater resources shall be determined on the best scientific information available considering both the temporal and spatial water requirements to maintain the health and viability of riverine and estuary ecosystems and associated flora and fauna.
- To contain the erosion problem, public awareness campaigns will be carried out on good land use practices

3.7.4 The Regional Administration Act No. 19, 1997

The Regional and District Act No 9 (1997) provides for Regional Commissioners to oversee Regional Secretariats, with District Commissioners directly supervising the District Councils. For this project, the Region and District level are the highest-level organs for engagement with communities within and adjacent to the project area.

3.7.5 The Water Resource Management Act (Amendment) 2009

The Water Resource Management Act 2009, as amended by WRM Act # 8 of 2022, Section 34, read in conjunction with the Environmental Management Act (EMA) of 2004, Section 57, provides guidance on the prohibition of human activities near water sources. It states that without prejudice to section 57 of the Environmental Management Act, the ministry may, by the order published in the Gazette, prohibit human activities to be conducted beyond sixty metres from a water dam or reservoir, or water source. The section reminds all users of water to adhere to the guidelines to ensure sustainable use of water for the benefit of different stakeholders and future generations. Section 37 of the Act gives powers to the Minister for Water to establish protected zones (in consultation with the institution responsible for land management) with a view to protect water sources from pollution, erosion, or adverse effects.

Sec. 44 (1) and (2) further covers matters relating to offences for use of water in excess of water use permit. Observation of compliance with this section is very important as it is critical in enforcing controls toward sustainable use of water resources. Section 48 also requires among other conditions to the water user permit to observe section 60 of the EMA Act 2004. The fourth Schedule of the Water Resource Management Act 2009 made under section 81 (1) guides the requirements of the constitution of the Water Users Association to maintain uniformity across different WUAs in terms of management and operations.

3.7.6 The Land Act Cap 113 R.E 2019

The Act addresses various issues that include defining the legal framework for the land tenure system and how land can be used for social and economic development. The Act also defines issues of land acquisition and compensation to the affected people. It further provides guidance on land ownership/land tenure in Tanzania.

The proposed project shall not involve the compensation of land, but will involve land to facilitate river training and the construction of cattle troughs.

3.7.7 The Employment and Labour Relations Act CAP 366 R.E 2019

The Act makes provisions for core labour rights to establish basic employment standards, including the prevention and settlement of disputes. Part II of the Act describes fundamental rights and protections for child labor, forced labor, and discrimination. and freedom of associations, while Part III provides for employment standards, which include issues like Hours of Work, Remuneration, leave, Unfair Termination of Employment, and Other Incidents of termination. The WRBWB and Contractor shall ensure that the recruitment and human resources aspects of the project adhere to the employment standards and requirements set out in this Act.

3.7.8 Public Health Act of 2009

This Act provides for the promotion, preservation, and maintenance of public health with the view to ensuring the provision of comprehensive, functional, and sustainable public health services to the general public and to provide for other related matters. Section 54 of this law states that "A person shall not cause or suffer from nuisance, likely to be injurious or dangerous to health, existing on land, premises, air or water". The ESIA study has taken into consideration the potential impacts that the Project may have on public health, and the appropriate mitigations have been outlined.

3.7.9 Child Act of 2009 revised in 2019

The primary objective is to protect and preserve all the rights of children. This law is related to the proposed project on the issue of child labour and violence against children. Section 12 of the law emphasized harmful employment to a child. The law states that "A person shall not employ or engage a child in any activity that may be harmful to his health, education, mental, physical, or moral development". The law emphasized protecting children against all forms of exploitation and violence and abuse. The law defines child abuse as a contravention of the rights of the child which causes physical, moral or emotional harm, including beatings, insults, discrimination, neglect, sexual abuse and exploitative labour. This is also linked with the Mkondoa sub-basin project on any issue related to child abuse and protection.

3.8 Applicable Regulations and Strategies

3.8.1 Environmental Management (Environmental Impact Assessment and Audit)2005 (Amendments) Regulations, 2018

Several policies, instruments, and laws support environmental and social management and the environmental and social impact assessment processes in Tanzania. The Environment Management Act (Cap 191) of 2004 (EMA), the Environmental Management (Environmental Impact Assessment and Audit) (Amendments) Regulation of 2018 reading together with the Environmental Management (Environmental Impact Assessment and Audit) Regulations of 2005, the National Environment Policy of 2021, and the National Environment Action Plan (1994) are the key instruments that cover environmental and social management in all the sectors of development.

Apart from the National Environment Policy, many sectoral policies consider Environmental 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 that may have negative effects on the environment. The policies presented are relevant sectoral and cross-sectoral policies that require the undertaking of an ESIA study before the commencement of project implementation.

3.8.2 The Environmental Management (Registration and Practice of Environmental Experts) Regulations, 2021

These Regulations make provision regarding Environmental Experts and establish the Environmental Expert Committee. The regulation has gone further to categorize experts according to their expertise and experience. The proposed Mkondoa project needed registered experts with the experience to undertake the ESIA.

3.9 African Development Bank's Environmental and Social Operational Safeguards (OSs)

The African Development Bank OSs set out the requirements for the Government of Tanzania (GoT) relating to the identification and assessment of E&S risks and impacts associated with projects supported by the Bank through Investment Project Financing. The standards: (a) support GoT in achieving good international practice relating to E&S sustainability; (b) assist GoT in fulfilling their national and international E&S obligations; (c) enhance non-discrimination, transparency, participation, accountability and governance; and (d) enhance the sustainable development outcomes of projects through ongoing stakeholder engagement.

The following table summarizes the Environmental and Social Standards (OSs) triggered by the proposed Mkondoa sub-basin project that the contractor and WRBWB must adhere to. Table 3.1 summarizes the requirements of the relevant E&S OS for the project.

Table 3- 1: Environmental and Social Standards (OSs) relevant to the project

OSs	Requirement	Relevance	Application
OS1: Assessment and Management of E&S Risks and Impacts	<p>OS1 requires Borrowers to identify, evaluate and manage the environmental and social risks and impacts of the project; adopt a mitigation hierarchy approach (avoid, minimise, reduce, mitigate, offset); adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities resulting from the project; utilize national environmental and social institutions, systems, laws, regulations and procedures in the assessment, development and implementation of projects, whenever appropriate; and to promote improved environmental and social performance, in ways which recognize and enhance Borrower capacity.</p> <p>The OS1 requires the mitigation hierarchy to follow; anticipate and avoid risks and negative impacts; where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels; once risks and impacts have been minimized or reduced, mitigate them; and where significant residual impacts remain, compensate for, or in the case of biodiversity and habitat losses</p>	Yes	<ul style="list-style-type: none"> ▪ The ESIA study responds to the requirement of OS1. The ESIA will prepare an Environmental and Social Management Plan (ESMP), ▪ The AfDB requires the WRBWB to assess, manage and monitor the environmental and social risks and impacts of the project throughout the project life cycle to meet the requirements of the OSs in a manner and within a timeframe acceptable to the Bank. ▪ But also, to conduct an environmental and social assessment of the proposed Mkondoa project, including stakeholder engagement in agreement with OS10. ▪ Conduct monitoring and reporting on the environmental and social performance of the project against the E&S OSs.
OS 2: Labor and Working Conditions	OS2 requires Borrowers to promote safety and health at work; promote the fair treatment, non-discrimination, and equal opportunity of project workers; protect project workers, with emphasis on vulnerable workers; prevent the use of all forms of forced labour and	Yes	<ul style="list-style-type: none"> ▪ The Contractor will develop and implement written labor management procedures applicable to the project. These procedures will set out how project workers will be managed per the requirements of national

OSs	Requirement	Relevance	Application
	<p>child labour; support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; and provide project workers with accessible means to raise workplace grievances.</p>		<p>law and this E&S OS.</p> <ul style="list-style-type: none"> ▪ Where required by national law or the labor management procedures, project workers will receive written notice of termination of employment and details of severance payments promptly. ▪ Children under the minimum age of 18 years shall not be employed ▪ A grievance mechanism will be provided for all direct workers and contracted workers. Such workers will be informed of the grievance mechanism at the time of recruitment and the measures put in place to protect them against any reprisal for its use. ▪ Measures relating to occupational health and safety will be applied to all project areas. The OHS measures will take into account the EHSGs as appropriate, the industry-specific EHSGs and other GIIP. ▪ The OHS measures will not be limited to (a) identification of potential hazards to project workers, particularly those that may be life-threatening; (b) provision of preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (c) training of project workers and maintenance of training records; (d) documentation and reporting of occupational accidents, diseases and incidents; (e) emergency prevention and preparedness and response arrangements to emergencies;19 and (f) remedies for adverse impacts. ▪ Project workers will be provided with facilities appropriate to the circumstances of their work, including access to canteens, hygiene facilities, and appropriate areas for rest. ▪ The WRBWB/contractor will make reasonable efforts to ascertain that third parties who engage contracted workers are legitimate and reliable entities and have in place labor management procedures applicable to the subproject that will allow them to operate per this OS ▪ The WRBWB/contractor will establish procedures for managing and monitoring the performance of such third parties in relation to the requirements of this OS while incorporating the requirements of this

OSs	Requirement	Relevance	Application
			<p>OS in the contractual agreement</p> <ul style="list-style-type: none"> ▪ The WRBWB/contractor will identify potential risks of child labor, forced labor and serious safety issues that may arise with primary suppliers.
OS 3: Resource Efficiency and Pollution Prevention and Management	OS3 requires Borrowers to promote the sustainable use of resources, including energy, water and raw materials; avoid or minimise adverse impacts on human health and the environment by avoiding or minimising pollution from project activities; avoid or minimise project-related emissions of short and long-lived climate pollutants, avoid or minimise generation of hazardous and non-hazardous waste; and to minimize and manage the risks and impacts associated with pesticide use.	Yes	<ul style="list-style-type: none"> ▪ This standard is relevant. Construction materials shall be extracted and used, and waste and materials shall be handled per the OS3 requirements, Good International Industrial Practice (GIIP), and the Environmental, Health, and Safety Guidelines. ▪ The WRBWB/contractor will consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention measures per the mitigation hierarchy and proportional to risk and impact associated with the projects ▪ To apply resource use efficiency to avoid adverse impacts on water quality and demand ▪ Adopt measures specified in the EHSGs and other GIIP to support the efficient use of raw materials, to the extent technically and financially feasible ▪ Avoid the release of pollutants or, when avoidance is not feasible, minimize and control the concentration and mass flow of their release using the performance levels and measures specified in national law or the EHSGs, whichever is most stringent. This applies to the release of pollutants to air, water and land due to routine, non-routine, and accidental circumstances, and with the potential for local, regional, and transboundary impacts ▪ where generated waste is considered hazardous, the WRBWB will comply with existing requirements for management (including storage, transportation and disposal) of hazardous wastes including national legislation and applicable international conventions
OS 4: Community Health, Safety and Security	OS4 requires Borrowers to address the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such	Yes	<ul style="list-style-type: none"> ▪ The development of river training, stabilization and cattle troughs in the project area will likely pose risks to health, safety, and security in the community, and therefore, the OS4 is applicable.

OSs	Requirement	Relevance	Application
	risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable		<ul style="list-style-type: none"> ▪ The WRBWB/contractor will evaluate the risks and impacts of the project on the health and safety of the affected communities during the project life cycle, including those who, because of their particular circumstances, may be vulnerable ▪ The design, construction, operation, and decommissioning of the structural elements of the subproject must be per national legal requirements, the EHSGs and other GIIP, taking into consideration safety risks to third parties and affected communities. The river training, stabilization and cattle troughs will be designed and constructed by competent professionals, and certified or approved by competent authorities or professionals ▪ The WRBWB/contractor will identify, evaluate and monitor the potential traffic and road safety risks to workers, affected communities and road users throughout the project implementation period ▪ The Contractor will identify and implement measures to address emergency events, such as explosions, leaks, or spills, which may occur for various reasons, including failure to implement operating procedures designed to prevent their occurrence, extreme weather, or lack of early warning.
OS 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	<p>OS5 requires Borrowers to avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives; to avoid forced eviction; to mitigate unavoidable adverse social and economic impacts from the land acquisition or restrictions on land use; to improve living conditions of poor or vulnerable persons who are physically displaced through the provision of adequate housing, access to services and facilities, and security of tenure; to conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable displaced persons to benefit directly from the project, as the nature of the project may warrant; and to ensure that resettlement activities are planned and implemented with</p>	Yes	<ul style="list-style-type: none"> ▪ Land for river training, stabilization, dykes and cattle trough construction will be donated freely by legal owners and they will sign the consent forms, in areas where it will be necessarily required. ▪ The project is not expecting resettlement. ▪ OS5 is applicable and The Land Acquisition Act Cap 118, The Land Act, CAP 113 of 2019; ▪ When land acquisition or restrictions on land use (whether permanent or temporary) cannot be avoided, the WRBWB will offer affected persons compensation at replacement cost and other assistance as may be necessary to help them improve or at least restore their standards of living or livelihoods ▪ Decision-making processes related to resettlement and livelihood

OSs	Requirement	Relevance	Application
	appropriate disclosure of information, meaningful consultation, and the informed participation of those affected.		<p>restoration will include options and alternatives from which affected persons may choose. Disclosure of relevant information and meaningful participation of affected communities</p> <ul style="list-style-type: none"> ▪ The WRBWB is not required to compensate or assist those who encroach on the project area after the cutoff date for eligibility, provided the cutoff date has been established and made public ▪ The WRBWB will ensure that a grievance mechanism for the project is in place, per OS10 as early as possible in project development to address specific concerns about compensation, relocation or livelihood restoration measures raised by displaced persons (or others) in a timely fashion ▪ Economically displaced persons who are without legally recognizable claims to land will be compensated for lost assets other than land (such as crops, irrigation infrastructure and other improvements made to the land) at replacement cost
OS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	<p>OS6 requires Borrowers to protect and conserve biodiversity and habitats, apply the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could impact biodiversity, promote the sustainable management of living natural resources, support the livelihoods of local communities, and promote inclusive economic development through the adoption of practices that integrate conservation.</p> <p>OS6 recognizes the importance of maintaining core ecological functions of habitats, including forests, and the biodiversity they support in a changing climate.</p>	Yes	<ul style="list-style-type: none"> ▪ A few trees and vegetation will be cleared along the riverbank, with minimal impacts on habitat and ecosystem services. Only necessary trees and vegetation will be removed. Removals will be done using light equipment and when it is dry to avoid habitat disturbance and biodiversity loss. Therefore, OS 6 is applicable. ▪ The environmental and social assessment as set out in OS1 will consider direct, indirect and cumulative project-related impacts on habitats and the biodiversity they support. This assessment will consider threats to biodiversity, for example habitat loss, degradation and fragmentation, overexploitation, hydrological changes, pollution as well as projected climate change impacts ▪ The assessment will include characterization of baseline conditions to a degree that is proportional and specific to the anticipated risk and significance of impacts. In planning and undertaking environmental and social assessments related to the biodiversity baseline conditions ▪ The WRBWB will ensure that competent biodiversity expertise is

OSs	Requirement	Relevance	Application
			<p>utilized to conduct the environmental and social assessment and the verification of the effectiveness and feasibility of mitigation measures. Where significant risks and adverse impacts on biodiversity have been identified, avoid or minimize impacts on modified habitat and implement mitigation measures as appropriate.</p> <ul style="list-style-type: none"> ▪ Where a contractor is purchasing natural resource commodities i.e, aggregate and sand that are known to originate from areas where there is a risk of significant conversion or significant degradation of natural or critical habitats, the environmental and social assessment will include an evaluation of the systems and verification practices used by the primary suppliers ▪ The WRBWB must establish systems and verification practices which will: (a) identify where the supply is coming from and the habitat type of the source area; (b) where possible, limit procurement to those suppliers that can demonstrate that they are not contributing to significant conversion or degradation of natural or critical habitats; and (c) where possible and within a reasonable period, shift the WRBWB's primary suppliers to suppliers that can demonstrate that they are not significantly adversely impacting these areas. ▪ This OS requires a differentiated risk management approach to habitats based on their sensitivity and values. The contractor and developer shall pay attention to this
OS 10: Stakeholders' Engagement and Information Disclosure	OS10 emphasizes stakeholder engagement throughout the project life cycle and requires a Stakeholder Engagement Plan (SEP). It encourages early identification of stakeholders, both project-affected parties and other interested parties. Under OS10, engagement must be proportionate to the nature, scale, risks, and impacts of the project and appropriate to stakeholders' interests. It specifies processes and criteria for information disclosure and meaningful consultation and requires an accessible and inclusive grievance mechanism proportionate to risks and impacts.	Yes	<ul style="list-style-type: none"> ▪ The proposed project covers areas of public interest. It has developed a Stakeholder Engagement Plan (SEP) to ensure the stakeholders receive timely, relevant, understandable, and accessible information. ▪ The developed SEP was adopted and used in stakeholder consultation during the ESIA study. ▪ WRBWB will engage with stakeholders throughout the project life cycle, commencing such engagement as early as possible in the project development process and in a timeframe that enables meaningful consultations with stakeholders on project design

OSs	Requirement	Relevance	Application
			<ul style="list-style-type: none"> ▪ WRBWB will provide stakeholders with timely, relevant, understandable and accessible information, and consult with them in a culturally appropriate manner, which is free of manipulation, interference, coercion, discrimination and intimidation. ▪ The WRBWB will identify those project-affected parties (individuals or groups) who, because of their particular circumstances, may be disadvantaged or vulnerable. ▪ The WRBWB will disclose project information to allow stakeholders to understand the risks and impacts of the project, and potential opportunities ▪ The WRBWB will continue to conduct stakeholder engagement per the SEP, and will build upon the channels of communication and engagement already established with stakeholders. ▪ The WRBWB will respond to concerns and grievances of project-affected parties related to the environmental and social performance of the project promptly ▪ The grievance mechanism is expected to address concerns promptly and effectively, in a transparent manner that is culturally appropriate and readily accessible to all project-affected parties, at no cost and without retribution ▪ The WRBWB will define clear roles, responsibilities, and authority as well as designate specific personnel to be responsible for the implementation and monitoring of stakeholder engagement activities and compliance with this OS

3.10 Environmental, Health, and Safety (EHS) Guidelines

The Environmental, Health, and Safety (EHS) Guidelines serve as technical reference materials that include both general and specific examples of Good International Practice. These guidelines apply to the Mkondoa sub-basin, with considerations made for the impacts and risks associated with the river as determined by an environmental assessment. This assessment factored in various site-specific elements, including the environment's assimilative capacity and other relevant project aspects.

In this ESIA, relevant EHS guidelines on the Environment (e.g., emissions, noise, and construction waste management), Occupational Health and Safety, and Community Health and Safety have been adopted in the mitigation measures provided for this project following the mitigation hierarchy as stipulated in OS1.

3.11 Gap Analysis between the National Regulations and the AfDB E&S Operational Safeguard

In Tanzania, subsequent legislations have been enacted that govern/ ensure compliance and considerations for the adverse E&S Impacts and risks associated with the implementation of the Mkondoa sub-basin project areas. Relevant laws and regulations shall be employed to govern the construction and operation of the road infrastructure under the project. The African Development Bank requires that all projects comply with national law, but where there is conflict and gaps exist, African Development Bank policies take precedence, except in cases where national standards are more stringent (e.g., air emissions or effluents).

Notably, there are some differences, particularly in the understanding of how E&S issues are handled, as analyzed in Table 3-3. The gap analysis was based on thee triggered E&S Operational Safeguards.

Table 3- 2: Comparison between the African Development Bank OSs and Tanzanian Legislation

African Development Bank OSs	Tanzanian legislation	Gaps	Measures to Fill the Gap
<p>OS1: Social and Environmental Assessment and Management</p> <p>Environmental and Social Assessment: The project requires carrying out an environmental and social assessment to assess its environmental and social risks and impacts throughout its life cycle.</p> <p>Environmental and Social Commitment Plan: Under OS1, the environmental and social commitment plan which will set out measures and actions required for the project to achieve compliance with the ESSs over a specified time frame is required to be developed and implemented. Stakeholder</p> <p>Engagement and Information Disclosure: As part of the ESIA undertaking, continuous engagement with stakeholders and providing sufficient information throughout the life cycle of the project, in a manner appropriate to the nature of their interests and the potential environmental and social risks and impacts of the project</p>	<p>Environmental Management Act No. 20 of 2004</p> <p>The Act refers to the obligation to undertake EIA by the project Proponent at his/her own cost before the commencement or financing of a project or undertaking. The Act prohibits any development to be the project to be initiated without an EIA Certificate. An Environmental Impact Assessment study shall be carried before the commencement or financing of a project or undertaking. It also provides for the adoption of the guidelines by the council on public participation, especially those likely to be affected by the project being the subject of an Environmental Impact Assessment study or review. Section 90 provides for the calling of public hearing by the council.</p>	<p>The laws of Tanzania do not provide for lifecycle environmental and social risk assessments. An environmental and social commitment plan is not reflected in Tanzania's environmental legislation. It does not mention information disclosure to the community during the study, but rather by the call from the National Management Council when there is a need</p>	<p>The project adopted OS1 for environmental and social impact assessment</p>
<p>OS2: Labour and Working Conditions</p> <p>Protecting the Workforce Child Labour and Minimum Age. A child under the minimum age will not be employed</p>	<p>The Occupational Health and Safety Act No. 5 of 2003</p> <p>The law requires employers to provide a good working environment to workers in order to</p>	<p>There is no significant gap between the national laws and the AfDB OS. However, there is no single document or law that</p>	<p>For the project to adequately capture labour and working condition issues, the</p>

African Development Bank OSs	Tanzanian legislation	Gaps	Measures to Fill the Gap
<p>or engaged in connection with the project. The minimum age is 18 years unless national law specifies a higher age.</p> <p>Forced Labor It prohibits the employment of forced labor, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty. This covers any kind of involuntary or compulsory labour, such as indentured labour, bonded labour, or similar labour-contracting arrangements. The borrower will not employ trafficked persons</p> <p>Grievance Redress Mechanism It requires the provision of a grievance mechanism for all direct workers and contracted workers (and, where relevant, their organizations) to raise workplace concerns. Such workers will be informed. Measures will be put in place to make the grievance mechanism easily accessible to all such project workers</p> <p>Occupational Health and Safety It is a responsibility of the project implementer to provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in the work areas. Measures relating to occupational health and safety will be applied to the project. The OHS measures will take into account the General Environmental Health and Safety Guidelines (EHSGs) and, as appropriate, the industry-specific EHSGs and other Good International Industry Practice (GIIP). The OHS measures applying to the project will be set out in the legal agreement.</p> <p>Contracted Workers The Borrower will make reasonable efforts to ascertain that third parties who engage contracted workers are legitimate and reliable entities and have in place labor management</p>	<p>safeguard their health and ensure safety at the workplace.</p> <p>The Workers Compensation Act No. 20 of 2008 The Act governs adequate and equitable compensation for all employees on grounds of injury, rehabilitation for occupational illnesses or injury and compensation to dependents and relatives upon fatality. Under this Act, the contractor/s are obliged to compensate employees in the case of injuries, death, and diseases while rendering their services to the employer/developer.</p> <p>The Employment and Labour Relations Act of 2019 This Act requires the Proponent to observe all core labour rights and related matters including establishing basic employment standards, providing a framework for collective bargaining, and providing for the prevention and settlement of disputes. No person shall employ a child under the age of fourteen years. Any person who procures, demands or imposes forced labour commits an offence. Every employer shall ensure that they promote an equal opportunity in employment and strive to eliminate discrimination in any employment policy or practice. For the avoidance of doubt, every employer shall take positive steps to guarantee equal remuneration for men and women for work of equal value. Every employee shall have the right- (a) to form and join a trade union; (b) to participate in the lawful activities of the trade union.</p>	<p>presents the Labor and Working Conditions issues in particular. The information is available in different pieces of documents. Issues regarding to community workers are not captured in the National Legislations. However, it might not be an issue in the project as the use of community workers is not foreseen. From the legal perspective, there is no requirement for development and implementation of Labour Management Procedures/ Plan, as an upfront guidance instrument for systematic planning and management of labour during project design and implementation.</p>	<p>AfDB OS2 will apply in Management of Labour and Working Conditions through the project circles. .</p>

African Development Bank OSs	Tanzanian legislation	Gaps	Measures to Fill the Gap
<p>procedures applicable to the project that will allow them to operate in accordance with the requirements of this OS.</p> <p>Community Workers</p> <p>The project may include the use of community workers in a number of different circumstances, including where labor is provided by the community as a contribution to the project, or where projects are designed and conducted for the purpose of fostering community driven development, providing a social safety net or providing targeted assistance in ecologically sensitive and conflict -affected situations. Given the nature and objectives of such projects, the application of all requirements of OS2 may not be appropriate. In all such circumstances, the Borrower will require measures to be implemented to ascertain whether such labor is or will be provided voluntarily as an outcome of individual or community agreement</p>			
<p>OS3: Resource Efficiency and Pollution Prevention and Management</p> <p>Pollution Prevention and Management</p> <p>It requires avoidance to release of pollutants or, when avoidance is not feasible, minimize and control the concentration and mass flow of their release using the performance levels and measures specified in national law or the EHSGs, whichever is most stringent. This applies to the release of pollutants to air, water, and land due to routine, nonroutine, and accidental circumstances, and with the potential for local, regional, and transboundary impacts.</p> <p>Air Pollution Management</p> <p>In addition to the resource efficiency measures described above, the Borrower will consider alternatives and implement technically and financially feasible and cost-effective options to avoid or minimize project-related air emissions during the design, construction, and operation of</p>	<p>Water Resources Management Act,2019</p> <p>This legislation is based on the principles of sustainable water resources management guided by; a) the precautionary principle; b) polluter pay principle; c) the principle of eco-system integrity; d) the principle of public participation in the development policies, plans and processes for the management of the water resources; e) the principle of international co-operation in management of environmental resources shared by two or more states; and f) the principle of common but differentiated responsibilities.</p> <p>This legislation requires application of permit by any person who diverts, dams, stores, abstracts or uses water from surface or underground water source, or for any such purpose constructs or maintains any works</p>	<p>There is no significant gap between the OS 3 and the national legislations regarding to resource efficiency and pollution prevention</p>	

African Development Bank OSs	Tanzanian legislation	Gaps	Measures to Fill the Gap
<p>the project.</p> <p>Management of Hazardous and Non-hazardous Waste. The Borrower will avoid the generation of hazardous and non-hazardous waste. Where waste generation cannot be avoided, the Borrower will minimize the generation of waste, and reuse, recycle and recover waste in a manner that is safe for human health and the environment. Where waste cannot be reused, recycled or recovered, the Borrower will treat, destroy, or dispose of it in an environmentally sound and safe manner that includes the appropriate control of emissions and residues resulting from the handling and processing of the waste material.</p> <p>Management of Chemicals and Hazardous Materials The Borrower will avoid the manufacture, trade, and use of chemicals and hazardous materials subject to international bans, restrictions or phaseouts unless for an acceptable purpose as defined by the conventions or protocols or if an exemption has been obtained by the Borrower, consistent with Borrower government commitments under the applicable international agreements.</p>	<p>from the respective Basin water Board. A person who diverts, dams, impounds, store, abstracts or uses water without water use permit commits an offence and shall, on conviction.</p> <p>Environmental Management (Solid Waste Management) Regulations, 2019 This regulation details the requirements and responsibilities for managing solid waste in Tanzania. It also highlights waste minimization and cleaner production principles alongside the duty to safeguard the public health and the environment from adverse effects of solid waste. It also highlighted the role of Local Government Authority to manage wastes including issuing permit to a person or firm which wish to operate solid waste disposal sites.</p> <p>The Environmental Management (Water Quality Standards) Regulations, 2007 The regulations require the application of water rights by the developer and compliance with prescribed effluent or receiving water standards, which are not below the standards specified in the regulations if the water right or permit is granted</p> <p>Environmental Management (Air Quality Standards) Regulations, 2007 These regulations require compliance with the minimum water quality standards. It prohibits the release of hazardous substances, chemicals, gas or mixtures containing gaseous and hazardous substances into the environment unless the release or emission is</p>		

African Development Bank OSs	Tanzanian legislation	Gaps	Measures to Fill the Gap
	<p>permitted.</p> <p>Environmental Management (Hazardous Waste Management) Regulations, 2021 Hazardous wastes are always associated with the construction projects and operation of the subprojects of this project. The regulations provide for proper management of these wastes in accordance with relevant law governing the operation of the facilities. Any damage is caused by hazardous waste which has been deposited into the environment, a person who deposited, caused or permitted a waste to be deposited, is liable for the damage to the environment and human health.</p> <p>Environmental Management (Standards for the Control of Noise and Vibration Pollution) Regulations, 2015 The regulations provide for a prohibition for any person to make or cause to be made any loud, unreasonable, unnecessary or unusual noise that annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and that of the environment.</p>		
<p>OS4: Community Health, Safety and security OS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.</p> <p>Community Health, Safety and security The Borrower will evaluate the risks and impacts of the project on the health and safety of the affected</p>	<p>Public Health Act, 2009 This Act provides for the promotion, preservation and maintenance of public health with a view of ensuring the provision of comprehensive, functional and sustainable public health services to the general public and to provide other related matters. It secures the improvement of health habits and life style of people, environmental sanitation and hygiene, preventing and controlling living infectious or communicable and other diseases. It requires</p>	<p>The national legislations on community health and safety are silent about the security issuesl.</p>	<p>OS4 will apply in case of any situation involving security matters.</p>

African Development Bank OSs	Tanzanian legislation	Gaps	Measures to Fill the Gap
<p>communities during the project life cycle, including those who, because of their particular circumstances, may be vulnerable. The Borrower will identify risks and impacts and propose mitigation measures per the mitigation hierarchy.</p> <p>Community Exposure to Disease</p> <p>The Borrower will avoid or minimize the potential for community exposure to waterborne, water-based, water - related, and vector-borne diseases, and communicable and non - non-communicable diseases that could result from project activities, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups. Where specific diseases are endemic in communities in the project area, the Borrower is encouraged to explore opportunities during the project life cycle to improve environmental conditions that could help minimize their incidence</p> <p>Emergency Preparedness and Response</p> <p>The Borrower will identify and implement measures to address emergency events. An emergency event is an unanticipated incident arising from both natural and man-made hazards, typically in the form of fire, explosions, leaks, or spills, which may occur for a variety of different reasons, including failure to implement operating procedures that are designed to prevent their occurrence, extreme weather, or lack of early warning. The measures will be designed to address the emergency event in a coordinated and expeditious manner, to prevent it from injuring the health and safety of the community, and to minimize, mitigate, and compensate for any impacts that may occur.</p>	<p>notification of any infections or communicable diseases to the responsible authorities to protect other members of the community.</p>		
<p>OS5, on Land Acquisition, Restrictions on Land Use and Involuntary Resettlement Eligibility for Compensation Loss of Profits</p>	<p>Land Acquisition Act No. 47 (1967)</p> <p>Provides for the following:</p> <ul style="list-style-type: none"> ▪ The Minister responsible for land is authorized 	<p>Currently, in Tanzania, there is no specific resettlement policy itemizing procedures and</p>	<p>The land shall be donated by legal owners for the project activities, where</p>

African Development Bank OSs	Tanzanian legislation	Gaps	Measures to Fill the Gap
	<p>to authorize any person to enter upon the land and survey the land to determine its suitability for a public purpose.</p> <p>The Government of Tanzania is supposed to pay compensation to any person who suffers damage as a result of any action.</p>	<p>processes to prevent PAPs from being left worse off by a project. However, the project will not involve resettlement</p>	<p>necessary in conformance with the national and OS5 guidelines.</p>
<p>Grievance Handling Procedures, Stakeholder engagement and information disclosure</p>	<p>Under s.13 of the <i>Land Acquisition Act, 1967</i>, if dispute or disagreement regarding the below listed below is not settled by the concerned parties within six weeks of the date of publication of the expropriation notice, the Minister or person holding claim in the land may institute a suit in the high court of Tanzania for the determination of the dispute.</p>	<p>Tanzanian Law does not provide for the establishment of grievance resolution mechanisms specific to particular resettlement operations. Tanzania has a well-established and accessible local grievance redress mechanism through existing administrative systems and structures.</p>	<p>GRMs will be set up for this project in line with existing administrative systems, with some changes in time for response based on the African Development Bank OS10</p>
<p>OS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</p> <p>The OS6 recognizes the importance of maintaining the core ecological functions of habitats, including forests, and the biodiversity they support. Habitat is defined as a terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment. All habitats support the complexities of living organisms and vary in terms of species diversity, abundance, and importance. OS 6 also addresses the sustainable management of primary production and harvesting of living natural resources. OS6 recognizes the need to consider the livelihood of project-affected parties, including Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, whose access to, or use of, biodiversity or living natural resources may be affected by a project. The potential, positive role of project-affected parties, including</p>	<p>Wildlife Conservation Act of 2022</p> <p>Prohibits livestock keeping, crop cultivation or any agricultural activities in any water reserve areas</p> <p>Tanzania Forest Act of 2002</p> <p>Safeguards ecosystem stability through conservation of water catchments and requires all developmental projects in watersheds to adhere to Environmental Impact Assessment (EIA) mitigation measures</p> <p>National Environment Policy of 2021</p> <p>Aims at strengthen conservation of wildlife habitats and biodiversity; enhance conservation of forest ecosystems for sustainable provision of environmental goods and services; manage pollution for safe and healthy environment; enhance conservation of aquatic ecosystem for sustained ecological services and socioeconomic wellbeing</p>	<p>There is no significant gap existing</p>	<p>The project will adhere to the requirements of OS6</p>

African Development Bank OSs	Tanzanian legislation	Gaps	Measures to Fill the Gap
<p>Indigenous Peoples, in biodiversity conservation and sustainable management of living natural resources is also considered</p>	<p>Environment Management Act No. 20 of 2004 Recognizes wetlands as fragile ecosystems that play an important role in water systems and Mandates the National Environmental Management Council (NEMC) to oversee the management of all natural resources, including wetlands.</p>		
<p>OS 10: Stakeholder Engagement and Information Disclosure. This OS 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.</p>	<p>The Environmental Management Act, 2004 Provides for ESIA studies to conduct robust stakeholder engagement and information disclosure. EIA/EA regulations 2005 and amendments 2018 Public participation is a key requirement during the ESIA process. The regulations require environmental experts or a firm of experts to ensure that there is adequate stakeholder participation in all stages of the Environmental Impact Assessment and their concerns are fully taken into account during the assessment of impact. The ESIA shall define the mechanisms for stakeholder participation during the monitoring and auditing process followed through. The regulations require constant liaising with relevant authorities and consulting stakeholders, including local communities in case of any new development or changes regarding to implementation of your project plan or activities.</p>	<p>The legislation does not clearly indicate the need for a stakeholder engagement plan and a grievance redress mechanism. It also does not clearly define the information disclosure requirement.</p>	<p>OS 10 will apply for the project.</p>

OS1: Assessment and Management of Environmental and Social Risks and Impacts:

Principal sector legislation EMA 2004 and subsidiary legislation are not aligned with the new 2021 NEP policy. However, EMA is currently under review to include, among other things, climate change. Some of the gaps identified include the following:

NEP 2021 enumerates the following capacity-related challenges to E&S management in Tanzania:

- ✓ Inadequate coordination among sectors in environmental management;
- ✓ Low public awareness and knowledge of environmental management;
- ✓ Inadequate land-use planning at several Government levels;
- ✓ Inadequate enforcement and compliance with environmental regulations;
- ✓ Limited capacity in terms of human, financial, infrastructure, technology and tools; and

Recommendations for addressing the gap

In cases where gaps are found between the AfDB and the Government of Tanzania's Environmental and Social requirements, the African Development Bank Environmental and Social Operational Safeguard shall take precedence, especially on matters not explicitly provided in the National Legislation.

3.12 Institutional Framework for Environmental and Social Management

Administrative and institutional arrangements for environmental management in Tanzania that are relevant to various projects, including this proposed subproject, are stipulated in the Environmental Management Act (EMA) (Cap 191) of 2004. In the Act, NEMC and the Directorate of Environment (DoE) are the key institutions among the seven specified in the Act about the management of environmental issues. Part III, Section 13(1) of EMA (2004) states that the Minister responsible for the environment shall be overall in charge of all matters relating to the environment and shall in that respect be responsible for ensuring adequate implementation of the Act, regulations and other guidelines necessary for the promotion, protection and sustainable management of environment in Tanzania.

3.12.1 Overall Management Responsibility

The institutional arrangement for environmental management in Tanzania is well spelled out in the EMA (2004). There are seven (7) institutions mentioned by the act, of which the Minister responsible for the environment is overall in charge of the administration of all matters relating to the environment. The legal institutions for environmental management in the country include:

- Vice President's Office - Minister responsible for Environment;
- National Environment Management Council (NEMC); and
- Local Government Authorities

3.12.2 Summary of institutions and their responsibilities

The outline of the responsibilities of different institutions and personnel at national and local levels in implementing the Environmental Management and Monitoring Plans for the Restoration Interventions of the Mkondoa Catchment Ecosystems project is presented in Table 3.4.

Table 3- 3: Summary of institutions and their responsibilities

SN	Institution and personnel designation	Responsibilities	Description
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SN	Institution and personnel designation	Responsibilities	Description
1.	President's Office, Regional Administration and Local Government, Tanzania (PO-RALG)	<ul style="list-style-type: none"> To coordinate and monitor closely the implementation of the proposed Mkondoa sub basin project. 	PO-RALG shall oversee the implementation of the project through the Regional Secretariate and District Councils (Kilosa, Mvomero and Gairo). The officers from the three district council shall work closely with WRBWB during project implementation. Each District has two environmental officers and three social development officers. These district councils have offices within the respective districts where the project is implemented.
2.	Ministry of Water	<ul style="list-style-type: none"> Formulation of policies, plans and strategies towards development, promotion and Management of the water resources covering short, medium and long term. Setting standards and Monitoring of quality compliance in the Construction, Rehabilitation and Maintenance of infrastructures in water resources To promote and foster capacity building in the water sector Monitoring & Supervision of Construction, Rehabilitation and Maintenance of infrastructures Monitoring, supervision, and coordination of various activities of Agencies/Parastatals, Boards and Institutions which are under the Ministry of Water To issue guidance on the development and management of water resources in the country 	Ministry of Water is a mother Ministry of WRBWB. Its involvement in the project will be done through the WRBWB. At the Ministry there is an Environmental Department with more than 15 E&S staff. However, the Ministry officers will be conducting monitoring visits to the project area to make sure that the project is implemented in accordance with the National and AfDB requirements governing Environment and Social.
3.	WRBWB	<ul style="list-style-type: none"> To ensure that the proposed Mkondoa sub basin project is designed per existing national legislation, policies, guidelines and regulations: To coordinate and implement land donation 	WRBWB is implementing agency of the Project. The Board has handled several other projects under AfDB and the World Bank. It has enough capacity to oversee E&S issues during project implementation. The Board has more that 40 technical staff

SN	Institution and personnel designation	Responsibilities	Description
		<ul style="list-style-type: none"> To ensure that Contractors are implementing the proposed project in compliance with ESMP for the project and the conditions of EIA Certificate To ensure that environmental monitoring and internal auditing are carried out regularly. 	(including 10E&S staff) in three main offices, Morogoro, Dar es Salaam and Dodoma. There are also small offices at Kilosa (project area) and Mvuha.
4.	Minister responsible for Environment- Director of Environment	<ul style="list-style-type: none"> Responsible for matters relating to the environment and articulation of policy guidelines necessary for the promotion and sustainable management of the environment in Tanzania. Advise the Government on Legislative and other measures for the management of the environment. or the implementation of the relevant international agreements in the field of the environment 	This Ministry operates through National Environment Management Council (Council). It has offices at Dodoma. It does not have a direct role for this project apart from issuing EIA Certificate.
5.	the National Environment Management Council (NEMC)	<ul style="list-style-type: none"> To review the EIA reports To recommend for project approval to the Minister of Environment for issuance of EIA Certificates. To ensure EMA Act 2004 enforcement and compliance by development projects To monitor project environmental compliance 	NEMC is the custodian of all environmental matters in the country. During project implementation NEMC shall monitor the project to make sure it comply to the ESMP prepared for the project. The Head Quarter of NEMC is at Dodoma but it has Zonal Offices in Morogoro where the project is implemented. NEMC has enough and very experienced staff to oversee the project.
6.	The Districts Environmental and Social Experts DEMO	<ul style="list-style-type: none"> To provide information on the local situation, available social services, and socio-economic profiles for baseline data on Land use planning, health, and social and economic conditions of the project area. To ensure a conducive working environment for the road contractors during project implementation. To provide the required technical 	As described above, each district where the project is located have two experienced Environmental Officers and Social Development Officers. These officer shall work together with WRBWB officers to ensure compliance of the ESMP during project implementation. Their offices are located in respective districts.

SN	Institution and personnel designation	Responsibilities	Description
		<p>support & advice and participate in road surveys and design</p> <ul style="list-style-type: none"> • To participate in environment management and project monitoring during project implementation; • To provide expertise on HIV/AIDS prevention awareness and testing to the project workers and communities: • Enforcement of laws and regulations relevant to the Restoration Interventions of the Mkondoa Catchment Ecosystems project: • Ensure enforcement of the Environmental Management Act in their respective areas, • Advise the Environmental Management and committee on all environmental matters, • Prepare periodic reports on the state of the local environment, • Monitor the preparation, review and approval of EIAs and implementation of ESMP. 	
7.	Local Leaders (Ward and Mtaa leaders)	<ul style="list-style-type: none"> • To assist in the recruitment of project construction workers locally: • To assist in project monitoring as a watchdog for the environment, ensure the well-being of residents, and participate in project activities: • To ensure a workable environment for the contractor by providing reliable support and security to the Contractor: • To participate in HIV/AIDS awareness campaigns to be conducted by the project: • To provide a link between the developer (WRBWB) and the community by providing information on the local social, economic, and environmental situation • To view the socio-economic and 	<p>Ward, Mtaa and Village leaders are under District Councils. WRBWB shall work closely with these leaders during project implementation for Environmental and Social safeguards. Their main task will be to bridge communication between WRBWB officers and the Communities. Their offices are located in the respective project areas.</p>

SN	Institution and personnel designation	Responsibilities	Description
		<p>cultural value of the sites and the proposed river training, stabilization and construction of cattle troughs, dykes.</p> <ul style="list-style-type: none"> • To render any required assistance and advice on the implementation of the project • Ensure enforcement of the Environmental Management Act in their respective areas, • Advise the Environmental Management Committees on all environmental matters 	

Source: Consultant, 2025

CHAPTER FOUR

4 ENVIRONMENTAL AND SOCIAL BASELINE

4.1 Synopsis of Mkondoa River Catchment

4.1.1 Climate and Meteorology

The long-term 50-year average annual precipitation over the catchment is 841 mm, and there is a rainy season from March to May and November to February and a dry season from June to September. Little rain is received in the dry season of June to September. The mean daily temperature of the Catchment is estimated at 21.9 °C. Annual potential evapotranspiration in the catchment is 1297.9 mm (TMA 2025)

Table 4- 1: Longterm Monthly and Annual Precipitation in Mkondoa Catchment

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Precipitation (mm)	124.7	115	141	153.2	55.2	13.3	6.6	7.9	13.4	25.5	60.1	124.9	840.7
Temperature (°C)	23.3	23.4	23.2	22.2	21.2	19.6	19.1	19.8	21.2	22.6	23.4	23.5	21.9
PET (mm)	114	108	108.5	84.3	82.5	82.5	92.4	107.3	124.7	141.9	131.1	120.7	1297.9

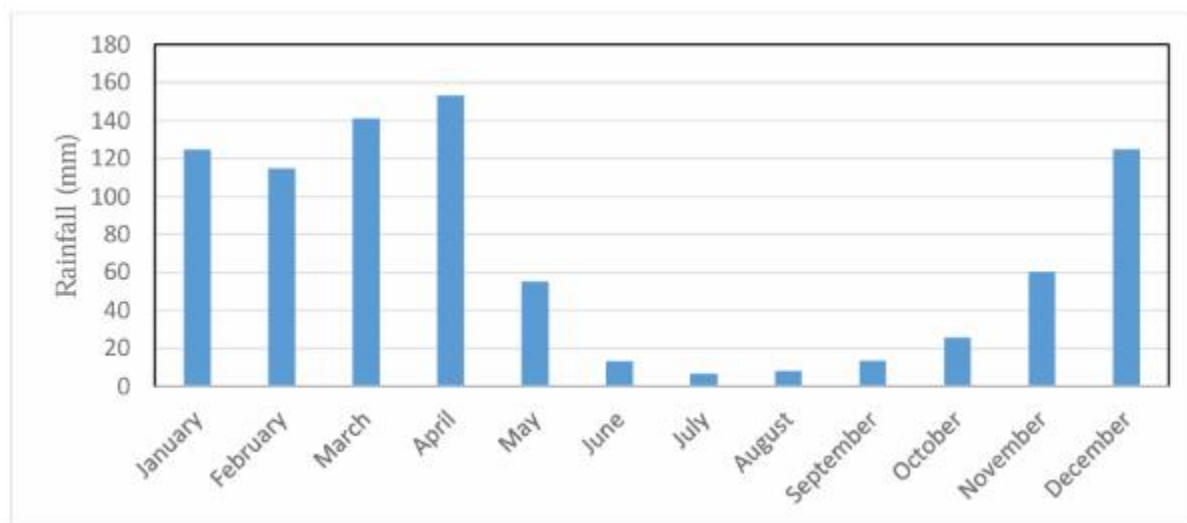


Figure 4- 1: Monthly and Annual Precipitation in Mkondoa Catchment

Source: TMA 2025

4.1.2 Soil and Geology

4.1.2.1 Soil

The Harmonized World Soil Database (HWSD, FAO 2012) was referenced to identify soil moisture units (SMU) for the catchment, using local soil surveys as the foundation. Soil textures have been assessed and categorized for both the top 30 cm and the lower 70 cm of soil across all catchments, as shown in Table 4- 2. According to the table, the most common soil texture in the catchment's topsoil is light clay, which accounts for 32% of the total. This is followed by heavy clay, which accounts for 20.4%. In the subsoil, the

predominant texture is sandy clay, which accounts for 37.2%, followed by loamy sand, which accounts for 25%.

Table 4- 2: Distribution of Soil Textures in Mkondoa Catchment (unit: km²)

	Clay (light)	Clay (heavy)	Sandy clay	Clay loam	Loam	Sandy loam	Sandy clay loam	Loamy sand	Sand	Un - identified
Top Soil Layer	2455	1250	433.4	134	231	2327	5093.2	0	379	645
%	19	9.7	3.3	1	1.8	18	39.3	0	2.9	5
Sub-Soil Layer	1643	7478	365.1	668	0	332	1759.7	2073	0	2160
%	10	45.4	2.2	4.1	0	2	10.7	12.6	0	13.1

4.1.2.2 Geology of Mkondoa Catchment

The Nguru, Ukaguru, and Rubeho Mountains in the Mkondoa Catchment comprise ancient crystalline Precambrian rocks uplifted over millions of years, with significant uplift occurring over the last 30 million years. During the early Holocene wet period, central areas were covered with large swamps and lakes, depositing fine-grained sediments. In recent years, river channels have shifted from a braided system to more confined channels, with some meanders becoming oxbows, indicating a change in stream dynamics. The Mkata River is now cutting deeper into its former floodplain. Along the northwestern edge of the Mgeta-Wami Plain, large alluvial fans have formed at the base of the Tanganyika Scrap, where perennial rivers drain the surrounding mountains. Limited information exists on the catchment's geology and soil development, but studies by JICA (2013) categorize its lithology into major classes, as shown in Figure 4- 2:

- **Archaean Basement & Proterozoic Rocks:** (These rocks date from ~540 to ~2,800 Ma to the present) Total Area of Outcrop is 8406 km² and can be divided into the following lithological groups:
 - ✓ Migmatite, granite and mafic dykes (Area: 249 km²) (gt).
 - ✓ Meta-igneous (A class of metamorphic rocks where the original rock was igneous) and sedimentary rocks (Area: 3780 km²) (Pa).
 - ✓ Composite metamorphic crust domain (Area: 4122 km²) (Ne).
 - ✓ Granulite, gneiss (high-grade regional metamorphic processes), and migmatite (Area: 255 km²) (Xs1).
- **Paleozoic Rocks:** Their ages may vary from Permian to Triassic. They consist of Conglomerate and tillite (sedimentary rock that consists of consolidated masses of unweathered blocks and glacial till, unsorted and unstratified rock material deposited by glacial ice). The Total Area of the Outcrop is 75 km².
- **Cenozoic Rocks:** These rocks are divided into two groups: Tertiary rocks and Quaternary rocks. Quaternary units contain Lacustrine sediments (sedimentary rock formations that formed at the bottom of ancient lakes) (R), Alluvial deposits, Fluvial deposits, Beach sand, and dunes (Sand dunes are common features of shoreline and desert environments). The total Area of the Outcrop is 4434 km².

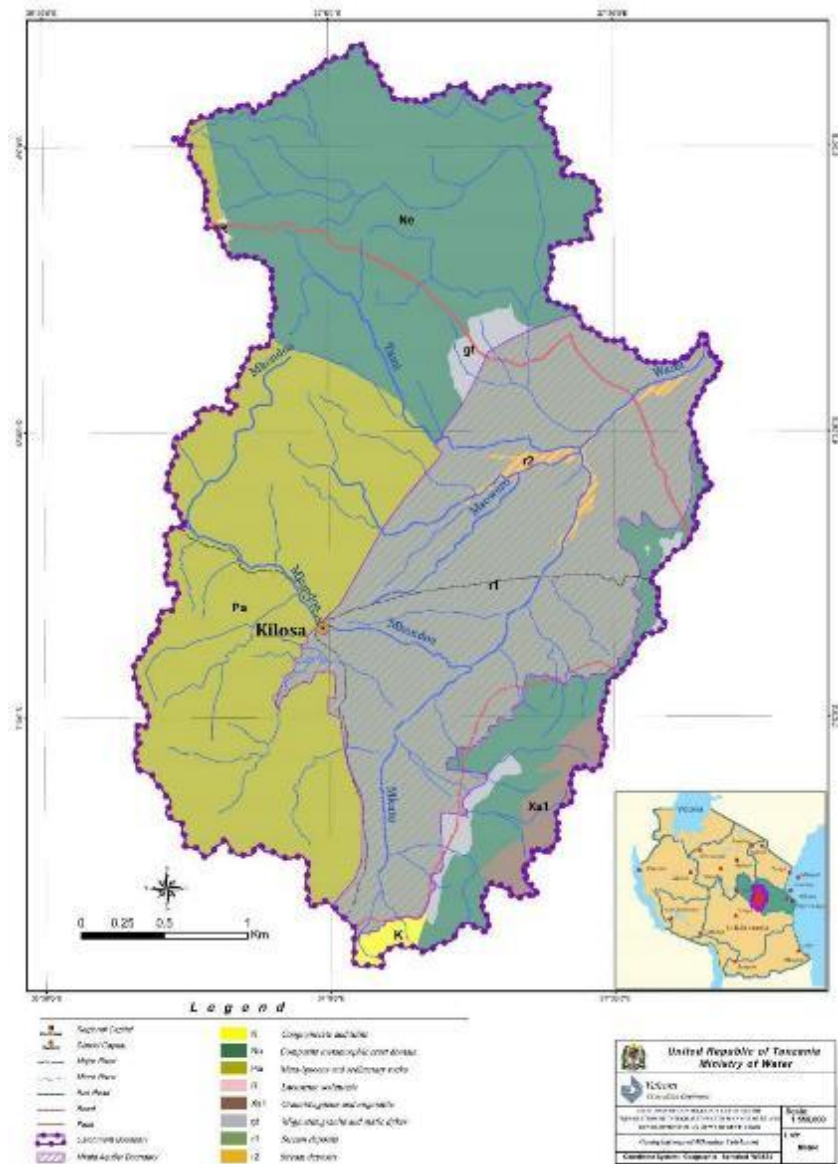


Figure 4- 2: Geology map of Mkondoa Catchment
Source: Geology and Mineral Map of Tanzania, 2004

4.1.3 Hydrogeology of Mkondoa Catchment

Mkata Plain is widely distributed along the Wami and Mkata Rivers and its tributaries within Mkondoa Catchment. This plain is one of the promising areas for groundwater development. The sediment in the basin is derived mainly from the western mountain ranges (DGIS, 1980). The coarse materials of gravel and very coarse sand were deposited and became relatively thick layers close to the western boundary of the catchment. In the central and eastern parts of the catchment, mainly fine-textured sediments, floodplain clays, loams, and clayey and loamy sands were deposited. In the western margin of the catchment, well-rounded coarse sands and gravels were deposited. The thickness of the sediment becomes thinner eastward from the Mkondoa River. The yields of wells are relatively high. The average yield of the existing wells is 240 liter/min. The hydraulic conductivity is evaluated as moderate (fine sand) to high (clean sand

and sand and gravel). In Mkata Plain, wells in the west of the plain have high yield, while wells in the eastern side have lower yield.

Monitoring boreholes are dug to record groundwater level fluctuations on a monthly basis. There is only 1 monitoring borehole in this catchment in quaternary aquifers. Considering the importance of groundwater in this Catchment, an additional 3 monitoring boreholes have been proposed to complement the monitoring activities.

4.1.4 River System

The Mkondoa River discharges into the Mkondoa Catchment near Kilosa. From there, it flows onto the Mkata Plain downstream of Kilosa, where it turns northeast and joins a tributary coming from the west-southwest. At this confluence, the river's name changes to the Wami River. Along its course, the river meets the Kisangata, Tami, and Mkundi Rivers, then continues northeast, crossing the National Road (B-127) at Dakawa village before flowing into the Wami Catchment. Notably, riverine floods occur along this river line every season, particularly during periods of significant rainfall, affecting settlements and farmlands, especially around Kilosa and Dakawa.

4.1.5 Land use

The land use of the Mkondoa Catchment is shown in Figure 4- 3. The figure has been created based on the map of the National Land Use Framework Plan (NLUFP) by JICA (2013) and the underlying data adverts to 2002. Table 4- 3 shows land cover type and area size in the catchment. Mainland cover types in the catchment are bush land (34.5%), woodland (23.7%), forest (14.4%), and agriculture (13.7%), according to Table 4- 3.

The river training and dyke construction shall be done within 60m of water bodies buffer zone, while project also entails the construction of four cattle troughs in the Villages of Mvumi (Kilosa DC), Makuyu (Gairo DC), Matala, and Makuyu (Mvomero DC) to promote sustainable livestock keeping along the Mkondoa Catchment. The village has developed a land use plan (see Appendix VII, VIII, IX and X) that designates specific sites for livestock keeping, ensuring that all project areas comply with local regulations. The four designated project areas have been voluntarily contributed by the villagers and are situated within approved livestock-keeping zones, with signs to indicate livestock keeping. The details of these approvals are as follows:

- a. Mvumi village, located in Kilosa District, received approval in 2012, with a ten-year validity period.
- b. Makuyu village in Mvomero District was approved in 2014, with a duration that extends until 2024; however, an extension is currently in process.
- c. Matala village in Kilosa District obtained approval in 2024, also for a ten-year duration.
- d. Makuyu village in Gairo District was approved in 2020, with an expiration date set for 2030.

Table 4- 3: Land Cover Areas in Mkondoa Catchment

No.	Cover Type	Area (km2)	% of Catchment Area
1	Agriculture	1769.7	13.7

No.	Cover Type	Area (km2)	% of Catchment Area
2	Built-up land	9.4	0.1
3	Bushland	4471.5	34.5
4	Forest	1872.3	14.4
5	Grassland	1214.4	9.4
6	Wetland (Forest)	28.0	0.2
7	Wetland(grassland)	528.3	4.1
8	Woodland	3066.4	23.7
	Total	12960.1	100

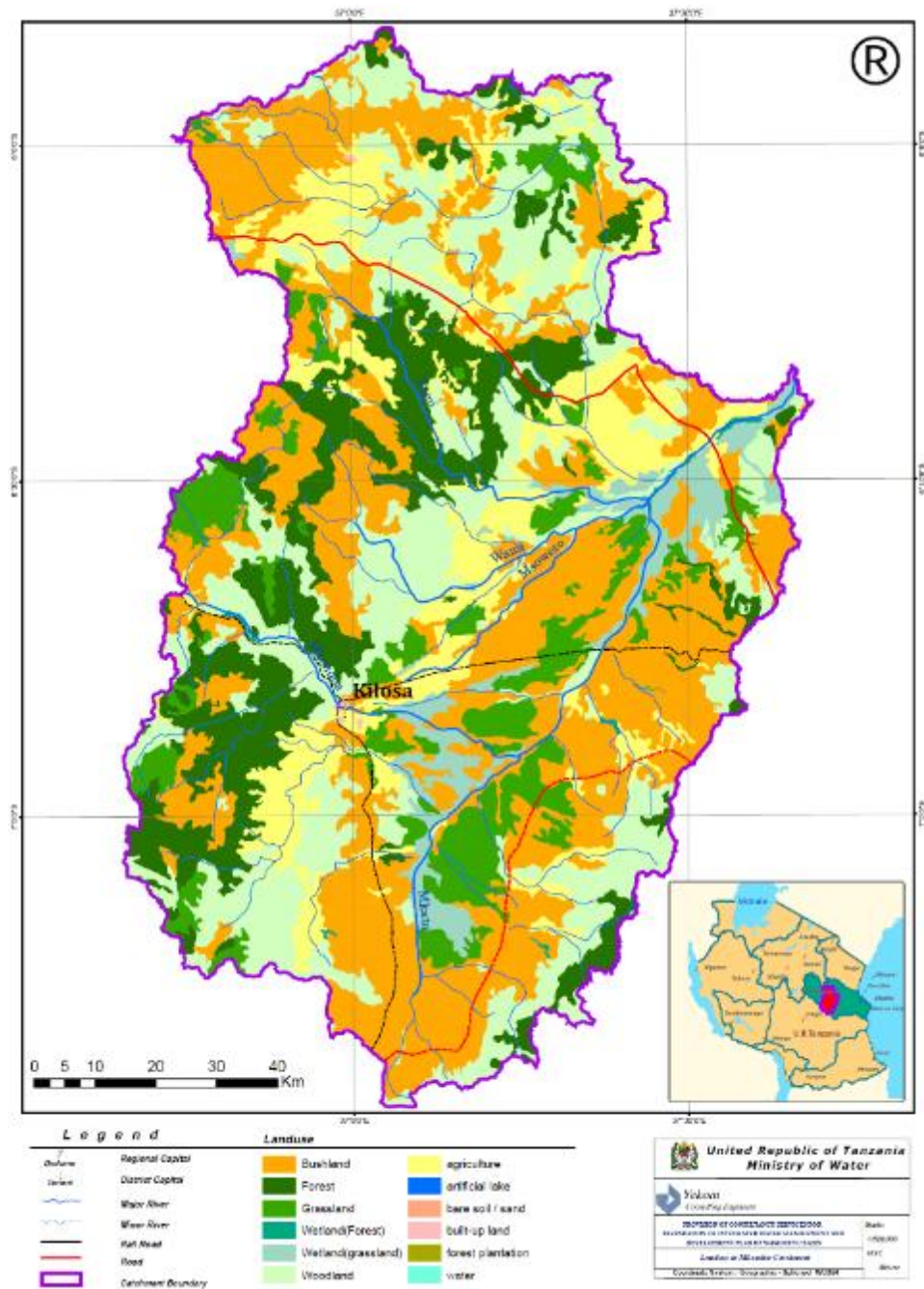


Figure 4- 3: Land use/Land cover of Mkondoa Catchment
Source: Yekom, 2023

4.1.6 Surface Water Availability

Surface water potential is assessed using a numerical simulation model at the Catchment level. In summary, during normal periods, the total mean annual surface runoff produced in the catchment is about 891 MCM. Mean long-term monthly flows in Mkondoa Catchment for normal, dry, and wet periods with a 10-year return period are presented in Table 4- 4. Accordingly, the total mean annual surface runoff produced in the catchment in dry periods is about 242 MCM, and during wet periods, it is about 1444 MCM.

Mean water flow from the Kinyasungwe catchment (upstream catchment) is assessed at 301 MCM annually. Accordingly, surface water availability in Mkondoa Catchment is estimated at 1192 MCM.

Table 4- 4: Mean Monthly Runoff produced in Mkondoa Catchment (m³/s)

Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Normal	35.64	28.51	34.45	79.36	66.41	26.02	13.31	9.98	7.72	6.65	9.27	21.62	28.27
Dry Period	9.74	7.72	9.39	21.62	18.06	7.13	3.56	2.73	2.14	1.78	2.49	5.94	7.67
Wet Period	57.74	46.33	55.84	128.66	107.63	42.17	21.62	16.16	12.47	10.81	14.97	35.05	45.8

4.1.7 Groundwater Resources

The catchment's groundwater development potential is calculated by summing up the aquifers inside the catchment's boundary. Regarding groundwater assessment, total groundwater resources are estimated at 240 MCM, of which 90 MCM is regarded as the sustainable yield that can be used to develop groundwater resources.

4.1.8 Current/Future Water Demands

This section presents the Sectoral Water Plans of Mkondoa Catchment, involving any gathered information on the Urban and Rural Water Supply, Irrigation, Livestock, Fisheries, Industrial, Mining, Hydropower, Wildlife and Tourism, Ecosystem Conservation and other Environmental water needs, and future projections. This sector-wise information portrays the current and future circumstances of water demands and plans in different horizons of 2016, 2020, 2025, and 2035.

4.1.8.1 Urban Water Supply

The current and future urban domestic water demands for the Districts in the Mkondoa Catchment are as shown in Table 4- 5. From the table, it can be noted that the highest demand for the urban population is estimated for Kilosa District. Current urban domestic water demand (2016) in the catchment is estimated to be 5.36 MCM, and the projected future urban water demand in 2035 is approximately 8.63 MCM.

Table 4- 5: Current and Future Urban Domestic Water Demand in Mkondoa Catchment (MCM)

Catchment	Region	Urban Areas (Towns, Municipals, District Centers)	2012	2016	2020	2025	2035
Mkondoa			4.85	5.36	5.94	6.74	8.63
	Morogoro		4.85	5.36	5.94	6.74	8.63
		Gairo	0.90	0.90	0.90	0.90	0.90
		Kilosa	3.72	4.21	4.76	5.53	7.35
		Mvomero	0.23	0.25	0.27	0.31	0.39

4.1.8.2 Rural Water Supply

The current and future rural domestic water demands for the Districts in the Mkondoa Catchment are as shown in Table 4- 6. Accordingly, the highest rural water demand is estimated for Kilosa District. Current rural domestic water demand (2016) in the catchment is estimated to be 11.88 MCM and the projected future urban water demand in 2035 is approximately 15.69 MCM.

Table 4- 6: Current and Future Rural Water Demand in Mkondoa Catchment (MCM)

Catchment	Region	District	2012	2016	2020	2025	2035
Mkondoa			11.22	11.88	12.60	13.57	15.69
	Morogoro		11.22	11.88	12.60	13.57	15.69
		Gairo	3.63	3.63	3.63	3.63	3.63
		Kilosa	5.76	6.29	6.87	7.64	9.37
		Mvomero	1.83	1.96	2.10	2.29	2.69

4.1.8.3 Irrigation Sector

In Mkondoa Catchment, most traditional schemes are characterized by poor infrastructure, poor water management, and low yields. The total area irrigated in Mkondoa Catchment was 9,299 ha in 2016, while the total number of irrigation schemes amounted to 27. Major crops in this catchment are paddy (62%) and maize (18%), as shown in Figure 4- 4. The irrigation crop water requirements were estimated based on FAO methodology according to FAO Paper Number 56, as presented in Table 4- 9. All irrigation schemes abstract water from rivers in this catchment. Msowero and Ilonga Rivers supply about 1195 ha of Kilosa District. Tami River is the source of water for 961 ha of some irrigation schemes in the Kilosa District. Mkundi River also provides demands of 661 ha of irrigated area. Wami/Mkata River irrigates 2439 ha, and 4042 ha is irrigated directly from Mkondoa/Wami River. Out of the latter area, the Dakawa Irrigation Scheme (2000 ha) is the most prominent scheme that abstracts water by a large-scale pump station from the Wami River.

Table 4- 8 This report presents the projected irrigated area in Mkondoa Catchment as a summation of all District plans without any allocation restrictions and coordination. Using these figures, the irrigation area in the catchment will increase to 20,370 ha in 2035. The future cropping pattern of each scheme is projected based on the cropping pattern growth ratio, considering the area's development potential (based on the irrigation scheme databank). Figure 4- 4 This shows the projected crop pattern in the Catchment for 2035. The net irrigation water requirement for the catchment is estimated at 74.5, 90.7, 110.3, and 134.2 MCM for 2020, 2025, 2030, and 2035, respectively.

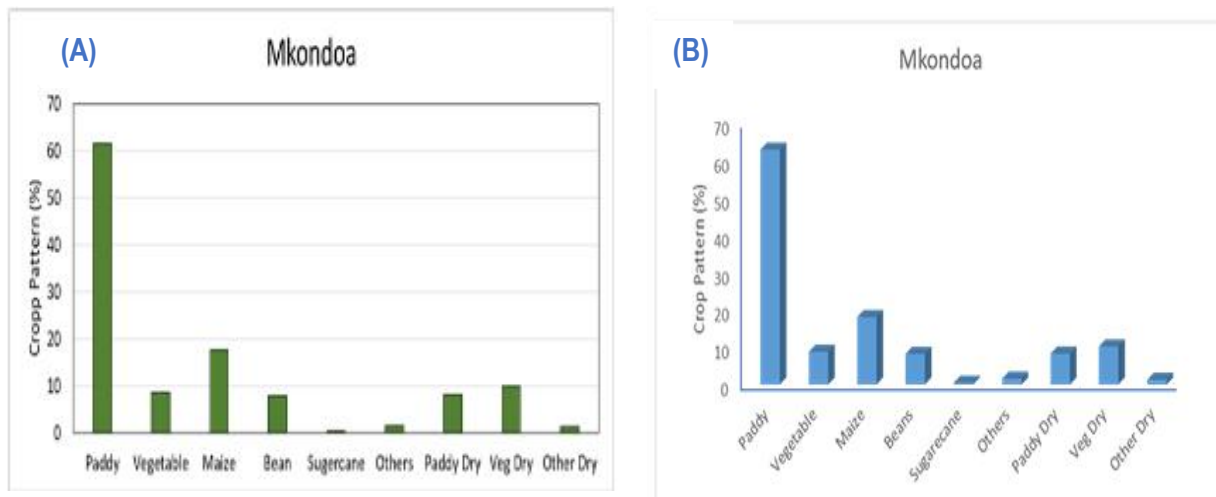


Figure 4- 4: Estimated Current Crop Pattern (A) in Mkondoa Catchment and for 2035 pattern (B)

Source: Yekom, 2023

Table 4- 7: Monthly Net/Gross Irrigation Water Requirement in Mkondoa Catchment

Parameter	Area (ha)	Monthly Water Requirement (MCM)												Annual Demand
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Net Requirement	9,299	7.3	14.9	9.9	2.5	6.3	5.0	1.9	2.0	3.1	3.7	2.8	1.8	61.3
Gross Requirement	9,299	27.9	55.4	36.2	9.6	22.9	19.0	7.2	5.6	8.5	10.1	7.8	6.3	216.4

Table 4- 8: Projected Irrigated Area in Mkondoa Catchment

Catchment	Annual Growth Rate (%)	Irrigated Area (ha)				
		2015	2020	2025	2030	2035
Mkondoa	4.00	9,299	11,313	13,763	16,744	20,370

Table 4- 9: Monthly Net/Gross Irrigation Water Requirement in Mkondoa Catchment in 2035

Parameter	Area (ha)	Monthly Net Water Requirement (MCM)												Annual Demand
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Net Requirement	20,370	16.1	32.8	21.7	5.5	13.8	10.9	4.1	4.4	6.9	8.1	6.2	3.9	134.3
Gross Requirement	20,370	32.7	67.3	44.9	11.3	28.9	22.2	8.4	12.5	20.0	23.3	18.0	9.2	298.6

Source: Yekom, 2023

4.1.8.4 Livestock Sector

The livestock population has been estimated based on data reported by districts in 2012 census publications and the ratio of the area of the district falling within each catchment to partition the population that lies in the catchment. According to the calculated livestock population of 2012 for each district and corresponding growth rates, the livestock population has been estimated. This population is used to draft the present livestock water demand. In the same manner, the livestock population has been projected for 2020, 2025, and 2035.

Total livestock populations in different horizons in Mkondoa Catchment are summarized in Table 4- 10. Using present and projected livestock population data and unit water consumption rates, current and future water demands for the livestock sector in the catchment are estimated. Livestock water demand calculation results are presented in Table 4- 11. Accordingly, annual livestock water demands in the Mkondoa Catchment are estimated at 6.6, 8.1, 9.9, and 12.7 MCM for the horizons of 2016, 2020, 2025, and 2035, respectively.

Table 4- 10: Summary of Baseline and Projected Livestock Population in Mkondoa Catchment

Species	Livestock Population					
	2012	2016	2020	2025	2030	2035
Cattle & Cow	315,445	412,288	500,957	609,223	705,958	779,435
Goat	214,980	279,714	339,491	412,301	477,144	526,806
Sheep	41,959	71,188	102,814	142,951	165,720	182,968
Pig	24,116	69,924	101,120	140,827	163,257	180,249
Poultry	535,444	725,952	881,837	1,023,480	1,157,836	1,278,828
Donkey	1,391	2,761	3,994	5,632	6,926	7,887
Mkondoa Total	1,133,336	1,561,827	1,930,211	2,334,414	2,676,842	2,956,172

Table 4- 11: Summary of Baseline and Projected Livestock Water Demands in Mkondoa Catchment

Species	Livestock Water Demand (m ³ /yr)					
	2012	2016	2020	2025	2030	2035
Cattle & Cow	4,147,788	5,421,173	6,587,078	8,010,671	9,282,643	10,248,787
Goat	471,128	612,994	743,994	903,558	1,045,661	1,154,495
Sheep	91,954	156,008	225,316	313,278	363,175	400,974
Pig	84,559	245,182	354,565	493,797	572,446	632,026
Poultry	75,099	101,819	123,683	143,549	162,393	179,363
Donkey	9,146	18,151	26,258	37,025	45,537	51,850
Mkondoa Total	4,879,675	6,555,327	8,060,894	9,901,878	11,471,854	12,667,496

Source: Yekom, 2023

Table 4- 12: Livestock data for the proposed cattle trough sites

Cattle trough site		Number of animals 2025
District	Village	
Kilosa	Mvumi	1500
Mvomero	Matale	1050
Mvomero	Makuyu	980
Gairo	Makuyu	1500

4.1.8.5 Fisheries and Aquaculture

Several factors determine the distribution of fish ponds; some of these are the availability of water and suitable land for fish farming, and awareness and motivation of the community in relation to the economic potentials in fish farming. Based on the information collected from the districts, it is estimated that a total of 79 fish ponds is in Mkondoa Catchment, with a total area of 1.5 ha. Most farmers own small ponds of an average size of 150 m², while there are some large-scale fish farms. The total annual water demand is estimated at 0.06 MCM for the current status and 0.086 MCM for the horizon of 2035.

4.1.8.6 Industrial Water Demand

The only significant industrial activity in the catchment is Food Products and Tobacco, with an annual production of 4,383 tons. Accordingly, the total water demand of industrial activities is estimated at 26,846 cubic meters in 2016. This sector's annual water demand is estimated at 35585, 50614, 71989, and 102392 MCM for the horizons of 2020, 2025, 2030, and 2035, respectively.

4.1.8.7 Mining Water Demand

According to the available data, the water requirement for mining activities in Mkondoa Catchment is estimated to be negligible for the current and future horizons.

4.1.8.8 Hydropower Plants

According to these studies, there is no existing or development plan of Hydropower generation in Mkondoa Catchment.

4.1.9 Demography

Population: As of the 2022 census, Kilosa District has an estimated population of 617,032, Mvomero District has 421,741, and Gairo District has 258,205. The population data, including the breakdown of females and males and the number of households along with the average household size, is presented in Table 4- 13 (NBS, 2022). It is noteworthy that the population distribution pattern shows a linear clustering along the main trunk roads.

Table 4- 13: Population Distribution, Sex, Sex Ratio, Number of Households and Average Household Size by Council

Region/Council	Population			Sex Ratio	Number of Households	Average Household Size
	Both Sexes	Male	Female			
Morogoro Region	3,197,104	1,579,869	1,617,235	98	829,888	3.9
Kilosa District	617,032	308,204	308,828	100	165,789	3.7
Mvomero District	421,741	210,834	210,907	100	110,940	3.8
Gairo District	258,205	125,509	132,696	95	53,818	4.8
Project Wards						
Mbumi	4,599	2,209	2,390	92	1,458	3.2
Dumila	47,237	22,815	24,422	93	13,130	3.6
Mvumi	23,895	12,136	11,759	103	6,241	3.8
Kasiki	5,317	2,568	2,749	93	1,523	3.5
Magole	11,752	5,734	6,018	95	3,313	3.5
Mvomero	25,654	12,675	12,979	98	6,897	3.7

Source: NBS, 2022

4.2 Baseline features at Specific Sites

4.2.1 River Training Sections

4.2.1.1 Kisangata River Section

The river section has an approximate width of 15 meters, with certain areas of its banks experiencing erosion due to heavy rainfall. Observations indicate that the curved sections of the banks contain deposits of sand and soil transported from upstream. Additionally, vegetation is present, including cultivated crops such as maize and sunflower, as well as Sorghum bicolor, alongside naturally occurring plants like Napier grass, rough cocklebur, guinea grass, country mallow, great leadtree, and African Bermuda grass, which enhance the landscape aesthetic. Fauna were also observed, such as frogs, grasshoppers, goats, and

sheep. On either side of the river in a section, there is a constructed wall measuring 30 meters in length that serves to channel irrigation water while also protecting the riverbanks. The closest resident is found approximately 100m.



Figure 4- 5: Kisangata river Training Site at Kisangata Village
Source: Field Visit Team, 2025

The main activities carried out in the floodplain are farming and livestock keeping in the form of pastoralism. The proposed dyke system limits the inundation of flood plain farming areas during floods up to 100-year flood. However, it prevents enriching the floodplain by the fine sediments coming from upstream. There is no settlement area within the legal buffer zone of the river and no resettlement is required. Since, livestock require to reach the main channel for drinking, appropriate measures will be considered to provide access to the main channel while keeping the dyke system and river banks unharmed.

4.2.1.2 Miyombo River Section

The current condition of the rivers significantly affects the local crops cultivated within the river buffer zone during periods of rainfall, as flooding is exacerbated by a decrease in riverbed elevation and the erosion of riverbanks. During rainfall events, residents, particularly students attending Zombo Secondary School across the river, face challenges in accessing essential social services, especially at the Changalawe Estate in Kigunga hamlet. The Miyombo River in this area has widened, and its meandering nature further contributes to riverbank erosion. The notable vegetation in this landscape includes banana plants, Napier grass, maize, and various types of grass. observed fauna include birds, lizards, bats, lizard, ants, dragonflies, and camillion

The main activities carried out in the floodplain are farming and livestock keeping in the form of pastoralism. The proposed dyke system limits the inundation of flood plain farming areas during floods up to 100-year flood. However, it prevents enriching the floodplain by the fine sediments coming from upstream. These is no settlement area within the legal buffer zone of the river and no resettlement is required. Since, livestock require to reach the main channel for drinking, appropriate measures will be considered to provide access to the main channel while keeping the dyke system and river banks unharmed.

4.2.1.3 Mkundi River River Section

The river section has widened to about 500 meters due to increased rainfall upstream. There is a buildup of sand and soil along the riverbanks, and the height of the banks has decreased as this accumulation continues. A notable feature in the area is the Dumila Bridge, which connects the Morogoro and Dodoma regions by crossing the river. Recently, it has been observed that people are collecting this sand. Most of

the surrounding land is cultivated with crops and vegetables, including maize, sunflowers, and a type of grass known as Napier grass. The closest settlement is situated at 400m from the river bank. Observed fauna included grasshoppers, frogs, butterflies, dragonflies, and lizards

Mkundi catchment is facing serious Land degradation environmental problems primarily driven by deforestation to give way to create room for afforestation for settlement and agricultural development activities. This in turn has led to reduced base flows during dry season thus changing Mkundi river to a seasonal river, increased incidences of soil erosion and high sediment loads during rainy season as well as declining water quality and quantity due to poor agricultural practices on the upstream. The catchment is also experiencing pollution of land and water sources, with the main pollutants being poor sanitation facilities and excessive use of agro-chemicals for pest and disease control within the watershed. Floods are a common occurrence in Mkundi catchment, especially on the downstream part of the watershed where its extensive floodplain supports a number of social economic activities. The frequent floods on the lower sections of catchment have

always caused significant socio-economic losses in productive agricultural farmland and damage to road infrastructure. The frequent flooding at the Dumila bridge has often threatened lives and livelihoods in the surrounding area. The Morogoro - Dodoma Road (B-127) crosses the Mkundi river at Dumila as indicated in Figure 1. The B-127 Road is one of the key trunk highways in Tanzania that links almost all northern parts of the country to Dar es Salaam as well neighboring countries in the northern corridor e.g. Rwanda, Burundi and Uganda.



Figure 4- 6: Mkundi River training site at Dumila
Source: Field Visit Team, 2025

4.2.2 Dykes Sections

There are two proposed sites along the Mkondoa River at Kilosa. Site 1 is for Dyke Rehabilitation and site 2 is for proposed new dyke construction, both sites drain an area of 18178.9km² the site is in Kilosa District in Morogoro region (Tanzania)

4.2.2.1 Existing Dyke Rehabilitation Site

The dyke is located on the left-hand side of the Mkondoa River, following the water flow. It is 1.1 km long, running from the railway bridge at Mbuni Village. Both sides of the access road of the dyke have vegetation

cover, which includes naturally occurring, planted, such as *Julbernardia globiflora*, *Pterocarpus angolensis*, *Syzygium quineense*, *Tamarindus indica*, as well as *Albizia*, *Saraca asoca*, *Tectona grandis*, *Terminalia*, and various *Diospyros species*. Observed fauna includes birds, ants, lizards, snails, bats, butterflies, and monkey. Currently, the dyke has suffered damage (erosion) due to excessive seasonal rains and human activities, such as livestock grazing See Figure 4- 7.



Figure 4- 7: Current condition of the Existing Mkondoa Dyke
Source: Field Visit Team, 2025

4.2.2.2 Description of the Proposed New Dyke site

The dyke will be constructed within the existing Mkondoa river embankment, spanning approximately 0.540 kilometers. The project involves elevating and stabilizing the embankment to a total height of 4 meters. Currently, the site is predominantly covered with grassland, shrubs, and trees. Observed fauna include frogs, grasshoppers, lizards, and butterflies. The embankment has experienced erosion, which has led to the diversion of the river channel.



Figure 4- 8: Site for the proposed Dyke at Mkondoa River
Source: Field Visit Team, 2025

4.2.3 Cattle Troughs Site

4.2.3.1 Mvumi Cattle Troughs Site – KILOSA DC

The site spans 2 acres at an altitude of 433 meters, located at latitude -6.573031 and longitude 37.156068. It is situated approximately 800 meters from the Mvumi river channel, bordered by a street road to the north and west, and bare land to the east and south. With nearby buildings located 120 meters away, the area features a gentle slope that facilitates easy access for livestock. The soil consists of red clay and sand, and the site remains undeveloped, lacking public utilities.

The level ground provides a stable base for the trough, which will be made from durable, weather-resistant materials to ensure longevity. A compacted earth pad will further minimize mud accumulation, while plants such as Napier grass, *Pterocarpus angolensis*, and *Tamarindus indica* are also considered. Observed fauna include butterflies, birds, grasshoppers, and lizards

4.2.3.2 Makuyu Cattle Troughs Site - GAIRO DC

The site covers 2 acres at an elevation of 961 meters. It is surrounded by farmland to the north, south, and east, with a seasonal stream located to the west. With buildings situated 50 meters away, the area has a flat landscape that facilitates easy access for livestock. The soil consists of a mixture of red clay and sand, and the site is currently used as pastureland, lacking public utilities.

The even terrain provides a solid foundation for the trough, which will be constructed from sturdy, weather-resistant materials to ensure durability. A compacted earth base will help reduce mud build-up, while plant species such as *Tamarindus indica* and *Albizia*, along with *Saraca asoca*, are present in the area. Observed fauna include grasshopper, lizard and birds

4.2.3.3 Makuyu Cattle Troughs Site – MVOMERO DC

The site spans 2 acres, situated at an elevation of 486 meters with coordinates at latitude 6.309898 and longitude 37.354286. It is located 250 meters from the Mkundi River and features a slight slope in its topography. The surrounding land is primarily undeveloped, with a neighboring village farm located 60 meters to the north, while the east, south, and west are bordered by untamed land. The soil composition comprises clay and soft stone, supporting existing land use for pasture. The land cover is characterized by shrubs and grasses, including species such as *Julbernardia globiflora* and various *Diospyros* species. Observed fauna include birds, butterfly, ants, and bees. Existing facilities at the site include one building, a road, an electric line, and a dip tank for livestock management, with a total of 120m dips available for use.

4.2.3.4 Matale Cattle Troughs Site – MVOMERO DC

The proposed cattle trough site covers an area of 9800 m², located at latitude -6.208962 and longitude 37.336941, with an elevation of 665 meters above sea level. The topography features a slight slope that aids in drainage, while the soil comprises clay and soft stone, providing an adequate foundation and moisture retention. Bordered by undeveloped land in all directions, the site is isolated from human activities, enhancing its suitability for pasture, which is the existing land use. This location is ideal for establishing a cattle trough, supporting sustainable livestock management in the area. Notable flora include shrubs and wooden vegetation, while observed fauna include birds, butterflies, lizards, termites, and ants

4.3 Baseline Measurements

4.3.1 Dust (Particulate Matter) concentration in terms of PM₁₀

The methodology for dust measurements is provided in the **section 1.6.4.2**. The measured particulate matter (PM₁₀) concentrations associated with the project sites were within detectable levels in the ambient air. The average PM₁₀ concentrations recorded at sampling locations ranged from 0.01 to 0.03 mg/m³ (Table 4- 14). The measured PM₁₀ values were below the corresponding limits prescribed by TBS and WHO AQG 2006 for ambient air quality.

Table 4- 14: Results of dust measurements

Sampling Point	Description	Average PM ₁₀ (mg/m ³)
Point 1	30m from Existing Mkondoa Dyke Site	0.01
Point 2	30m from New Dyke Site	0.02
Point 3	30m from Mvumi Cattle Trough Site	0.03
Point 4	30m from Matale Cattle Trough Site	0.02
Point 5	30m from Makuyu Cattle Trough Site	0.02
Point 6	30m from Makuyu 2 Cattle Trough Site	0.02
Point 7	30 from where the river training will be done at the Mkundi River	0.01
Point 8	30 from where the river training will be done at the Kisangata River	0.01
Point 9	30 from where the river training will be done at the Miyombo River	0.02
TBS LIMITS [TZS845:2005]		0.06-0.09
WHO AQG 2006		0.05

Source: Site visit and measurement, 2025

Some dust abatement strategies and/or technology should be enforced with special attention to mitigate the effects associated with generated particulates while ensuring prescribed levels are met. These include:

- Employing dust suppression techniques, such as applying water or non-toxic chemicals, to minimize dust from vehicle movements and dykes' stabilization during dry and/or windy weather. Dusty areas such as dykes' sites, internal access roads and bare area with loose soils should be suppressed down and compacted to reduce dust generation;
- Stockpiled materials should be covered or stored properly;
- Planting of trees around the project area as Trees also mitigate the greenhouse gas effect by trapping heat, reducing ground level ozone levels, and releasing life-giving oxygen
- Provision of PPE to workers and their use should be made mandatory in dust-prone areas;

- Implementing an Environmental Monitoring Program for the sites by monitoring the dust levels of dust (in terms of PM₁₀) on a quarterly basis (after every three months).

4.3.2 Ambient Pollutant Gases Emissions

The methodology for air quality measurements is provided in the **section 1.6.4.3**. Scanty levels of Pollutant gases were detected at some locations with CO₂ (Carbon dioxide), CO (Carbon monoxide), NO₂ (Nitrogen dioxide), SO₂ (Sulfur dioxide), CH₄ (Methane), and H₂S (Hydrogen sulfide). Methane (CH₄) and Hydrogen sulfide (H₂S) levels were measured across the sampling locations, despite not being regulated by either local or international standards; the recorded levels for unregulated CH₄ have no significant effects on the environment and human health. Levels of legislated ambient pollutant gases, i.e. CO (Carbon monoxide), NO₂ (Nitrogen dioxide), SO₂ (Sulfur dioxide), and CO₂ (Carbon dioxide), were found to be within their corresponding limits prescribed by TBS for ambient air quality as displayed in Table 4- 15 below

Table 4- 15: Results of air quality measurements

Sampling Point	Description	CO ₂	CO	NO ₂	SO ₂	CH ₄	H ₂ S
		ppm	mg/m ³	ppm	ppm	mg/m ³	mg/m ³
Point 1	30m from Existing Mkondoa Dyke Site	321	0.2	0.00	0.00	0.00	0.00
Point 2	30m from New Dyke Site	301	0.2	0.00	0.00	0.00	0.00
Point 3	30m from Mvumi Cattle Trough Site	322	0.1	0.00	0.01	0.00	0.00
Point 4	30m from Matale Cattle Trough Site	313	0.2	0.00	0.00	0.00	0.00
Point 5	30m from Makuyu Cattle Trough Site	321	0.2	0.00	0.00	0.00	0.00
Point 6	30m from Makuyu 2 Cattle Trough Site	328	0.2	0.00	0.00	0.00	0.00
Point 7	30 from where the river training will be done at the Mkundi River	322	0.1	0.00	0.00	0.00	0.00
Point 8	30 from where the river training will be done at the Kisangata River	328	0.2	0.00	0.01	0.00	0.00
Point 9	30 from where the river training will be done at the Miyombo River	326	0.2	0.00	0.00	0.00	0.00
TBS Limits		-	15	0.12	0.12	-	0.1

Source: Site visit measurements, 2025

Based on the results, the following mitigation measures should be employed in order to reduce the emitted pollutant gases to an unacceptable level:

- The use of good-quality fuels for trucks and machinery
- Maintaining stable operating conditions, i.e., minimizing emissions by maintaining proper air and fuel ratio
- Ensure appropriate uses of machinery as per manufacturer's guidelines

4.3.3 Noise Level

The sampling methodology is provided in the **section 1.6.4.4**. The noted sources of noise at the site during measurement were considered to include wind, birds, insects, and Vehicles. As shown in Table 4- 16. The hourly equivalent sound level recorded at all assessed locations was within the local standard (i.e., TBS, 2001): EMDC 6(1733), Limits for Environmental Noise. The average noise levels ranged from 40dB (A) to 45dB (A) for daytime and 30 dB (A) to 34 dB(A) during nighttime.

Table 4- 16: Noise Levels Recorded at the Project Sites

Sampling Point	Description	Average Noise Levels Measured on-site in dBA	
		Daytime Noise	Night Time Noise
Point 1	30m from Existing Mkondoa Dyke Site	40	34
Point 2	30m from New Dyke Site	44	31
Point 3	30m from Mvumi Cattle Trough Site	45	30
Point 4	30m from Matale Cattle Trough Site	40	33
Point 5	30m from Makuyu Cattle Trough Site	42	33
Point 6	30m from Makuyu 2 Cattle Trough Site	40	30
Point 7	30 from where the river training will be done at the Mkundi River	40	33
Point 8	30 from where the river training will be done at the Kisangata River	42	33
Point 9	30 from where the river training will be done at the Miyombo River	40	33
TBS-NES Limits		45	35

Source: Site Visit Measurements, 2025

Based on the measured noise levels, the following abatement and control strategies are recommended as mitigation measures for laborers and nearby locals in noisy zones to avoid sound level-induced hearing damage:

- Check the performance of the major equipment periodically, in order to troubleshooting and fix the problem by lubricating, repairing, etc. These include regular servicing and proper lubrication and maintenance of noisy machines to reduce noise levels; maintenance should consider of the following:
 - *replacement or adjustment of worn or loose parts;*
 - *balancing of unbalanced equipment;*
 - *lubrication of moving parts;*
 - *use of properly shaped and sharpened cutting tools.*
- Use of machinery or equipment of superior technology as a noise minimization strategy;

- Reduce the noise exposure level of the laborers by employing part-time operators or altering their activity zones between safe and unsafe acoustical zones;
- Installation of barriers between noise sources and receivers can attenuate the noise levels
- Encourage the use of noise protectors i.e. earplugs where necessary however this should be done with carefully because workers if not done properly as workers would not be able to communicate; in noise; that they will not be able to hear warning signals; and they would not hear conversation; 'when wearing protector devices, hence appropriate trainings should be done including the use of signals before applying such methodology.

4.3.4 Ground Vibration

The sampling methodology is provided in the **section 1.6.4.5**. As detailed in the Table 4- 17 Below, all nine assessed locations had the ground vibration levels below the TBS limit (TZS 1471:2011) of 5mm/s. The mean ground vibration level recorded in both areas was below the limits. There was no significance difference in vibration levels; hence, it is obvious that other natural and anthropogenic activities mainly contributed to vibration in the assessed areas. The detected ground vibration was assumed to be originating from vehicle and human movements that were moving near the measuring points.

Table 4- 17: Summary of the Ground Vibration Levels at different locations

Sampling Point	Description	Vibrations (mm/s)
Point 1	30m from Existing Mkondoa Dyke Site	0.3
Point 2	30m from New Dyke Site	0.4
Point 3	30m from Mvumi Cattle Trough Site	0.4
Point 4	30m from Matale Cattle Trough Site	0.3
Point 5	30m from Makuyu Cattle Trough Site	0.3
Point 6	30m from Makuyu 2 Cattle Trough Site	0.3
Point 7	30 from where the river training will be done at the Mkundi River	0.2
Point 8	30 from where the river training will be done at the Kisangata River	0.3
Point 9	30 from where the river training will be done at the Miyombo River	0.4
TBS LIMIT (TZS 1471:2011)		5

Source: Site visit measurements, 2025

4.3.5 Water Samples Analysis

The water samples were analyzed at the Morogoro Water Quality Laboratory (MGWQL) located in the Morogoro Region. The results indicate that the majority of the physicochemical parameters of the water samples-such as pH, temperature, color, turbidity, nitrate (NO₃), phosphate, Total Suspended Solids (TSS), manganese, iron, chloride, and Total Dissolved Solids (TDS)-fall within acceptable limits for surface water quality. However, the samples collected from the Mvumi River and Mkundi River exhibited elevated

concentrations of iron and manganese. In contrast, the water sample from the Miyombo River complies with the Tanzanian standards for receiving water, meeting the criteria outlined for Category 1. Category 1 water is deemed suitable for various applications, including processing for drinking water supplies, swimming pools, food and beverage production, and pharmaceutical manufacturing, as well as for industries that require a comparable quality of water. (Refer to Appendix IV for further details).

It is recommended that:

- Human activities be restricted near or along the water sources to reduce the concentration of the elevated parameters.
- Regular water quality monitoring be conducted at least quarterly throughout the year.

CHAPTER FIVE

5 STAKEHOLDERS CONSULTATIONS AND PUBLIC INVOLVEMENT

5.1 Objectives of the Public Consultation

The overall goal of the consultation process was to disseminate project information and to incorporate the views of stakeholders in the planning of the proposed project. Public consultation during the ESIA was to ensure that the views, interests, and concerns of project stakeholders are taken into account in the assessment of the potential impacts of the project as well as in project decisions, particularly in the design of mitigation measures. In addition, the public consultation aimed to improve communication between the project and impacted or interested groups. The consultation was of critical importance in gaining insights into the key environmental and social issues and concerns of communities and other stakeholders and in aiding the development of potential strategies for addressing these impacts.

In the public consultation process, different categories of Interested and Affected Parties (IAPs) were identified and consulted. Simple methods such as networks and interviews were used to identify stakeholders. From one stakeholder, the team was connected to another and another stakeholder in a chain-like manner.

Stakeholders Engagement Plan (SEP) which includes the Grievances Redress Mechanism (GRM) have been prepared for the project to guide WRBWB and contractor on stakeholders consultation and management of grievances during implementation and operation of the project.

The sampling of stakeholders was done as follows:

- For institutions and LGAs, the consultant directly approached management, which provided the respondent(s) and any relevant literature.
- For the general community in the site neighborhood, the consultant, in collaboration with LGA, called a general meeting at the respective village/ward office.

Stakeholders Identification represent the organizations and individuals who may be directly or indirectly (positively or negatively) affected by the Project or who may influence how the Project is implemented. Stakeholders identified for inclusion in activities that meet one of the following criteria:

- iv. Have an influence/interest in the Project,
- v. Would potentially be impacted by the Project or have an influence on the Project (negatively or positively); or
- vi. Their roles and responsibilities

Table below shows the stakeholders consulted and their roles and responsibilities;

Table 5- 1: Stakeholders consulted and their responsibilities

Government					
Stakeholder	Roles and responsabilités	Level of Involvement	Interest	PAP/ OIP	Project Component

Government					
Stakeholder	Roles and responsabilités	Level of Involvement	Interest	PAP/ OIP	Project Component
Ministry of Water	Oversee project implementation, provides technical assistance, capacity building and report to the Ministry of Finance	Lead implementer	High	OIP	1,2 &3
Ministry of Finance	Supports fund disbursements and broad advice on financial and economic issues for project implementation	Enabler in controlling of disbursement of project and financial management of the project	High	OIP	1,2 &3
Ministry of Community Development, Gender, Elderly and Children	Promotion of gender inclusion during project implementation Enforcement of policies and Acts	Support project implementation	Low	OIP	1,2 &3
Government Agencies					
Wami/Ruvu Basin Water Board	Coordinating implementation of project activities, preparation of project documents, monitoring and evaluation, report to the Ministry of Water, AfDB and making relevant data to stakeholders.	Lead implementing agencies under the Ministry of Water	High	OIP	1,2 &3
National Environmental Management Committee (NEMC)	NEMC will take the leading role as technical advisory, coordinating and regulatory agency responsible for the environmental management and compliance issues	Enable in implementation of project activities. Medium	Medium	OIP	1,2 &3

Government					
Stakeholder	Roles and responsabilités	Level of Involvement	Interest	PAP/ OIP	Project Component
	which aim to safeguard environment and social.				
TMA	Will ensure standardization and coordination of meteorological activities eg installation of climate monitoring stations	Enabler in project activities implementation	High	OIP	1
Rural Water Supply and Sanitation	Supports management and ensure sustainability of water supply system for constructed cattle troughs	Enabler in project activities implementation	Medium	OIP	1,2 &3
Tanzania Forest Services	Supports conservation activities through provision of trees seeds, conduct training to local communities on procedures and techniques of nursery establishment and management	Enabler in project activities implementation.	Medium	OIP	2 &3
Tanzania National Road Development Agency (TANROAD) and Tanzania Rural Roads Agency (TARURA):	Provides technical advice during river training works and dyke construction.	Enabler in project activities implementation	High	OIP	2&3

Government						
Stakeholder	Roles and responsibilities	Level of Involvement	Interest	PAP/ OIP	Project Component	
Community Based Water Supply Organizations (CBWSOs):	Responsible for the provision of technical support, maintenance of water infrastructure and ensure sustainability of the project	Enabler in project activities implementation	Medium	OIP	2&3	
Water User Association (WUAs)	Provide awareness on water resources management and conservation to local communities, managing water use conflicts and ensure proper use of water infrastructures for project sustainability	Enabler in project activities implementation	High	OIP	2&3	
Local Government Authorities						
The Regional Level (RS):	Responsible for monitoring and evaluation, provision of technical backstopping and capacity building to LGAs project implementation team.	Enabler in implementation of project activities.	High	OIP	1,2 &3	
Respective LGA's: (Kilosa, Mvomero and Gairo DC)	Responsible for leading and coordinating project implementation activities within the area of their jurisdiction towards the achievement of intended objectives. They are also responsible for the engagement of diverse	Enabler in implementation of project activities.	High	OIP	1,2 &3	

Government					
Stakeholder	Roles and responsabilités	Level of Involvement	Interest	PAP/ OIP	Project Component
	stakeholders.				
Local leaders (village and ward, Councilor's and Tarafa leaders)	Responsible for village and Ward administration including land administration, Organize villagers to participate in process and meetings, Provide local knowledge, Responsibilities for facilitating land acquisition process	General administration and coordination of socio-economic development at ward levels. Mobilization of local communities	High	OIP	1,2 &3
Communities					
General communities residing along the Project area	Project identifications eg. identification of sites Provide local knowledge and cultural insight Participate in development of ESIA/ESMPs	They have a big stake in project implementation	High	PAP	1,2 &3
Landowners	Provide land for project implementation	They have a big stake in project implementation	High	PAPs	2 &3
Livestock keepers	Participate in project management and operation, Provide local knowledge and their experience during construction of cattle troughs	They have a big stake in project implementation	High	PAPS	1,2&3
Farmers and fish farming groups	Ensure sustainability of livelihood restoration activities,	They have a big stake in project implementation	High	PAPS	1,2&3

Government					
Stakeholder	Roles and responsabilités	Level of Involvement	Interest	PAP/ OIP	Project Component
	Provide local knowledge on best agriculture practices and fish farming methods, Participating in project implementation,				
Vulnerable Persons: Vulnerable people in the study area include but are not limited to: <ul style="list-style-type: none"> - Elderly people (over age of 65 yrs.) - Women and girls Unemployed male youth/adult men - Orphans or women headed households - Children and Youths - Persons with disabilities - People living with prolonged diseases for instance HIV/AIDs 	Vulnerable groups may be affected by the Project activities by virtue of their physical disability, social or economic standing, limited education, lack of employment. Appropriate engagement practices and tools will be adopted to ensure adequate access to information and participation.	They have a rare stake in project implementation	Medium	PAPs	2 &3
Non- Government Organization					
Sustainable Agriculture Tanzania (SAT), AGRIWEZESHA and SHAHIDI WA MAJI	Supports conservation, farming activities, capacity building, advocacy and experience sharing on project	Project partners and participants in project activities	High	OIP	1,2 &3

Government					
Stakeholder	Roles and responsabilités	Level of Involvement	Interest	PAP/ OIP	Project Component
	implementation activities				
Private Sectors:					
Contractors and Consultants:	Provider of various services supporting project implementation	Enabler in project activities implementation.	High	OIP	1,2 &3
Sugar plantation and production company i.e MKULAZI HOLDING:	Support conservation activities through Cooperate Social Responsibilities.	Support project implementation	Medium	OIP	1,2 &3
Association of irrigation farmers: i.e UWAWAKUDA:	Support conservation activities and provide demo plots for tree nurseries	Support project implementation	Medium	OIP	1,2 &3
Development Partner					
African Development Bank (AfDB)	Through Climate Action Window ensure fund disbursement and capacity building for implementation of project activities	They have a big stake in project implementation	High	OIP	1,2 &3
Media	Responsible for information disseminating and raising awareness.	enhances stakeholder engagement and project outcomes	Medium	IOP	1,2&3

5.2 Stakeholders' Response and Issues Raised

In general, stakeholders seem positive about the proposed project. They acknowledge the expected contribution of the proposed restoration interventions for the degraded catchment ecosystems along the Mkondoa catchment to the social and economic status of employees and the mitigation of flooding impacts. They also acknowledge the economic benefits of new direct and indirect business ventures expected to be created by the project. Minutes of consultation meetings and their signatures are presented in Appendix V.

Table 5- 2: Issues Raised by Stakeholders' Consultations

S/N	Date & Location	Name	Institution	Issue/Recommendation	Remarks
1	17-03-2025 <i>Sokoine University of Agriculture</i>	Dr Emmanuel Ndetto (+255673271873)	Sokoine University of Agriculture	Higher learning institutions should be involved in the conservation of water resources and intervention in climate change issued	Noted
2	17-03-2025 <i>TANROADS Morogoro Office</i>	Eng. Batista Nyengo (+255787667450)	TANROADS	Construction of flood control facilities to regulate floods during high flow, such as; Intensive river training, strengthening river banks, and Dam construction	The recently affected bridges are in Kiegeya and Mkundi Bridges along Dodoma road. TANROAD in the project is the main stakeholder largely affected by climate change impacts
3	17-03-2025 <i>RUWASA Offices</i>	Eng. Heka Bulugu (+255653900176)	RUWASA	Basin Water Board to conserve water sources to ensure reliable water supply and invest in construction dams to store water during rain for consumption in the dry season	Invest in storage facility to adapt climate change
4	17-03-2025 <i>TARURA - Morogoro Offices</i>	Regional Manager Eng. Emmanuel Ndyamkama (+255754770794)	TARURA	River training work should be done on all challenging segments of the Rivers, coupled with the provision of alternative income-generating activities to communities and demarcation of the rivers.	TARURA is among potential stakeholder who is highly affected by flood impact in the project area
5	18-03-2025 <i>DAS Office</i>	Said Nguya (+255742102913)	DAS (On Behalf of District Commissioner)	The Mkondoa Project will be based only on the Mkundi River. The Mbulumi and Diwale Rivers will have separate concerns in the future.	noted

S/N	Date & Location	Name	Institution	Issue/Recommendation	Remarks
6	18-03-2025 Mvomero DC Office	Eng. Maimuna Makutika (+255715683298)	Mvomero DC	<p>i. Awareness on water and environmental conservation should be provided to upstream users in order to reduce the amount of sediment generated.</p> <p>ii. Request support in preparation of VLUP for Kambala village, as there are a lot of livestock keepers and normally water their herds from the Mkundi river</p> <p>iii. Propose drilling of a borehole and construction of a cattle trough at Kambala village</p>	<p>Notable challenges upstream of Mkundi river are;</p> <p>i.Alluvial mining upstream of Mkundi river at Matare village</p> <p>ii.Cultivation within 60 m buffer at Dumila village</p>
7	18-03-2025 UWAWAKUDA Office	Mr.Wilbard Ulomi (Manager) (+255712766726)	UWAWAKUDA - Mvomero DC	It is proposed to have a small dam at Kwa Mhuji village for feeding water to livestock so as to prevent their movement into the Wami River and to the UWAWAKUDA farm	UWAWAKUDA is large irrigation scheme which affected by periodic floods from the Mkundi and Wami River.Through the Mkondoa Catchment interventions, the challenges will be mitigated
8	18-03-2025 Mkulazi Holding Company Office	Eng. Iddi Makung'uto (+255783240012)	Mkulazi Holdings Company LTD	The proposed project aims to mitigate the problems experienced in both the dry and rainy seasons.	There is Low amount of water from aquifer as per geophysical studies hence no alternative water sources
9	18-03-2025 Kilosa DC – DED Office	Zakia Fande (Ag. DED) (+255719625001)	Kilosa District	<p>Floodwater from the Mkondoa River affects habitats in Kilosa.</p> <p>The river training and bank stabilization are required</p>	Livestock keepers degrade water sources
10	18-03-2025 Kilosa DC Office	Eng.Majid Shigongo (+255763452765)	Kilosa District	River training and bank stabilization in the Mkondoa River are required	The Mkondoa river experience encroachment, Siltation and meandering

S/N	Date & Location	Name	Institution	Issue/Recommendation	Remarks
11	18-03-2025 Kilosa DAS Office	Sabina Sugwa (+255714141103)	Ag. DAS	Stakeholders' consultation should consider covering a wide from villages to high levels in order to increase awareness and project ownership	The proposed intervention will minimize farmers' and livestock keepers' conflicts
12	19-03-2025 Mvumi Village Office	FGD With WUA & Village Council (Contacts as per attached attendance)	Mvumi Village- water Users Kisangata	-Awareness programs and alternative livelihood activities are required. Provision of water sources for livestock and cattle troughs	Abnormal floods is Experienced from Kisangata The number of Livestock are above village carrying capacity
13	19-03-2025 Dumila Ward Office	FGD With Village Council (Contacts as per attached attendance)	Dumila Ward	A borehole and cattle trough are proposed for Mkundi Village.	Some small rivers which require intervention to reduce the Mkundi river effect are; <ul style="list-style-type: none">• Nyacha• Mawangala• Chamasi
14	19-03-2025 Dumila Ward Office	Mr. Douglas Mwigumila (Ward Councilor) (+255715560222)	Dumila Ward	Request of bank stabilization for small rivers which are tributaries to the Mkundi River; -Nyacha, Mawangala, Chamasi and Mtongolo	<ul style="list-style-type: none">• Mostly covered by water during floods• Mkundi river meandering• The livestock route is not clearly indicated• Farmers' livestock keepers' conflict
15	19-03-2025 Berega Ward Office	Filemoni D. Maube (Ward Councilor) (+255687248171)	Berega Ward	Several interventions are required that including; -River Training -Check dams -Bridges -Cattle trough -Alternative economic activities	Dams can be constructed at confluences of rivers

S/N	Date & Location	Name	Institution	Issue/Recommendation	Remarks
				-Tree planting	
16	19-03-2025 <i>Gairo DC – DED Office</i>	Anita Makota (+255754767737)	Ag. DED Gairo	Proposed construction of dykes to trap sediment and flood control Demarcation of Nguyami River Stakeholders' Consultation should be considered from the planning stage	Human activities along buffer zone requires appropriate measures to control.
17	19-03-2025 <i>DAS Office - Gairo</i>	Jeremiah A. Mapogo (+255784428481)	DAS (On Behalf of District Commissioner)	An awareness campaign is required for farmers and livestock keepers, together with the selection of proper alternative economic activities to replace those in the water sources area.	Noted
18	19-03-2025 <i>Chakwele Ward Office</i>	Asna Benjamini (+255759821927)	WEO – Chakwale Livestock Officer	The request of the construction of a cattle trough and borehole drilling is proposed to be at Kilimani village	Currently, the livestock are travelling from Kilimani to Makuyu for drinking water and vaccination

Table 5- 3: Issues Response Table during community meetings (Villages and Ward Level)

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
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SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
MBUMI WARD						
40.	20-03-2025 <i>Mbumi Ward Office</i>	Abramani Issa	Mbumi Ward	Ward councilor	<ul style="list-style-type: none"> ▪ The design for the proposed rehabilitation of the existing Mkondoa Dyke should be as strong as that constructed by the colonialists. ▪ It is important to increase the river's depth. ▪ Continuous education should be provided to the community to help mitigate climate change issues, particularly flooding. ▪ Cattle troughs should be built in the area, as human activities, especially livestock keeping, have significantly contributed to the destruction of the dyke. This measure will help ensure the sustainability of the project. Argues that there should be no bias, particularly gender bias, during workers recruitment during project implementation 	<ul style="list-style-type: none"> ▪ The proponent will ensure that ▪ Noted ▪ Noted ▪ Noted <p>The proponent will ensure that the project implementation is bias-free.</p>
					<ul style="list-style-type: none"> ▪ He is thankful for the proposed project in their area as proper implementation will benefit them ▪ Due to poor construction method and materials of the previous dyke construction it resulted to 	<ul style="list-style-type: none"> ▪ Positive ▪ Noted. The design team will be informed Noted

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
					easily destroyed by rain destroying his farm, hence argue for proper project implementation for the proposed project Argue for the reestablishment of previously existing dams such as Kidete dam upstream to assist mitigating flooding impact downstream	
41.	20-03-2025 <i>Mbumi Ward Office</i>	Godfrey Mwega	Mbumi Ward	Village Member	<ul style="list-style-type: none"> Argues for design team and construction team to align with proper design ethics so as the proposed project to be sustainable He argues that livestock is the main contributor to the destruction of the proposed project, hence his argument for the construction of cattle troughs to mitigate animals' access to water sources. 	<ul style="list-style-type: none"> Noted Noted
42.	20-03-2025 <i>Mbumi Ward Office</i>	Mahad Juma	Mbumi Ward	Village Member	<ul style="list-style-type: none"> Argues for the establishment of a significant number of cattle troughs in their village 	<ul style="list-style-type: none"> Noted
43.	20-03-2025	Ali Mauma	Mbumi Ward	Village member	<ul style="list-style-type: none"> Argues that agricultural activities beneath the river are the cause of all these problems; hence, farmers should be educated also 	<ul style="list-style-type: none"> Positive

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
	<i>Mbumi Ward Office</i>				upstream	
44.	20-03-2025 <i>Mbumi Ward Office</i>	Fortunatus Emmanuel	Mbumi Ward	Village member	<ul style="list-style-type: none"> ▪ Thankful for the project; however, argues for the use of manpower from their ward rather than relying on other areas' people 	<ul style="list-style-type: none"> ▪ The contractor will be encouraged to prioritize the use of manpower from the ward
45.	20-03-2025 <i>Mbumi Ward Office</i>	Kagome Basha	Mbumi Ward	Village member	<ul style="list-style-type: none"> ▪ He is aware that the project shall have a positive impact on them, but asks when the project starts and what the project costs 	<ul style="list-style-type: none"> ▪ The project is at the design level once it is completed; details of cost will be disclosed. It shall commence once the EIA certificate is obtained and the bank approves it.
46.	20-03-2025 <i>Mbumi Ward Office</i>	Jovin Mtabuzi	Mbumi Ward	Village member	<ul style="list-style-type: none"> ▪ Poor supervision on construction of dyke ▪ The use of low-quality materials ▪ Cattle intrusion into water sources 	<ul style="list-style-type: none"> ▪ Formulation of committee at ward level to supervise all the construction activities plus quality check on material to be used. ▪ The village leaders, in cooperation with extension officers, to assist in advice livestock keepers to utilize their planned area according to VLUP and to minimize the number of livestock.
MVUMI VILLAGE & GONGWE VILLAGE						
47.	20-03-2025	Kisia Ali	Mvumi Village	Village member	<ul style="list-style-type: none"> ▪ Argues for the continues provision of education to people regarding the impact of 	<ul style="list-style-type: none"> ▪ Noted

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
	<i>Mvumi Ward Office</i>				conducting human activities beneath to river streams	
48.	20-03-2025 <i>Mvumi Ward Office</i>	Mwanaharusi Matola	Gongwe Village	Village member	<ul style="list-style-type: none"> ▪ Thankful for the project as it will help them mitigate flood disasters in their areas 	<ul style="list-style-type: none"> ▪ Positive
49.	20-03-2025 <i>Mvumi Ward Office</i>	Suleman Kado	Mvumi Village	Village member	<ul style="list-style-type: none"> ▪ Thankful to the project but argues for community members to be the first security members to ensure project sustainability 	<ul style="list-style-type: none"> ▪ Noted
50.	20-03-2025 <i>Mvumi Ward Office</i>	Tanu Albert	Gongwe Village	Village member	<ul style="list-style-type: none"> ▪ Argues that the project is well received as it will impact them positively, particularly in flooding control 	<ul style="list-style-type: none"> ▪ Positive
51.	20-03-2025 <i>Mvumi Ward Office</i>	John Maneno	Mvumi Village	Village member	<ul style="list-style-type: none"> ▪ Asked for the project to commence as soon as possible, and they shall protect the project 	<ul style="list-style-type: none"> ▪ We are confidently pushing for the prompt commencement of the project.
DUMILA VILLAGE						
52.	19-03-2025 <i>Dumila Ward Office</i>	Edwin Mgai	Dumila Village	Village member	<ul style="list-style-type: none"> ▪ Grateful for the project but advocate for the construction of check dams upstream and effective riverbank reinforcement from Dumila Bridge upward for at least 4-5 kilometers. 	<ul style="list-style-type: none"> ▪ Noted
53.	19-03-2025	Yahaya	Dumila Village	Village	<ul style="list-style-type: none"> ▪ The design team should be 	<ul style="list-style-type: none"> ▪ Noted

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
	<i>Dumila Ward Office</i>	Ndunda		member	informed regarding the restoration of culverts so as to reduce water discharge to the river, particularly at Dumila Secondary School, Kwa Mzee and Dumila	
54.	19-03-2025 <i>Dumila Ward Office</i>	Douglas Mwigumla	Dumila Village	Ward Councilor	<ul style="list-style-type: none"> Argue for planting grasses in the 60 meters of the river reserve to mitigate erosions Also argue that the height of the embankment of the river should be considered access to water users. Other institutions should be informed to mitigate the impact of environmental degradation jointly 	<ul style="list-style-type: none"> Positive Noted Noted
MAGOLE WARD						
55.	21-03-2025 <i>Magole Ward Office</i>	Abdallah Seleman Mwinyikombo	Changarawe Village	VEO	<ul style="list-style-type: none"> The importance of giving information to the community on project activities and its progress and the starting time of its implementation. Grateful for the project as they are a mostly affected by floods that causes loss of life and damage to properties and infrastructure 	<ul style="list-style-type: none"> Noted The proponent promised to implement the project on time and a very collaborative approach so as to achieve desired objectives
56.	21-03-2025	Charles Andrew	Changarawe Village	Member Village	<ul style="list-style-type: none"> A lot of livestock in the village There is designated livestock 	<ul style="list-style-type: none"> Awareness in water resources management and

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
	Magole Ward Office	Mihayo		Council	grazing area ▪ Cultivation along river bank causes degradation and siltation	proper farming practices will be provided
57.	21-03-2025 Magole Ward Office	Rehema Rajabu	Changarawe Village	Community Member	▪ Request the government to rehabilitate embankment in Miyombo river to avoid severe flood that damage properties and loss of life	▪ The issue was noted and will be share to high authorities
58.	21-03-2025 Magole Ward Office	Mwanabibi Makuti	Changarawe Village	Community Member	▪ Accept the project and willing to voluntarily donate land for project implementation. They will also provide security in all phase of project lifecycle.	▪ Noted
59.	21-03-2025 Magole Ward Office	Sevelin Nikodem	Changarawe Village	Community Member	▪ Accept the project and request the government to dreg Miombo river to reduce sediment and increase river depth	▪ It will be implemented at this project phase
					▪ Commend the efforts made by the government ▪ Agree to collaborate at all phase of project implementation ▪ Women will participate in project activities	▪ Noted
					▪ Request for employment opportunities for local people	▪ Noted ▪ Contractors will be guided to employ local communities for unskilled labors
					▪ Eager to know the benefits of the project to people residing along Mkondoa River.	▪ They will be provided with livelihood enhancement activities

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
60.	21-03-2025 Magole Ward Office	Ismail Kidaile	Zombo Village - Kilosa	Village council member	<ul style="list-style-type: none"> The project is at right time as the Miyombo river change course which results to problem of water scattering along the river shore causing blockage of communication between Kigunga and Miyombo village which results increasing the number of absent students from Kigunga village in Miyombo Secondary schools 	<ul style="list-style-type: none"> The problem is expected to be fixed after implementing of river training through Enhancing Climate Resilience in Water Resources in Mkondoa Catchment
61.	21-03-2025 Makuyu Ward Office	Vitalis Daud Chihongeka	Makuyu Village-Gairo	Village council member	<ul style="list-style-type: none"> Congratulate the opportunity of having cattle trough project in their village adding that both farmers and livestock keepers will be benefited 	<ul style="list-style-type: none"> Noted
62.	21-03-2025 Matale Village Office	Bakari H. Mgaza	Matale village - Mvomero	Village council members	<ul style="list-style-type: none"> Also, four hamlets surrounding matare river/mkundi namely Kisanga, Matare, Kilimanjaro and Nyamega *own a lot of cattles of which they also in need of cattle trough to protect the river on the other side 	<ul style="list-style-type: none"> Noted
63.	21-03-2025 Makuyu Ward Office	Katouth Abijan Kikoti -	Makuyu village Chairperson	Village council members	<ul style="list-style-type: none"> Advice: Big livestock keepers are found in the other side of the river in Visaraka hamlet in Mkundi village.If possible, they should be considered for the same cattle trough in their area 	<ul style="list-style-type: none"> Noted

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
64.	21-03-2025 Makuyu Ward Office	Penford Adrian	Makuyu village	Village council members	<ul style="list-style-type: none"> ▪ Makuyu village have more than 60,000 cattles, Will this be sufficient for all cattle? 	<ul style="list-style-type: none"> ▪ The project will be implemented in phases to meet available water demand
65.	21-03-2025 Makuyu Ward Office	Peter Arobogast Kipilimba	Makuyu Village	Village council members	<ul style="list-style-type: none"> ▪ There is no reason to raise objection for the introduced project, the project is accepted for further stage 	<ul style="list-style-type: none"> ▪ Noted
ZOMBO WARD						
66.	21-03-2025 Zombo Ward Office	Salma Mohamed	Zombo Ward	Village member	<ul style="list-style-type: none"> ▪ At Miyombo Bridge (Kigunga), water deviates from the river; people fetch water here and use it for livestock. ▪ The Kiguga area and Nyaria experience river overflow due to shallow river depth. ▪ The Kiguga village area is problematic and it should be the starting point of the project as it experiences floods occasionally, for the proposed 1.3km, we are worried other problematic sections will be left unattended ▪ The project should start at Kigunga and end at Miyombo village. 	<ul style="list-style-type: none"> ▪ The project shall train the river especially in meandering areas and plant trees to strengthen the banks
67.	21-03-2025	Hamis Abdalah	Zombo Ward	Village members	<ul style="list-style-type: none"> ▪ In Nyameni, floods wash away footbridges, cutting off access, 	<ul style="list-style-type: none"> ▪ This section will be rectified and strengthen the crossing

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
	Zombo Ward Office				<p>and causing students unable to attend studies at Zombo Secondary School.</p> <ul style="list-style-type: none"> ▪ Requesting the contractor to cooperate with leaders and community members. 	<p>wood bridge</p> <ul style="list-style-type: none"> ▪ The contractor shall be instructed to cooperate with local government during the implementation period
68.	21-03-2025 Zombo Ward Office	Samson John	Zombo Ward	Village members	<ul style="list-style-type: none"> ▪ Due to flooding in Miyombo river three deceased bodies were found in the river last year (2024) and in the past five years, 12 people have died (7 men, 5 women) where 2 children. ▪ Farmers face transportation and healthcare challenges due to the river separating villages forming Zombo ward ▪ There is enough security in the village, so the contractor will have area to store equipment and material. 	<ul style="list-style-type: none"> ▪ After project implementation in collaboration with village government, these tragedy events will be prevented ▪ The project shall consider improving local bridges to restore transport system ▪ This is positive comment and contractor will be advised to consider it
CHANGARAWA VILLAGE						
69.	20-03-2025 Changarawe Village Office	Abdallah Selemani	Changarawe Village	Village members	<ul style="list-style-type: none"> ▪ We accept that the proposed project and the infrastructure will be protected under the village government ▪ Currently, Livestock drink water directly from the river; it is a good idea to construct cattle troughs 	<ul style="list-style-type: none"> ▪ This is positive ▪ Positive comment
70.	20-03-2025	Matayo	Changarawe	Village	<ul style="list-style-type: none"> ▪ There is a private dam that 	<ul style="list-style-type: none"> ▪ The river will be trained and

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
	Changarawe Village Office	Mwalimu	Village	members	connects to the Miyombo River, causing flooding on farms and roads in the Changarawe hamlet	stabilized to control floods but also it will include plantingtrees. Farmers are advised not to encroach river boundary
71.	20-03-2025 Changarawe Village Office	Abdallah Selemani	Changarawe Village	Village members	<ul style="list-style-type: none"> ▪ The village receives many pastoralists with many flocks from other areas for pastures, and the allocated land for livestock is not enough. They take cattle to drink at the river ▪ We lack a formalized land use plan despite having conducted surveys; no official records exist 	<ul style="list-style-type: none"> ▪ The project will considered construction of cattle trough that should be allocated in grazing area if feasible ▪ This will be communicated to respective District council
72.	20-03-2025 Masanze Ward Office	Charles Mihayo	Masanze Ward	Community member	<ul style="list-style-type: none"> ▪ Farmers cultivate up to the riverbanks combining with livestock watering results to lowering riverbed and destabilize embankments 	<ul style="list-style-type: none"> ▪ The proposed project will address this matter
73.	20-03-2025 Masanze Ward Office	Antony Jonas	Masanze Ward	Livestock and farming officer	<ul style="list-style-type: none"> ▪ The area from Miyombo estate to the bridge experiences floods, which impact farms and residential areas ▪ No land disputes around the river; the area is village-owned. ▪ The whole river area is safe there is no crocodiles or hippos. 	<ul style="list-style-type: none"> ▪ The river training reaching 1.3km will address these issues ▪ Positive
MATALE VILLAGE						

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
74.	21-03-2025 <i>Matale Ward Office</i>	Halfani Juma	Matale Village	Community member	<ul style="list-style-type: none"> Due to geography, herders are scattered and Matale and Nyamwega sub-villages have more livestock, so one proposed cattle trough is not enough for the entire village which has four village. So Nyamwega and Kidodoma can have one centralized cattle trough and Kilimanjaro and Matale can have another cattle trough 	<ul style="list-style-type: none"> This alternative livelihood will be considered
75.	21-03-2025 <i>Matale Ward Office</i>	Thabit Amis	Matale Village	Community member	<ul style="list-style-type: none"> Herders from neighboring villages not in the project (Kilama and Gairo) normally close the river looking for pasture especially during dry season 	<ul style="list-style-type: none"> Noted
76.	21-03-2025 <i>Matale Ward Office</i>	Michael Ramadhani Mgaya	Matale Village	Community member	<ul style="list-style-type: none"> We welcome the project and request an additional cattle trough for the village division. Villages far from the project should continue using the river, as interim period. The village government should manage the prevention of riverbank deforestation. 	<ul style="list-style-type: none"> Cooperation with the village government is essential to ensure project success
MVOMERO WARD						
77.	20-03-2025	Abdallah Ngome	Makuyu Village	Agricultural officer	<ul style="list-style-type: none"> There is borehole drilled during PADEP projects (Chanika) but it lacked follow-up development. It 	<ul style="list-style-type: none"> Noted

SN	DATE & VENUE	NAME	ORGANISATION/ INSTITUTION	POSITION	ISSUES/COMMENTS RAISED BY STAKEHOLDERS	ISSUE RESPONSE
	<i>Makuyu Ward Office</i>				<p>can be completed and used as cattle trough. Due to nature of the village one cattle trough is not enough</p> <ul style="list-style-type: none"> ▪ The proposed new cattle trough should be located where Mahange and Kibulunge hamlets can share ▪ Area for the new cattle trough in grazing land there is a high-voltage power line passing about 500 Meters, no permanent settlements, so a transformer would be needed. ▪ For the existing borehole that needs improvements the nearest electricity connection is 300 meters away from the project site ▪ We request that the project be fully implemented, as intended. 	
78.	20-03-2025 <i>Makuyu Ward Office</i>	Sadala Kibondo	Makuyu Village	Community member	<ul style="list-style-type: none"> ▪ Tree planting should be done at water sources. ▪ People mining gold in river channels should be supported with irrigation and fish farming initiatives as alternative. ▪ Representatives have accepted the project, and it will be successful. 	<ul style="list-style-type: none"> ▪ Planting trees will be part of the project ▪ These alternative livelihoods will be considered

5.3 Main issues and concerns raised by the stakeholders

The following are the main issues that were raised by stakeholders consulted;

- i. **Water Pollution** – Stakeholders had the opinion that River training and dykes' construction is associated with water pollution because it involves dredging which makes the sediments loose. This pollution must be controlled to ensure that populations downstream are not affected.
- ii. **Loss of access to river water**– Communities living near the river training and dykes' projects are going to implemented were worried if they shall be able to access water from the river which is the source of their livelihood.
- iii. **Supporting alternative income sources (e.g., agroforestry)** - For those who are committed to donating land for the construction of cattle troughs and are shifting away from human activities like farming near the river, we request that the basin board effectively implement alternative project support. This support may include initiatives such as poultry and beekeeping.
- iv. **Project acceptances** – Stakeholders accepted the proposed project and the infrastructure as they believe it will be protected under the village government

CHAPTER SIX

6 ASSESSMENT OF ENVIRONMENTAL AND SOCIAL IMPACTS AND PROJECT ALTERNATIVES

6.1 Introduction

This section outlines the impact identification and assessment of the impacts in each stage of the proposed project. The section also proposes mitigation measures the proponent is committed to undertaking to prevent or reduce the identified adverse impacts. Two zones of impact, namely core impact zone and influence impact zone are considered;

- i. The direct area of influence- The core impact zone includes the area immediately bordering the project area. In the case of this project, local impacts will be the site of the construction and rehabilitation activities within the 60m River buffer zone and 200m radial distance from the center of the cattle troughs.
- ii. The indirect area of influence- includes the area beyond the proposed site. This includes sources of construction materials, access roads etc. Most of the positive impacts are expected to be within this boundary. This project covers the whole of the Kilosa, Gairo and Mvomero Districts.

6.2 Impact Identification

The proposed project can cause a wide range of environmental and social impacts on many receptors. The EIA identifies these impacts to mitigate the adverse ones or enhance the benefits. Impact *identification* is a process designed to ensure that all potentially significant impacts are identified and considered in the EIA process. Several 'tools' are available to assist in impact identification. The simplest, and most frequently used, *checklists* of impact methods were used for this project. The following subsections present the impacts identified associated with the project.

6.2.1 Impacts identified to be associated with the mobilization and construction phase.

The following impacts were identified to be occurring during the project's construction phase.

- i. Employment opportunities
- ii. Growth of the local economy
- iii. Impacts on biodiversity
- iv. Impact on Water Quality
- v. Impacts on Air Quality
- vi. Impacts due to Waste Generation
- vii. Occupational Health and Safety Risks
- viii. Community Health and Safety Risks
- ix. Soil Erosion
- x. Impacts due to Increased Noise and Vibration levels
- xi. Gender-based violence (GBV), rape and sexual harassment
- xii. Gender inequity in employment
- xiii. Impacts associated with Transmission of Vector-Borne and Communicable Diseases
- xiv. Impacts associated with Transmission of Sexually Transmitted Infections Impacts on Labour and Working Conditions

6.2.2 Impacts Identified to be Associated with the Operation Phase

The following impacts were identified to be occurring during the operational phase of the project;

- i. Control of River Bank Protection
- ii. Flood control and prevention
- iii. Impacts on Biodiversity
- iv. Aquatic Weed formation
- v. Loss of access

6.2.3 Impacts Identified to be Associated with the Decommissioning Phase

The following impacts were identified to be occurring during the decommissioning phase of the project;

- i. Solid Waste Generation
- ii. Noise and Dust Emissions
- iii. Soil Erosion and Disturbance of Rehabilitated Areas
- iv. Occupational Health and Safety Risks
- v. Possible Water Contamination
- vi. Visual Landscape Disturbance

6.2.4 Climate Change Issues Related to the Proposed Project

The following are Climate change issues related to the proposed project;

- i. Increased Flood Risks
- ii. Extended Dry Seasons
- iii. Higher Evaporation Rates
- iv. Increased Sedimentation
- v. Temperature Stress on Infrastructure
- vi. Climate-Induced Shifts in Livestock Watering Patterns
- vii. Potential Drought-Induced Conflicts
- viii. Greater Variability in River Flows

6.3 Impact Assessment

The impact assessment stage comprises several steps that collectively assess how the river training, stabilization, and dyke construction will interact with elements of the physical, biological, or human environment to produce impacts on resources/receptors. The steps involved in the impact assessment stage are described in greater detail below.

6.4 Impact Prediction

The impact assessment process predicts and describes impacts that are expected to occur for different phases of the Project in Gairo, Kilosa, and Mvomero Districts. Where possible, impacts are quantified to the extent practicable, which may include an increase in noise or air pollution levels above acceptable standards, volume of waste or water discharged, etc. For each impact, its significance is evaluated by defining and evaluating two key aspects:

- The **magnitude** of the impact; and

- The **sensitivity** of the feature or receptor that will be impacted.

6.4.1 Impact Magnitude

Magnitude essentially describes the intensity of the change that is predicted to occur in the resource/receptor as a result of the impact. A magnitude rating tends to reflect a combination of the size of an area that may be affected, the duration over which the aspect may be altered, and the size, degree, or scale of that change. In essence, magnitude is a descriptor for the degree of change that is predicted to occur in the resource or receptor.

For positive impacts (which are mostly socio-economic impacts) magnitude is generally categorized as 'Positive' unless sufficient information is available to support a more robust characterization and to assign the degree of magnitude as Small, Medium or Large. For instance, if the number of jobs to be assigned to local community members is confirmed or if the size or value of the contribution to the national, regional, or district economy is known then a magnitude rating can be assigned. If not, then the significance rating is assigned based on the sensitivity of the feature impacted by a specific activity or change. The term 'magnitude,' therefore, encompasses all the characteristics of the predicted impact, including Extent, Duration, Scale, Frequency, and Likelihood (only used for unplanned events). The definitions for characteristics of magnitude used during the impact assessment are summarized in Table 6- 1.

Table 6- 1: Impact Characteristic Terminology

Characteristic	Definition	Designations
Type	A descriptor indicating the relationship of the impact to the Project (in terms of cause and effect).	Direct Indirect Induced
Characteristic	Definition	Designations
Extent	The "reach" of the impact (e.g., confined to a small area around the Project Footprint, projected for several kilometers, etc.).	Local Regional International
Duration	The period over which a resource/receptor is affected.	Temporary Short-term Long-term Permanent
Scale	The size of the impact (e.g., the size of the area damaged or impacted, the fraction of a resource that is lost or affected, etc.).	no fixed designations; intended to be a numerical value]
Frequency	A measure of the constancy or periodicity of the impact.	no fixed designations; intended to be a numerical value]

Source: UNEP, 2022

The evaluation of pre-mitigation impact significance considers control measures that are already part of or embedded within the Project design. This avoids the situation where an impact is assigned a magnitude based on a hypothetical version of the Project that considers none of the embedded controls defined as

part of the Project description. Additional mitigation measures aimed at further reducing the significance of impacts are proposed where necessary or appropriate and are assessed as part of the 'residual' impact significance rating.

In the case of **type**, the designations are defined universally (i.e., the same definitions apply to all resources/receptors and associated impacts). The definitions for these universally defined designations are provided in Table 6- 2.

Table 6- 2: Designation Definitions

Designation	Definition
	Type
Direct	Impacts that result from a direct interaction between the Project and a resource/receptor (e.g., between the occupation of a plot of land and the habitats which are affected).
Indirect	Impacts that follow on from the direct interactions between the Project and its environment as a result of subsequent interactions within the environment (e.g., the viability of a species population resulting from loss of part of a habitat as a result of the Project occupying a plot of land).
Induced	Impacts that result from other activities (which are not part of the Project) that happen as a consequence of the Project (e.g., influx of camp followers resulting from the importation of a large Project workforce).
	Extent
Local	Impacts that affect an area in proximity to the development area within an area defined on a resource/receptor-specific basis.
Regional	Impacts occurring at a regional scale as determined by administrative boundaries or which affect regionally important resources or ecosystems.
International	Impacts that extend across international boundaries or affect resources such as features, resources or areas protected by international conventions.
	Duration
Temporary	Impacts are predicted to be of short duration (in the order of days) and/or intermittent/occasional.
Short-term	Impacts that are predicted to last only for the duration of the construction period
Medium-term	Impacts that will continue for a period of 5 to 10 years following the completion of the construction phase e.g., where the impact may reverse or affected resources or receptors recover within this period of time.
Long-term	Impacts that will continue for the life of the Project, but will either cease when the Project stops operating or is decommissioned, or where the impact may reverse or the affected resource/receptor recovers or reverts to a near natural state after 10 or within 20 years following the completion of the construction phase.
Permanent	Impacts that cause a permanent change in the affected receptor or resource (e.g., removal or destruction of ecological habitat) that endures substantially beyond 20 years following

Designation	Definition
	the completion of the construction phase.

Source: UNEP, 2022

Scale and **frequency** are not assigned fixed designations, as they are typically numerical measurements (e.g., number of acres affected, number of times per day, etc.). The terminology and designations are provided to ensure consistency when these characteristics are described in an impact assessment deliverable. However, it is not a requirement that each of these characteristics be discussed for every impact identified.

For unplanned events (e.g., accidental release of hazardous materials) the **likelihood** of the impact occurring is taken into consideration in deriving the magnitude rating. The likelihood of an impact occurring as a result of an unplanned event is expressed as a probability. It is designated using a qualitative scale (or semi-quantitative, where appropriate data are available), according to the attributes described in Table 6-3.

Table 6-3: Definitions for Likelihood Designations (only used for unplanned events)

Likelihood	Definition
Unlikely	The event is unlikely but may occur at some time during normal operating conditions.
Possible	The event is likely to occur at some time during normal operating conditions.
Likely	The event will occur during normal operating conditions (i.e., it is essentially inevitable).

Source: UNEP, 2022

The likelihood is estimated based on experience and/or evidence that such an outcome has previously occurred. It is important to note that likelihood is a measure of the degree to which the unplanned event is expected to occur, not the degree to which an impact or effect is expected to occur as a result of the unplanned event. The latter concept is referred to as uncertainty, and this is typically dealt with in a contextual discussion in the impact assessment deliverable, rather than in the impact significance assignment process.

In the case of impacts resulting from unplanned events, the same resource/receptor-specific approach to concluding a magnitude designation is utilized, but the 'likelihood' factor is considered, together with the other impact characteristics, when assigning a magnitude designation. There is an inherent challenge in discussing impacts resulting from (planned) Project activities and those resulting from unplanned events. To avoid the need to fully elaborate on an impact resulting from an unplanned event before discussing what could be a very low likelihood of occurrence for the unplanned event, this methodology incorporates likelihood into the magnitude designation (i.e., in parallel with consideration of the other impact characteristics), so that the "likelihood factored" magnitude can then be considered with the resource/receptor sensitivity/vulnerability/importance to assign impact significance. Rather than taking a prescriptive (e.g., matrix) approach to factor likelihood into the magnitude designation process, it is recommended that this be done based on professional judgment and assisted by quantitative data (e.g., modeling, frequency charts) where available.

Once the impact characteristics are understood, these characteristics are used (in a manner specific to the resource/receptor in question) to assign each impact a magnitude. In summary, magnitude is a function of the following impact characteristics:

- Extent;
- Duration;
- Scale;
- Frequency; and
- Likelihood.

Magnitude essentially describes the degree of change that the impact is likely to impart upon the resource/receptor. As in the case of extent and duration, the magnitude designations themselves (i.e., negligible, small, medium, large) are universally used and across resources/receptors, but the definitions for these designations will vary on a resource/receptor basis, as is discussed further below. The universal magnitude designations are:

- Positive;
- Negligible;
- Small;
- Medium; and
- Large.

The magnitude of impacts considers all the various dimensions of a particular impact to decide where the impact falls on the spectrum (in the case of adverse impacts) from negligible to large. Some impacts will result in changes to the environment that may be immeasurable, undetectable, or within the range of normal natural variation. Such changes can be regarded as essentially having no impact and should be characterized as having a negligible magnitude.

6.4.2 Sensitivity

In addition to characterizing the magnitude of impact, the other principal step necessary to assign significance to a given impact is to define the sensitivity/vulnerability/importance of the impacted resource/receptor to the type of activity proposed (e.g., habitat clearance, topsoil removal, etc.) or the consequences of a Project activity (e.g., dust, noise, water pollution, or induced population influx). This requires a range of physical, biological, cultural or human factors to be considered and may also need to include other factors such as legal protection, government policy, stakeholder views and economic value.

Characterization of sensitivity for a physical or biological resource or receptor (e.g., a water feature or parameter, cliff, vegetation type) will consider its conservation status and importance (on a local, national and international scale), its vulnerability to disturbance, and its resilience to recover or withstand a specific impact or type of impact. Where the receptor is human or cultural, the value of that social and cultural heritage receptor/s and its vulnerability to the impact is considered, considering the receptor's resilience, including its ability to adapt to change or use alternatives where available.

As in the case of magnitude, the sensitivity/vulnerability/importance designations themselves are universally consistent, but the definitions for these designations will vary on a resource/receptor basis. The universal sensitivity/vulnerability/importance designations are:

- Low;
- Medium; and

- High.

6.4.3 Evaluating Significance

Once the magnitude of impact and the sensitivity/vulnerability/importance of the resource/receptor have been characterized, the impact's significance is assigned using the impact significance matrix shown in Table 6- 4.

For impacts resulting from unplanned events (typically accidents, such as a major oil spill or other event that cannot be reasonably foreseen), the above methodology is applied, but likelihood is also considered when assigning the magnitude designation, as classified in Table 6- 4.

Table 6- 4: Impact Significances

Evaluation of Significance		Sensitivity/Vulnerability/Importance of Resource/Receptor		
		Low	Medium	High
Magnitude of Impact	Negative Impacts			
	Negligible	Negligible	Negligible	Minor
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Critical
	Positive Impacts			
	Positive	Minor	Moderate	Major

UNEP, 2022

The matrix applies universally to all resources/receptors and all impacts to these resources/receptors, as the resource/receptor- or impact-specific considerations are factored into the assignment of magnitude and sensitivity designations that enter into the matrix. The following are definitions of impact significance;

- An impact of **Negligible significance** is one where a resource/receptor (including people) will essentially not be affected in any way by a particular activity or the predicted effect is deemed to be 'imperceptible' or is indistinguishable from natural background variations.
- An impact of **Minor significance** is one where a resource/receptor will experience a noticeable effect, but the impact magnitude is sufficiently small (with or without mitigation) and/or the resource/receptor is of low sensitivity/ vulnerability/ importance. In either case, the magnitude should be well within applicable standards.
- An impact of **Moderate significance** has an impact magnitude that is within applicable standards but falls somewhere in the range from a threshold below which the impact is minor, up to a level that might be just short of breaching a legal limit. Clearly, to design an activity so that its effects only just avoid breaking a law and/or cause a major impact is not best practice. The emphasis for moderate impacts is therefore on demonstrating that the impact has been reduced to a level that is as low as reasonably practicable (ALARP). This does not necessarily mean that impacts of moderate significance have to be reduced to minor, but that moderate impacts are being managed effectively and efficiently.
- An impact of **Major significance** is one where an accepted limit or standard may be exceeded, or large-magnitude impacts occur to highly valued/sensitive resources/receptors. IA aims to get to a

position where the Project does not have any major residual impacts, certainly not ones that would endure into the long term or extend over a large area. However, for some aspects, there may be major residual impacts after all practicable mitigation options have been exhausted (i.e. ALARP has been applied). An example might be the visual impact of a facility. It is then the function of regulators and stakeholders to weigh such negative factors against the positive ones, such as employment, in deciding on the Project.

- An impact of **Critical significance** after all feasible mitigation measures have been identified and assessed warrants the highest level of attention and concern. As with residual impacts of major significance, the regulators and stakeholders will need to closely evaluate whether the positive impacts of the project outweigh the residual negative impacts of critical significance. In many cases, residual critical impacts can be considered as a potential fatal flaw of the project.

6.5 Significant Impacts during the construction phase

Positive Impacts

6.5.1 Employment Opportunities and Skills Development

During the project construction phase, employment opportunities will increase in villages within the project area, specifically in Kilosa, Mvomera, and Gairo District Councils, as well as at the ward and Village levels. About 200 people will be directly and indirectly employed as hired laborers during the construction of the proposed project. Additionally, other business opportunities will emerge, such as food vendors selling foodstuffs. The project will also require various support services such as security, catering, waste management, cleaning, and maintenance. These services often generate employment opportunities for local businesses and service providers. Security firms will be engaged to safeguard the site while catering services will be needed to provide meals for the workers. Maintenance crews will be necessary to keep equipment and facilities in good working order, all contributing to increased local employment. Project workers will be provided with information and documentation that is clear and understandable regarding their rights under national labor employment and social security laws and any applicable collective agreements, including their rights related to hours of work, wages, overtime, compensation and benefits, and the grievance mechanism shall be proved. This impact will be a “**major positive impact**”.

6.5.2 Growth of local economy

The construction of new dykes, cattle troughs, check dams, and rehabilitation, will require a wide range of materials, including cement, sand, bricks, and stones as the project involves constructing a different structure associated with the project. Local material suppliers will benefit from increased demand during the construction phase, which can lead to expanded production, additional sales, and the potential hiring of more staff to manage increased orders and logistics. Additionally, the construction phase will inject money into the local economy as workers and contractors spend their earnings on housing, food, transportation, and other goods and services in the surrounding area. This increased consumer spending will stimulate local businesses, creating a multiplier effect that boosts overall economic activity in the project area and the region.

During the project execution phase, contractors will provide job-specific training to workers. This training will facilitate skill development for local workers, enhancing their future employability and expertise in construction and related fields. This impact will be a “**major positive impact**”.

6.5.3 Increase of Government Revenue

The proposed project's construction activities are expected to generate tax revenues for local governments through the issuance of permits, licensing fees, and property taxes associated with the project. Also, most of the machines and equipment for maintenance. Additionally, sales taxes from the purchase of construction materials (such as cement, bricks, sand, gravel etc.) and services will contribute to government revenue. This revenue can be allocated towards public infrastructure or community development initiatives. This impact will be “**major positive impact**”.

Negative Impacts

6.5.4 Impact on water Quality (surface and groundwater contamination)

The proposed project includes the river training works and construction of embankments (river training and stabilization about total length of 11.6km), and dykes in Mkondoa River. During the construction of the proposed barrage and river training works, surface water resources may get contaminated by sediments, fuel and chemical spills, or by solid waste and effluents generated by the kitchens and toilets at the construction campsites. The impact on these water bodies will be only for the period of construction and will vanish as the construction work is over. In addition to that, construction waste, if left unattended, will result in forming leachate, which may percolate through the soil strata and will reach the underground water table and hence, will end up contaminating it. This impact is temporary and adverse. This impact will be “**major negative impact**”.

6.5.5 Impact on Biodiversity

Impacts on Terrestrial Flora

The project area harbors different sorts of floral species, though along the proposed embankment, the number of species richness and individual quantity is not so much high relative to the other part of the country. The floral composition of the program site comprises trees, shrubs, and herbs. The survey during the baseline data collection has indicated that there are several mature trees and shrubs in the area. Most of the tree species comprises timber and horticultural species (e.g. mango, banana). Ecologically, these species are not very important; moreover, they have negative impact on human health. On the other hand, the horticultural species like mango support the poor people of this area by providing various products such as fuel wood, food and timber. Some horticultural species are used as fodder as well. Birds use these species for their habitat and food. The project construction activities and river training will focus on the core project area to avoid disturbing other vegetation. Figure 6- 1 shows the typical vegetation in some parts of the Miyombo river.



Figure 6- 1: Vegetation and erosion in the Miyombo river

Impacts on Wildlife

Wilderness is a trait of wild areas which are far from the urban areas. Urban areas display lots of population, roads traffic, congestion, sounds of machines, etc. The forest areas close to the river bank exhibit trait of wilderness. Due to construction in this area, human disturbance to ecosystems, to the wild animals and birds especially. The severity of this disturbance totally depends upon duration of activity in the site, its intensity and frequency. Many mammals and birds can be more disturbed by presence of workers, loud noises and operational construction plants. River banks are used as corridor for bridging land and terrestrial life. These banks should be as natural as possible of earthen material, grass concrete or pebbles rather than concrete. The concrete boundary will act as a barrier for many wildlife especially amphibians and reptiles that use the sandy banks of the river.

Impacts on Aquatic Flora

The revetment proposed for the Mkundi, Miyombo and Kisangata rivers can potentially affect the aquatic vegetation along the riverbank. Some parts of the riverbank are covered with dense reeds that provide a nursing ground for birds and small fishes. However, the revetment is being proposed for the riverbank stretches that undergo severe erosion during every high-flow season, resulting in the loss of any vegetation that exists there. Hence, the revetment works are unlikely to cause any significant loss of the aquatic vegetation; in fact, these protection works will discontinue the loss of vegetation caused by the riverbank erosion. Furthermore, the aquatic vegetation naturally grows along slow-moving streams at different places of rivers hence, it is expected that it will gradually re-grow along the protected riverbank as well

Impacts on Aquatic Fauna

Various construction phase activities like; controlling the flow of water, construction of a barrage and river channelization wall to change water flow, will ultimately affect the aquatic life. Many studies have proved that creation of barrages or dams in river channels effect ecology of river, especially fish. As fish needs particular in stream flow of water which is disturbed by barrage and hence affects spawning and food activities of this fauna. The construction of a barrage and the transport of water and sediment will upset the local hydrological equilibrium, and the effects spread through the community, causing a general ecological transition. These responses are an important focus of modern river ecology. Juvenile fish would be affected by altered flow of water. Fish ladders can be provided as a useful structure for the fish mobility path, depending on the success of the design. Those fish that successfully negotiate the barrage structure would then pass into the calmer basin where the change in current flows, sedimentation, directional clues and predation could either benefit or dis-benefit differing species. There are two categories of threats to fish:

- **Direct:** injury and mortality due to strikes and water conditions (for example water pressure) resulting in damage or disorientation; and
- **Indirect:** loss and degradation of habitat which may be important for feeding and spawning; and disruption to movement.

The current development aims to maintain the natural meander of the river but fixing the river width will reduce meander and cause straightening of rivers as compared to its natural course. Straightening causes the streams to flow more rapidly, which can, in some instances, vastly increase soil erosion. All of this results in faster water flow and higher water levels during floods. The increased erosion results in higher water turbidity, which is a big problem for all aquatic organisms because it reduces the penetration of sunlight into the water. The movements of heavy vehicles, excavation activities, cut and fill processes at the subproject sites, oil and petroleum, bitumen and other liquid and chemical spills may also deteriorate the quality of the surface water.

Impact of Riparian Vegetation Removal on River Ecosystems

The removal of riparian vegetation significantly impacts river ecosystems by increasing water temperatures and altering nutrient dynamics. Without this vegetative buffer, nutrients from adjacent lands flow unimpeded into rivers, potentially causing eutrophication and degrading water quality. In areas where the riparian belt remains intact, up to 90% of these nutrients are intercepted and absorbed before reaching water bodies. Additionally, the root systems of riparian plants, especially trees, are vital for reinforcing riverbanks, preventing soil erosion, and maintaining the structural integrity of river channels. This impact will be “**major negative impact**”.

6.5.6 Impact on air Quality due to dust and Gaseous emissions

Air pollution by dust and gaseous emissions from various sources is an issue of consideration during the project execution stages, particularly in the choice of technologies and practices to be used under the project. Dust will mainly be generated from earth movements (excavation, leveling, dumping), wheels of trucks and machinery moving /traveling along unpaved surfaces, handling and transport of soil, and from exposed surfaces. At the construction site, the possible impacts are expected to be localized in the areas of influence. The dispersion area of exhaust and dust (up to standard levels of air quality) will depend on the concentration of machinery and equipment at the site and the capacity of their engines.

Additionally, Reduction in air quality shall depend on equipment type, quantities, duration, distance from sensitive environments and prevailing atmospheric conditions, particularly wind and moisture of the air. The main source of emission of atmospheric pollutants emanates from the exhaust from engines (in construction equipment trucks/tipper, excavators, etc.). Various internal combustion engines will release greenhouse gases (GHGs), notably carbon dioxide (CO₂), small quantities of noxious gases such as nitrogen oxides (NO_x), sulphur oxides (SO_x), and hydrocarbons. There will be truck journeys by vehicles mobilizing construction materials, land clearance etc. Several truck journeys followed the project sites. Consequently, any reduction in air quality, although virtually certain, will be moderate and localized.

Along the proposed project areas, the adjacent areas, including undeveloped plots with shrubs and some trees, are relatively open without impediment to air movement, hence enhancing dilution of air pollutants. Also, the leafy vegetation will be able to filter out a considerable content of low-level airborne pollutants. Thus, ventilation and vegetation are anticipated to lessen the air pollution problem. This impact is slightly

significant because the project areas are at a reasonable distance from the local community. This impact will be **“moderate negative impact”**.

6.5.7 Impacts due to Waste Generation

Different types of waste are likely to be generated during the construction phase of the project. The community waste will be in the form of food, cans and paper and from construction camps toilets and washing yards. Considering the laborers (about 50 in number) residing in the construction camp and the locally available labor, an average solid waste generation rate of 0.5kg/capita/day is adopted for the estimation of solid waste generation. Based on this assumption, a total of about 25 kg of solid waste will be generated from construction camps daily. Construction waste may include excavated soil, sand, gravel, pieces of concrete, bricks, wood, metal pieces and electrical waste. All these, if left unattended, can become a source of nuisance and environmental pollution in the project area. Insecure and unhygienic disposal of the solid wastes, particularly garbage and trash may cause degradation of soil and land. Insecurely disposed of heaps of wastes containing kitchen garbage and food waste can serve as breeding grounds for the disease spreading vectors and rodents. Throwing away solid wastes into water channels and the wastewater network can result into the choking of the latter.

Wastewater will be generated at the construction camps by the workers. If the generated wastewater is not properly treated or disposed of, this may contaminate the surface water sources apart from soil contamination. The estimated wastewater to be generated from construction camps project assuming that on average the water demand per person is 100 liters per day (estimated) and that 80% of the water demand will become wastewater. This impact will be **“moderate negative impact”**.

6.5.8 Occupational Health, Safety and Security Risks

Occupational Health and Safety (OH&S) related impacts will arise during construction phase activities including clearing of earth, leveling and compaction. Hazard of being hit by falling objects, major hand-arm and whole-body vibration hazards, skin and respiratory tract irritation from exposure to cement dust, overexertion and awkward postures etc. will be another impact. Welding hazards include electric shock, fumes and gases, fire and explosions, eye and head injuries etc. Security as well as the safety of the Contractor and Consultant staff will be major issues. Operating mechanical and electrical equipment will trigger H&S issues e.g., struck by moving vehicles or other equipment, slips or trips, struck by flying objects, such as dirt or splashed fluids, caught in pinch points, shear points, crush points, falling from machines etc. However, the site shall have a qualified OHS expert to make sure that all safety requirements are adhered to. Also PPEs shall be provided to all workers. This impact will be **“moderate negative impact”**.

6.5.9 Community Health, Safety and Security Risks

The construction activities and vehicular movement at construction sites may result in roadside accidents particularly inflicting local communities who are not familiar with the presence of heavy equipment. The quality of groundwater and surface water resources available in the nearby local communities may be affected due to the river training, construction activities, oil spillage and leakage, roadside accidents, etc. The proposed project will also have potential of air (dust pollution), noise and vibrational impacts on nearby community. The labor works with different transmittable diseases that may cause the spread of those

diseases in the local residents. The construction areas located near the residential settlements may cause accidents for the people moving near to those areas. Conflicts may arise between the local community and the construction workers, which may be related to religious, cultural or ethnic differences or based on competition for local resources. Tensions may also arise between different groups within the labor force, and pre-existing conflicts in the local community may be exacerbated. Ethnic and regional conflicts may also be aggravated if workers from one group are moving into the territory of the other. Entry of a temporary labour force into an area could cause different negative impacts to the community. The situation when temporary workers come from different parts of Morogoro Region and they are from different social and cultural backgrounds could easily create conflicts with the local social environment. Due to this, workers must receive training and sign a labour code of conduct, in order not to create conflicts with the local environment. This impact will be **“moderate negative impact”**.

6.5.10 Soil Erosion

River training would accelerate erosion problems in most cut sections. Nevertheless, all cuts in the sloping grounds should be refurbished firmly and provided with the vegetation cover to reduce the effect of soil erosion. Inadequate compaction and resurfacing compounded by rain, trampling etc. may cause erosion and consequent sediment load in runoffs consequently affecting the rivers on which the project is undertaken. Also soil erosion is expected at the quarry sites and borrow pits. This is mostly likely to happen if construction is undertaken during the months of February - May when most of the project areas experience heavy rains. However, this is a impact is current very severe without the project, and once the project is completed this problem shall be minimized to a great extent. This impact will be **“moderate negative impact”**.

6.5.11 Impacts due to Increased Noise and Vibration Levels

Construction activities are highly expected to generate significant amounts of detectable noise levels from vehicles and construction equipment. Noise will also arise from various construction machinery at the site and transportation of materials, which might have a significant impact on the project neighbors. During construction, noise levels are expected to reach 80dBA if not controlled, which is well beyond the TBS standards of 55dBA during the day and 45dBA during the night. Due to the nature of the site and activities the construction activities will be done during the day only to minimize impacts.

Construction activity can result in varying degrees of ground vibrations, depending on equipment and method employed. Vibration will be produced by construction vehicles, plant and machinery during delivery of materials, processing of materials, and actual construction work. Due to an increase in activities and number of operational vehicles, the impacts of vibration will cause disturbance to humans and animals as well as birds. Vibration may even cause physical damage to properties near the construction site. This impact is local and will be of long term. Noise and vibration impacts are expected to be minimal because for most part (about 80%) the project area passes through areas without settlements. This impact will be **“moderate negative impact”**.

6.5.12 Gender-based violence (GBV), rape and sexual harassment

Due to labor influx to the project area on daily bases (there shall be no construction camp at the site) for this project, the acts of GBV, sexual harassment, and other sexual offenses such as rape might happen. About 50 skilled and unskilled workers are expected to be working for the project contractor during the

construction phase. The following impacts/ risks have the potential to happen during the construction phase if proper mitigation measures are not going to be implemented;

- Construction workers may engage in sexual fraternization with residents. In addition to this being a driver of HIV infection, it will lead to domestic conflicts, GBV, and domestic violence.
- Women who seek employment may also face demands for sexual favors before being employed which amounts to sexual harassment. Even when employed, women may face continuous and unwanted demands for sex and risk losing their jobs if they do not give in.
- Residents may also face the risk of being subjected to verbal harassment in the form of insults and demeaning comments in addition to unwanted gestures and touches by construction workers.
- Sexual harassment of women (workers) might also happen as a result of mixing of women and men at worksites.
- Outright rape is also a risk at construction sites. As a result, domestic violence and gender-based violence might happen.

This impact will be “**minor significant impact**”.

6.5.13 Gender inequity in employment

During the construction phase at the site, the potential risk that may result into gender inequality may include unequal distribution of work, discrimination against women, and unequal pay for women, among others. It should be noted that despite various efforts in regard to gender equality, such as legislation, policies and other initiatives in Tanzania, the construction sector remains one of the most male dominated sectors; women are mostly under-represented in all construction occupations and professions. As such circumstance, project implementers such as engineers, director, and managers in the mixed-use complex project are likely to be men. Thus, women are likely to face challenges associated with cultural and structural barriers, such as harassment and discrimination, limited networking opportunities and long working hours which may result in poor career prospects and high levels of stress. Moreover, women may experience difference in wages or salaries. The difference in wages may be associated with the gap in education between men and women, different types of posts held in the construction site, differences in amount of work experiences as well as difference in the working days and capability to negotiate salary. This impact will be “**minor significant impact**”.

6.5.14 Impacts associated with Transmission of Vector Borne and Communicable Diseases

Communicable diseases are caused by viral, bacterial, parasitic and fungal pathogens that are airborne or that are transmitted through an infected person, animal or environmental source. Communicable diseases include malaria, tuberculosis (TB), measles and bacterial infections such as colds, gastric infections (eg diarrhea) and the like.

Communicable diseases expected to be experienced at Kilosa, Gairo and Mvomero include Malaria, tuberculosis, gastroenteritis, pneumonia, acute respiratory infection, diarrhea, etc. HIV/AIDS and other sexually transmitted diseases are presented separately in *Section 5.3.1.12*. Some of these diseases are water borne and caused by poor sanitary conditions and poor-quality drinking water.

The presence of an external workforce working in construction sites where interaction with the community is possible could lead to the increased transmission of communicable diseases within the ward. It is expected that there shall be no construction camps at the project area, workers shall come in the morning and leave in the evening. The profile of any disease transmission will be influenced by the existing disease profile of Morogoro Region and the diseases profile of the other parts of Tanzania workers are sourced from.

In addition, if opportunistic workers (those hoping to find employment on the Project or from related activities) migrate to Morogoro, this could also impact on the transmission of communicable diseases.

Finally, overcrowding, poor hygiene and sanitation at construction site and poor waste management can also facilitate the spread of communicable diseases. There is the potential for increased transmission between contractor's workers living and then onwards into communities through interactions. Children will be at particular risk of diarrhea diseases due to their poor sanitary behaviors, while the others will be at risk of more severe health outcomes as a result of their frailty.

During construction, modifications to the environment and in-migration into the area are likely to increase the risk of transmission of malaria. Modifications to the environment can create small water pools (e.g. wheel ruts and footprints) offering new mosquito breeding grounds and leading to increased vector densities and human-vector interaction. Any influx of people into the area may play an indirect role in increasing the malaria burden. This may result from an increase in pressure on medical facilities and inadequate waste management. The highly endemic nature of malaria means that the proposed buildings are unlikely to significantly add to the already high disease burden of the community during the wet season. However, modifications to the environment may change the breeding patterns of mosquitoes extending the high risk malaria season for transmission from its peak.

As above, poor hygiene, sanitation and waste management can all result in increased risk of transmission of water borne communicable diseases such as Hepatitis A and E and Typhoid through increased risk of contamination of water and food with faecal matter. In addition, these factors can also result in increased number of pests, such as rats, which can contribute to disease transmission.

Communicable diseases have the potential to impact Project workforce and the community. It is anticipated that during the construction period the workforce will comprise up to 50 employees, both skilled and unskilled. Local labour will (as far as possible) be sourced from Morogoro region. This impact will be **"minor significant impact"**.

6.5.15 Impacts associated with Transmission of Sexually Transmitted Infections

According to Tanzania HIV Impact Survey 2022-2023 (THIS 2022-2023), Prevalence of HIV among adults in Tanzania was 6.4%, which corresponds to approximately 1,548,000 adults living with HIV. HIV prevalence was higher among women (6.6%) than among men (3.0%). Annual incidence of HIV among adults (aged 15 years and older) in Tanzania was 0.18%, which corresponds to approximately 60,000 new cases of HIV per year among adults. HIV incidence was 0.24% among women and 0.11% among men. The HIV/AIDs prevalence rate in Morogoro Region is 3.3% (See figure below).

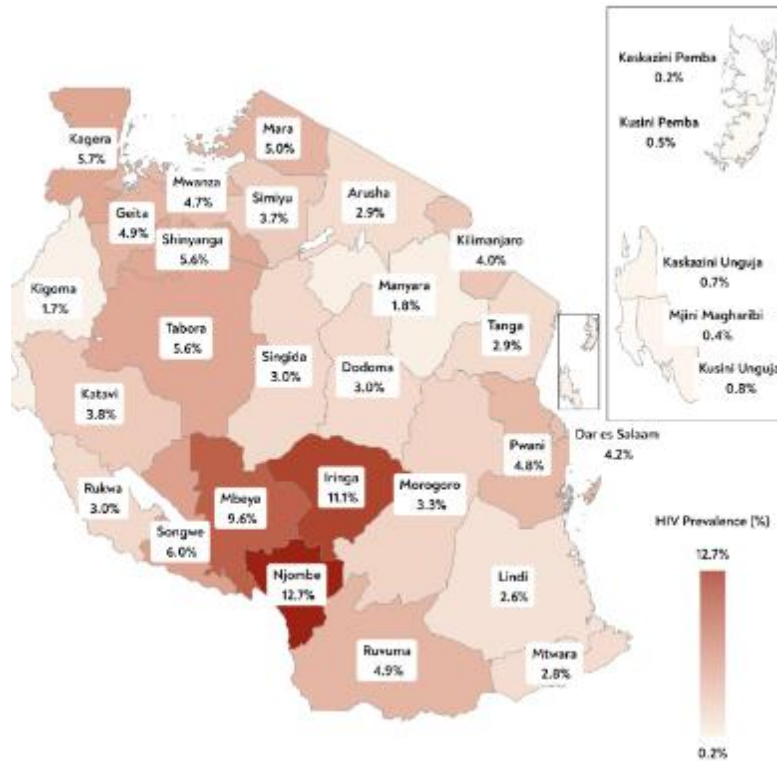


Figure 6- 2: HIV prevalence in Morogoro region

It is anticipated that during the construction period, the necessary workforce will comprise up to 50 people, who shall enter the project site and leave daily (there shall be no contractor camp). The Project could result in increased transmission of STDs including HIV/AIDS during construction due to:

- Presence of a mainly male workforce, with higher incomes, who may engage in high-risk sexual activities with young girls at the project area
- Workers establishing casual relationships with young girls. This may result in transactional sex or circumstances where the women assume they are in a more serious relationship, which will end in marriage.
- Engagement in casual high-risk sexual activity by transport drivers at their end destination. Transport drivers typically have higher rates of STDs and HIV/AIDS than the general population.
- Increased numbers of CSWs, who may have higher infection rates of STDs and HIV, near construction sites.
- In-migration, resulting in the mixing of people with higher HIV/AIDS or STD prevalence rates than the host community, which may promote the transmission of the disease.

While there is access to treatment for STIs including HIV/AIDS in the communities, it is limited in terms of quality. Furthermore, there are significant taboos around STDs, which may influence people's willingness to access treatment. Any lack of access to treatment could affect the long-term health of those who contract STDs other than HIV, including fertility, damage to internal organs and long-term disability or even death. Increased transmission of STDs including HIV/AIDS has the potential to affect the community. However, impacts could spread regionally due to vehicle movements and especially if there shall be the presence of

CSWs nearby. The increase in risk of STDs including HIV/AIDS will be long-term, as it can take time for prevalence/ incident rates to return to baseline levels. Furthermore, those infected with HIV/AIDS will have health effects, which last beyond the duration of the construction activities. This impact will be “**moderate significant impact**”.

6.5.16 Impacts on Labour and Working Conditions

According to the European Foundation for the Improvement of Living and Working Conditions (2012), whilst labour laws have influence in the United Republic of Tanzania with regard to minimum standards, the actual working conditions are often not in line with the legal provisions. The substance of labour law is often undermined and employees are subjected to conditions well below the specified minimum working conditions. Informal sector employed most people in Morogoro region which is the source of labour force for the project. Formal employment is limited. Lack of employment is an issue in the communities, especially the youth. As such, many people will lack knowledge and experience of formal employment and associated requirements.

Workers’ rights including occupational health and safety need to be considered to avoid accidents and injuries, loss of man-hours, labour abuses and to ensure fair treatment, remuneration and working and living conditions. These issues should be considered not only for those who are directly employed by the Project, but also their sub-contractors and those within the supply chain.

6.5.17 Worker Health and Safety

Bearing in mind the nature of the activities being undertaken during construction; worker health and safety is a key risk area with the potential for accidents that may result in injuries and potential fatalities as well as lost man- hours. Many national companies may currently not meet international safety requirements and standards. Employees working informally and those with limited or without awareness of their rights (for example, migrant workers, or those newly entering the labour market) are likely to be most at risk.

6.5.18 Worker Rights

The labor laws in Tanzania are generally in line with international labor laws and Tanzania has ratified the eight core International Labour Organization (ILO) conventions:

- Freedom of Association and Protection of the Right to organize Convention, 1948 (No. 87);
- Right to Organize and Collective Bargaining Convention, 1949 (No. 98);
- Forced Labour Convention, 1930 (No. 29);
- Abolition of Forced Labour Convention, 1957 (No. 105);
- Minimum Age Convention, 1973 (No. 138);
- Worst Forms of Child Labour Convention, 1999 (No. 182);
- Equal Remuneration Convention, 1951 (No. 100); and
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111).

However, the implementation of workers’ rights is unlikely to be fully aligned with these requirements. Enforcement of laws is also often limited. There is therefore a risk that some subcontractors/ suppliers on the proposed project may not be fully compliant with Tanzanian legal requirements related to labour conditions. Forced labour and child labor are unlikely to occur in sub-contractor organizations but may occur in the supply chain, particularly in relation to the provision of food supplies. Discrimination is likely to

occur as women are generally not employed in construction activities and may not be selected by contractors.

Sensitive receptors for this impact will be Project employees especially the unskilled employees who have a poor understanding of the requirements of Occupational Health and Safety (OHS) standards and their labour rights as enshrined in the law. This impact will be “**moderate significant impact**”.

6.6 Significant Impacts during the Operation Phase

Positive impacts

6.6.1 Control of river bank erosion

During the last four to five decades, rivers such as the Mkundi River, Kisangata River and Miyombo River have been undergoing strong metamorphosis in width, bank erosion, and braiding intensities. Environmental and climatic changes and watering cattle have been the main drivers for those rapid changes. In particular, the riverbank erosion has resulted in the loss of valuable land along both of the riverbanks. The intended river training on these rivers shall stabilize the bed and banks of these rivers and hence reducing soil erosion which to a great extent reduce the land area near the rivers, cause water pollution (turbidity) and contributes to siltation due to sediment movement. This impact will be “**major positive impact**”.

6.6.2 Improved Flood Protection

In these project areas, overbank spills regularly caused flooding to over hundreds of thousands of hectares of land area along the banks of Rivers such as the Miyombo, Kisangata and Mkundi Rivers. Over the years, the embankment has been increasingly under attack from bank erosion, causing the embankment to breach at several locations. After such breaches of the embankment, it needs to be retired back away from its original alignment and reconstructed. The embankment rehabilitation and reconstruction work envisaged under this project will cover 11.6km, and it will help avoid the losses caused by the repeated floods and will result in saving agricultural farms and crops and nearby settlements – the annual losses that are likely to take place caused by the flooding if no protective measures are undertaken. Floods have devastating impacts on human’s losing thousands of lives, property, livestock, and agriculture whenever it hits. Considering the devastative impacts of flood in Tanzania, it should be prevented. So, this is one of the important benefits that will avoid the flow of flood water into the developed areas. This impact will be “**major positive impact**”.

6.6.3 Ecological Uplifting of Rivers

The proposed river improvement and/or rehabilitation will contribute to the overall ecological improvement of the river. The abundance of freshwater will have a positive overall impact on the ecosystem and its functions. The proposed subprojects will be habitats for many birds and other animal. The food chain will naturally form, with some artificial species introductions, and the fauna will emerge. The ecological uplift will have the direct benefit of providing food resources and the indirect benefit of enhancing the aesthetic beauty of the river. This impact will be “**major positive impact**”.

Negative impact

6.6.4 Aquatic Weeds Formation in River Basin

The condition of the proposed river will be ideal for the aquatic weeds formation because the aquatic weeds are ideal to form with a decrease in flow of river and trapped sediments in a favorable climatic condition. Due to aquatic weed formation, there will be negative impacts on rivers and its related ecosystems. The potential impacts will include:

- Aquatic weeds can assimilate large quantities of nutrients from the river water, reducing their availability for planktonic algae;
- They may also cause a reduction in oxygen levels and present gaseous exchange with river water, resulting in adverse fish breeding;
- Dense growth of aquatic weeds may provide ideal habitat for the development of mosquitoes causing malaria, encephalitis and filarasis;
- These weeds greatly reduce the aesthetic value of the river water body from a recreational point of view; and
- They may cause tremendous loss of water from water bodies like oxbow lakes and dams through evapotranspiration.

This impact will be “**moderate negative impact**”.

6.6.5 Loss of Access

The construction of dykes along the riverbanks as part of the flood control and soil erosion project has an impact on the livelihoods of people and livestock, as these infrastructure projects will create barriers to accessing water from the rivers. The dykes are usually very tall, and their slopes might prevent people and their animals from accessing the water. Water is a vital element for the communities nearby. WRBRB and RUWASA should collaborate closely to ensure that people and livestock have access to clean water during the project's operational phase. This impact will be “**moderate negative impact**”.

6.7 Impacts During the Decommissioning Phase

6.7.1 Solid Waste Generation

During the dismantling of temporary site offices, storage areas, and the clearing of leftover materials from construction activities, the project will generate solid waste such as concrete debris, scrap metal, wood, plastics, and domestic waste. If not properly managed, this waste can pollute the environment and pose health risks to nearby communities. This impact will be “**moderate negative impact**”.

6.7.2 Noise and Dust Emissions

The use of machinery, vehicles, and manual demolition work during decommissioning will produce noise and raise dust. This could temporarily disturb residents, farmers, and livestock in the vicinity of the project sites, particularly around riverbanks and cattle troughs. This impact will be “**moderate negative impact**”.

6.7.3 Soil Erosion and Disturbance of Rehabilitated Areas

Removing infrastructure and clearing land can expose bare soils to erosion, particularly on riverbanks and areas near cattle troughs. Without proper soil stabilization and vegetation replanting, this may lead to further land degradation and sedimentation in nearby rivers. This impact will be characterized as a moderate negative impact.

6.7.4 Occupational Health and Safety Risks

Decommissioning work involves risks like falling debris, sharp objects, and accidents with machinery. Workers at the dyke sites, riverbanks, and cattle trough areas could face injuries if proper safety measures and personal protective equipment (PPE) are not enforced.

6.7.5 Possible Water Contamination

If construction debris, oil spills, or waste materials enter nearby rivers during site clearing, it could contaminate water sources used by livestock, irrigation, and communities downstream, risking health hazards and water quality issues.

6.7.6 Visual Landscape Disturbance

The presence of waste piles, exposed ground, and dismantled structures before full rehabilitation may temporarily degrade the visual quality of the landscape, affecting the aesthetic value of the project area.

6.8 Climate Change Issues Related to the Proposed Project

6.8.1 Increased Flood Risks

Heavy and unpredictable rains, attributed to climate change, may overwhelm riverbanks and dyke structures, particularly during construction and the early operational phases. This could cause damage to newly constructed dykes, cattle troughs, and surrounding farmland.

6.8.2 Extended Dry Seasons

Longer dry spells will reduce water availability for livestock troughs and irrigation needs. This could increase pressure on remaining water sources, raising the risk of livestock congestion at trough sites in Matala, Makuyu, and Mvumi.

6.8.3 Higher Evaporation Rates

Hotter temperatures will increase water loss from river surfaces and trough storage tanks, reducing water availability for livestock and requiring more frequent refills from boreholes or other water sources.

6.8.4 Increased Sedimentation

Intense rainfall events can increase soil erosion upstream, leading to higher sediment loads in the Miyombo, Mkondoa, Kisangata, and Mkundi rivers. This would reduce the effectiveness of river training works and increase the need for regular maintenance.

6.8.5 Temperature Stress on Infrastructure

Higher daytime temperatures could weaken construction materials such as concrete dykes, pipes, and solar equipment, reducing their lifespan and increasing maintenance costs for the project.

6.8.6 Climate-Induced Shifts in Livestock Watering Patterns

Prolonged droughts and changing grazing areas may force more livestock to gather at cattle troughs, increasing pressure on water resources and the risk of damage to trough structures if demand exceeds design capacity.

6.8.7 Potential Drought-Induced Conflicts

In times of extreme water shortage, competition between farmers and pastoralists over water points could escalate into local conflicts, particularly in shared-use areas like Mvumi and Makuyu, where water demand is high.

6.8.8 Greater Variability in River Flows

Unpredictable River flows driven by climate change could affect the performance of river training and dyke systems, with some seasons experiencing dangerously high floods. In contrast, others observe extended dry periods that reduce access to water for irrigation and livestock.

6.9 Summary of Impacts Significance Before application of Mitigation Measures

The matrix shown below (Table 6.6) gives the summary of the impacts identified and respective significance ratings prior to application of mitigation measures. The methodology is provided in section 6.6.

Table 6- 5: Summary Significance of impacts before application of Mitigation Measures

		Impact Significance Rating	
S/N	Environmental and Social Impacts	Mobilization and Construction Phase	Operation Phase
1.	Environmental Impacts		
2.	Control of River Bank Protection	Negligible	Major
3.	Flood control and prevention	Negligible	Major
5.	Impacts on water quality	Major	Negligible
6.	Impact on Biodiversity	Major	Negligible
7.	Impacts on Air Quality	Moderate	Negligible
8.	Impacts due to Waste Generation	Moderate	Negligible
9.	Occupational Safety and Health	Moderate	Negligible
10.	Impacts due to Increased Noise and Vibration Levels	Moderate	Negligible

S/N	Environmental and Social Impacts	Impact Significance Rating	
		Mobilization and Construction Phase	Operation Phase
11.	Soil erosion	Moderate	Negligible
12.	Aquatic Weed formation	Negligible	Moderate
	Social Impacts		
1.	Employment Opportunities and skills development	Major	Negligible
2.	Growth of local economy	Minor	Minor
3.	Increased Tanzania Government Revenue	Minor	Minor
4.	Community Health, Safety and Security Risk	Moderate	Negligible
5.	Gender Based Violence (GBV)	Minor	Negligible
6.	Gender inequity in employment	Minor	Negligible
7.	Impacts due to Transmission of Communicable Diseases	Minor	Negligible
8.	Transmission of Sexually Transmitted Infections	Moderate	Negligible
9.	Impacts on Labour and Working Conditions	Moderate	Negligible
10.	Loss of Access	Minor	Moderate

Source: Consultant, 2025

6.10 Project Alternatives

Consideration of project alternatives is crucial in ensuring that the developer and decision-makers have a broader base from which to choose the most appropriate option. The following alternatives are considered and have been examined in this ESIA Study:

6.10.1 No project alternative

The no project alternative entails retaining the current status quo (No construction of the new Dyke and Cattle troughs, no rehabilitation of Mkondoa dyke and no river training and bank stabilization at Kisangata river and Mkundi River). Adopting this option would mean avoiding most of the negative effects associated with this project's activities and missing all the positive benefits, such as flood control within the Mkondoa Catchment. The benefits that shall be missed includes employment opportunities, Flood control and prevention, Increase in crop production, Increased revenue to Gairo, Kilosa, Mvomero, Districts and the sub-basin as a whole, Reliable cattle watering points (cattle troughs), Increased pressure on social services and utilities, and Increased surface water runoff etc.

6.10.2 Alternative Site

The option of using another site apart from that of the proposed one was also considered. However, the proposed site was observed to have the following advantages over others;

- The site for Cattle Troughs construction has the potential to reduce land-use conflicts, minimize water contamination risks, potential to drill boreholes with high yield, and avoid ecologically sensitive zones.
- Sites for River Training have the potential to protect more critical areas and could enhance water retention and sediment control.
- Site for Construction of New Dyke has the potential to reduce displacement of people, avoids areas of high environmental sensitivity, and may provide better flood management in critical zones.

6.10.3 Energy Alternative

The use of other alternative energy sources apart from power from the National grid and diesel generator for powering were considered. As is the case in most developing countries, the supply of electricity from national grids is not reliable as it mostly originates from hydroelectric power generators, which depend on rainfall frequency, intensity, and pattern. On the other hand, diesel generators, which are mainly used during power interruptions, emit a lot of greenhouse gases, especially when they are run for a long time. Solar energy was considered; however, the quantity of electricity required would require a large area for solar panels and is, therefore, not feasible.

6.10.4 Technology and Construction Material Alternatives

Construction technology involves the choice of construction materials and the techniques and means used to erect project component particularly the dykes and cattle troughs. As with the design process, cautious consideration of contextual conditions is crucial to developing appropriate construction technologies. In addition, any selected technology must be constantly reviewed and, if necessary, upgraded during the construction process. Several construction technologies were considered. The following criteria were used to select the most suitable technology options for this project;

- The use of locally available, low-energy-consumption construction materials, especially those produced with renewable energy sources;
- The use of materials from sustainable production chains (e.g., the avoidance of timber from savage deforestation);
- The use of non-toxic materials; and
- The use of materials easily dismantled (and recyclable as materials or energy sources).

6.10.5 Alternative dyke design

In the context of flood protection along the Mkondoa River at Kilosa, two alternative dike alignment designs were evaluated: the *setback dike* and the *waterside dike*. The setback dike, positioned farther from the riverbank, offers numerous ecological and operational advantages, including the preservation of natural wetland habitats, enhanced floodway capacity, reduced peak flood levels and flow velocities, minimized bank erosion, and lower long-term maintenance costs due to infrequent direct water contact. Conversely, the waterside dike, built directly adjacent to the riverbank, requires less land and can be constructed with existing spatial limitations but typically faces higher maintenance demands and greater exposure to erosive forces. The selection between these alternatives was guided by factors such as environmental sustainability, land availability, flood management efficiency, and local site constraints.

CHAPTER SEVEN

7 IMPACTS MITIGATION MEASURES

This chapter describes measures or interventions that shall be implemented so as to minimize the potential impacts identified in the preceding chapter. Many of the mitigation measures put forward are nothing more than good engineering practice that shall be adhered to during all the project phases.

7.1 Enhancement Measures for Positive Impacts during Construction Phase

7.1.1 Benefits to communities resulting from employment.

- The contractor shall be encouraged to employ local unemployed yet willing-to-work hard manpower to the extent viable, subject to a minimum of 50% unskilled labor. This will ensure that local people benefit more benefited out of the project.
- Employment should be on equal opportunities for both genders,
- The employment procedures and arrangements should be in agreement with OS2
- The contractor shall provide on-the-job training.

7.1.2 Growth of Local Economy

- The contractor shall buy most of the construction materials available locally from authorized suppliers.
- The contractor shall involve village government for notifying the public as per OS10 and labourers be recruited as per OS2.

7.1.3 Increase of Government Revenue

- Developer and contractor shall pay all the required taxes and duties promptly
- The employment procedures and remuneration should adhere to local laws and OS2

7.2 Mitigation Measures for Negative Impacts During Construction Phase

7.2.1 Impact on Water Quality

- The contractor shall avoid the release of pollutants or, when avoidance is not feasible, minimize and control the concentration and mass flow of their release using the performance levels and measures specified in national law or the OS3, whichever is most stringent.
- The surface and groundwater reserves will be adequately protected by installing screens and barriers to protect the source of contamination such as construction and oily waste that will degrade its potable quality;
- Suspended sediments would be monitored in the downstream flow and in case of a sudden change for necessary measures;
- Wastes will be collected, stored temporarily and taken for disposal site. Similarly, if the sewage after treatment is to be discharged onto the land it will meet the requirements of the primary effluent quality standards (PEQS) for disposal of wastewater.
- Regular water quality monitoring according to determined sampling schedule;
- Spill kits shall be kept close to the construction sites in case there is an incidental spill off, so that it can be immediately cleaned up;

- Refueling, storage, servicing or maintenance of the equipment within 100 m of drainages, water courses, alluvial plains or other sensitive environmental resources will be strictly prohibited. If these activities have to be done at the construction site, all precautionary measures shall be taken to prevent leaks or spills from reaching the soil or nearby water courses;
- Ready-mix concrete trucks containing alkaline cement or residues of cement will not be allowed to enter any watercourse. Washout of the concrete trucks shall be performed at the concrete batching plant camp, where appropriate facilities will be provided. If the washout of concrete trucks were necessary at or near the construction site, this shall be done at distance greater than 200 m of any watercourse and never in a very high or high habitat sensitivity area. The washout area will be clearly signposted and drivers shall be aware of the designated locations for washout;
- Handling and storage of lubricants, solvents shall be properly organized as well proper usage of construction equipment;
- Storage of substances that are harmful to soils and waters (e.g. fuels for construction machinery) on the construction site shall be minimized. All hazardous substances either products to be used or waste, shall be stored in adequate places, far from sensitive areas (e.g. water courses, habitats with a rich biodiversity) and adequately equipped to prevent any soil, surface water or groundwater contamination);
- Undertake regular preventive maintenance of vehicles and construction machinery so as to reduce leakages of lubricants, motor oil and fuel.

7.2.2 Impact on Biodiversity

- For the trees to be removed for the proposed interventions, compensatory tree plantation will be carried out along the embankment. About 50 ha of land are available for this purpose along the priority reach, and a plantation plan will be prepared. The tree plantation will be carried out fully in compliance with the AfDB OS6. In addition to providing ecological service, embankment stabilization, and enhanced aesthetic value, this plantation will also prevent any encroachment over the embankment. A monitoring program will be initiated for the regrowth of the aquatic vegetation along the riverbank revetment.
- Since most of the potentially negative impacts of riverbank revetment on the aquatic habitat are expected to be temporary in nature, and since the revetment is likely to provide habitat for some aquatic species, as stated earlier, no mitigation measures are needed for this activity.
- Embankment slopes should be given along with the river. The slope is then planted with grasses, sedges and herbs. This will mitigate the permanent loss of habitat for the threaten species of fresh water turtle among others. Planting on such bank slopes would increase the value of habitat by providing vertical structural diversity and will provide a compensation for the lost land-water interface for the movement of reptile and amphibian species. It also provides compensation for clearance of vegetation along banks of river.
- Ten (10) trees against each fallen tree of similar floral function on both sides of the proposed alignment should be planted that will help in rehabilitating the floral and faunal activities of the project area.
- Forests restoration should be done with native species, e.g., *Acacia nilotica*. It will enhance the site value and in part will provide compensation for the lost habitat for the species;
- The mobility of construction machinery should be planned to minimize the loss of habitat;

- Incorporate technical design measures to minimize removal of trees, if possible such as change in the alignment;
- The construction camp management plan during the planning stage must consider fencing and gating to check the entry of animals in search of eatable goods; and
- Similarly, waste management plan of the camps must be considered at the planning stage to prevent wild animals and birds.
- Barrage and channelization works shall be properly designed to accommodate design flows;
- Provision to control flood damages and provision of safety of embankments will be considered during the design of these arrangements;
- Control of wastewater and sediment releases to river;
- Contractor will be required to implement the water quality management protocols;
- Ensure the minimum ecological flow at downstream area;
- Inspections by the fisheries officers should be facilitated to facilitate the proper implementation of relevant laws;
- All vehicles, machinery, equipment and generators used during construction activities will be kept in good working condition and be properly tuned to minimize the adverse impact on waterfowl habitat, by reducing noise, exhaust and land disturbance;
- Communities are given awareness and are involved in the proper protection of the Biota inside and around the project area and
- Proper monitoring to check the compliance of laws, regulations and standards will be carried out.
- Hunting, poaching and harassing of wild animals shall be strictly prohibited, and Contractor shall be required to instruct and supervise its labor force accordingly and clear orders should be given in this regard;
- Proponent must take NOC from the relevant department prior to construction phase;
- After consultation with the Wildlife Department, site specific Wildlife Safety Plans should be developed;
- Wildlife Conservation Act, 2009 will be followed for compliance;
- Similarly, wastes shall be properly disposed of to prevent it being eaten by animals, as it may be hazardous to them.

7.2.3 Impact on air quality due to dust and gaseous emission

- Effective control of the potential by minimizing the total area of bare earth at the project site during dry periods.
- Accesses and construction sites will be kept moist to reduce dust formation. Water sprays should be implemented all the time.
- Dust-generating activities will be slowed down in days of strong wind;
- Ground will be moistened during loading and unloading of aggregates in trucks;
- Truck dumpers carrying spoil or other dusty materials will be covered with tarps;
- Loaded trucks should be washed down prior to exit from the working site to ensure that loose material is not tracked onto the rivers;
- Hoardings will be constructed around the construction sites to minimize the spread of dust;
- Vehicles and construction machinery will be required to be properly maintained and to comply with relevant emission standards;
- No unnecessary idling of construction vehicles at the construction sites will be allowed;

- Construction truck traffic will be optimized so as to get a minimum number of trucks carrying the maximum volume of materials. This will be addressed in the Construction Traffic Management Plan;

7.2.4 Impacts due to Waste Generation

- All waste/materials which can be reused at site as follows;
 - Salvaging easy-to-remove items like doors, hardware, appliances, iron sheets, and fixtures for reuse.
 - Wood cut-offs can be used for cripples, lintels, and blocking to eliminate the need to cut full length lumber. Scrap wood can be chipped on site and used as mulch or groundcover.
 - Brick, concrete and masonry can be recycled on site as fill, subbase material or driveway bedding.
 - The demolition materials which cannot be reused/ recycled shall be collected as garbage at the transfer station and disposed off at dump site
- Identification and classification of the different waste types that could be generated at the construction site (due to the materials used and waste generated in different sections) according to the Environmental Management Regulations (Hazardous Waste Control), 2009;
- Completely separate hazardous from non-hazardous waste streams at the construction site should be done;
- Immediate removal of waste material (concrete, iron, rocks, etc.) waste from site
- Collection and disposal of district solid alike waste generated in the construction site and camps (food, beverages, packaging waste such as paper, bottles, glass, etc., glass bottles) according to national legislation (separation of recycling waste materials from the waste stream that will be disposed at authorized dumpsite). Recyclable waste shall be given to an authorized recycling company;
- Signing a contract with the company for waste collection (registered by NEMC) and transportation for the collection and transport of the hazardous waste generated at the construction site to authorized dumpsite;
- Ensuring that the contracts signed with the companies dealing with waste recycling and recovery will take delivery and acceptance of the waste streams is performed on a frequent basis so that the construction sites remain clean at any time;
- Reusing excavated soil and construction waste as much as possible;
- The separate collection of possible hazardous waste (motor oils, vehicle fuels) and sub-contracting an authorized collector and transporter to transport, recovery or finally dispose the hazardous waste;
- Establishing the Temporary Hazardous Waste Storage Points according the national legislation on handling, labelling, storage and management with hazardous waste;
- Establishing and following the hazardous waste management procedure;
- Ensuring that the hazardous waste is packaged and labelled showing the R and S phrases (risk and safety statements of the hazardous waste) and it is temporary stored on safety storage facility equipped with adequate ventilation, fire resistant conditions especially if there are VOC emissions, mercury containing lamps, asbestos materials form demolition works (if any);

- Ensuring that the access to these temporary hazardous waste storage points be only allowed for trained and equipped staff, and entrance prohibited for untrained workers and public;
- Promptly cleaning up All waste spills;
- Making available for inspections full records of the type of waste stream generated, quantity composition, origin, disposal destination and method of transport for all different waste streams;
- Contractors shall cooperate with Village leaders for smooth collection of solid wastes from the project area
- Undertaking the selective removal and storage of top soil;
- The removal of topsoil from the soil surface so as to serve for reuse in the restoration of disturbed areas not occupied by the proposed project;
- The reuse of topsoil to restore cuttings;
- Burning and burying of wastes shall be strictly prohibited

7.2.5 Occupational Health and Safety Risks

Providing basic medical training to specified work staff and basic medical service and supplies to workers;

- Complying with the safety precautions for the construction workers as per International Labor Organization (ILO) Convention No. 62, as far as applicable to the Project Contract and requirements of OS2 and OS4;
- Training of workers in construction safety procedures, environmental awareness, equipping all construction workers with safety boots, helmets, gloves and protective masks, goggles, shields and monitoring their proper and sustained usage;
- The Proponent, through the Contractor, is committed to adherence to the occupational health and safety rules and regulations stipulated in the Occupational Safety and Health Act, 2003.
- Appropriate working gear (such as nose, ear mask and clothing) and good construction site management shall be provided.
- The contractor will ensure the provision of medicines, first aid kits, ambulances etc. at the camp site;
- Work areas will be cordoned off where necessary;
- Contractors will instruct their staff to use Personal Protective Equipment (PPE) (e.g., wire containment, displaying warning signs along the work site, and communicating warnings to mats) to enhance safety;
- Safety lookouts will be built to prevent people and vehicles from passing at the time of hot or cold work; and
- An emergency management plan must be devised by the contractor in close coordination with the emergency services.
- A well-stocked First Aid kit (administered by first aider) shall be maintained at each farm area and construction site. The first aider shall also be responsible for the primary treatment of ailments and other minor medical cases as well as providing some health education to the workforce.

7.2.6 Community Health Safety and security Risks

The contractor will ensure the provision of medicines, first aid kits, emergency vehicles, etc., at the workplace;

- The laborers with different transmittable diseases will be restricted within the construction site;
- Ensure that the site is restricted from the entry of irrelevant people, particularly children;

- Training of workers in the construction safety procedures, environmental awareness, and equipping all construction workers with safety boots, helmets, gloves, ear plugs, and protective masks, and monitoring their proper and sustained usage;
- Provision of proper safety and diversion signage, particularly in urban areas and at sensitive/accident-prone spots;
- Setting up speed limits in close consultation with the local stakeholders;
- The mitigation measures provided for air and noise shall be adopted to reduce the air pollution, noise pollution and vibrational impacts on nearby community; and
- The GRM will be prepared and communicated to all workers and the community in line with OS1 and OS10 and reduce this impact.

7.2.7 Impacts due to Noise and Vibration

- Equipment should be maintained in accordance with the manufacturer's instructions and specifications, training to equipment operators on equipment operational guidelines and standards with dos and don'ts such as "shut off the engine when not in use".
- Restricting noisy construction activities to normal working hours (8 am - 5 pm).
- Wherever possible, all construction equipment will comply with the requirements of the Tanzania Bureau of Standards (TBS) on noise emission in the environment by equipment for use outdoors. All the equipment shall bear the TBS marking and the indication of the guaranteed sound power level and shall be accompanied by TBS declaration of conformity;
- All vehicles and machinery used at the construction sites will be subject to regular maintenance. The vehicles and machines that are excessively noisy due to poor engine adjustment or damaged noise control devices shall not be operated until corrective measures have been taken;
- The location of noisy equipment will be chosen as far as possible from sensitive receptors (dispensary, hospital, school, offices). When near sensitive receptors, construction works will be scheduled and provided with the necessary resources so that the time of exposure is as short as possible;
- The contractor shall adhere to OS3, which requires observing pollution prevention and energy efficiency technologies
- The Earth moving equipment shall be operated as far away from vibration sensitive areas as possible
- Earth moving and ground impacting operations shall be phased so as not to occur in the same time period because vibrations are additive.
- Night time activities shall be avoided as people feel more vibrations during night time hours.
- Dynamic compaction. A smaller falling weight will produce smaller vibrations;
- Avoid vibratory rollers and packers near sensitive receptors.
- Monitoring of vibrations during the performance of critical work processes will be undertaken in buildings which are within a distance of 20-30 meters from the area where the these works take place.

7.2.8 Soil Erosion

- There shall be no construction activities on the ground during rainy season

- The contractor shall deliberately re-cover exposed soils with pavements for smooth operations and unpaved area shall be covered with grass to overcome erosion by moving water in the area.
- Proper drainage channels shall be provided to direct water to designated area.
- Proper grading to promote sheet flow and minimize flow concentration on unconsolidated soil.

7.2.9 Gender based violence (GBV), equity, rape and sexual harassment

- All workers, community and stakeholders will be educated on preventing and responding to sexual harassment, SEAH, and GBV ahead of any project-related work as per OS4.
- Workers shall be provided with identification cards and shall put on uniforms all the time while at the site
- The community within the vicinity of the college where construction will take place will also be educated on gender-based violence and sexual offences such as sexual harassment, rape and defilement in the context of labour influx and the prevention and response measures.
- Strategies such as male involvement will be employed in preventing and responding to GBV and sexual harassment
- Partnerships will be established with relevant government agencies and NGOs to ensure survivors of GBV and sexual offences access survivor-centered services such as medical care, psychosocial support, legal redress, safety, etc as and when necessary
- Impose zero tolerance on sexual harassment, all forms of gender-based violence, and discrimination at all phases of the project

7.2.10 Gender inequity in employment

- WRBRB and contractor shall ensure that women get adequate employment opportunities during recruitment and job postings.
- The contractor shall carry out regular sensitization and awareness campaigns for workers to promote gender equity in employment during the construction works and during operation
- During programme inception, contractor shall disclose standard operating procedures, guidelines and management systems established to ensure the promotion of gender equality and social inclusion
- Programme staff and trainers need to include male and female representatives from diverse ethnic groups. They will need to receive training on gender equality and social inclusion within the context of the programme.
- The contractor shall provide gender disaggregated data, separate bathing, changing, sanitation facilities for men and women

7.2.11 Impacts associated with Transmission of Vector Borne and Communicable Diseases

- Workers should receive training as part of their induction and then at least every 6 months on potential high risk communicable and vector borne diseases, symptoms, preventative measures and transmission routes as well as treatment options. This will be particularly important for diseases with which non-local workers are unfamiliar and in case of any emerging disease outbreaks.

- A Worker Code of Conduct should be developed providing a site code of behaviour including worker-worker interactions, worker-community interactions and development of personal relationships with members of the Community. This would apply to all Project workers and visitors to the construction site.
- In the event of a new disease, increased transmission or outbreak compared to the baseline, the Project should interact with local health care facilities and workers to ensure there is an appropriate response in place. This involves community education and awareness, training of health care workers etc
- For all contractors and sub-contractors, at worker sites the following will be implemented at a minimum in order to minimize disease transmission:
 - Providing workers with appropriate sanitary facilities which are appropriately designed to prevent contamination.
 - Developing a robust waste handling system to avoid the creation of new vector breeding grounds or attracting rodents to the area.
 - Implementing measures to reduce the presence of standing water onsite through environmental controls and source reduction to avoid the creation of new breeding grounds.
 - Ensuring the construction site is kept clean and free from any accumulation of wastes as well as supplied with clean potable water.
 - Ensuring appropriate food preparation and monitoring measures are in place.
 - Monitoring to ensure that all standards are being met by the relevant departments.
- The workforce will be provided with access to treatment at health facilities near the site. Access to health care should include direct employees, sub-contractors and employees of the supply chain working on based on site.
- The Project should implement TB prevention measures including testing and referral for treatment for all personnel working on the Project. This approach should be explained clearly to the workforce along with making it clear that there are no consequences for their employment.
- The Project should monitor the emergence of major pandemics through World Health Organization (WHO) alerts and in the event of a pandemic review mobilization and demobilization of ex-patriate Project personnel and/ or implement appropriate control measures and Emergency Response Plans.

7.2.12 Impacts associated with Transmission of Sexually Transmitted Infections

- An HIV/AIDS training course and on-going education on transmission of HIV/AIDS and STDs, to employees, through workshops, posters and informal information sessions;
- Encouragement of employees to determine their HIV status;
- Supply of condoms/ femidoms at the construction site(s) and Development of a comprehensive Construction Site Management Plan, including rules for on-site behavior, entrance and exit policies and prohibition of sex workers on site.
- As part of STD Management Plan, information should be provided to workers on STD prevalence rates in Tanzania as well as the expectations of local communities if a women is made pregnant by a worker (e.g., marriage, financial implications etc.).
- Workers should have access to confidential health care for the treatment of STDs through medical facilities/ health care at Project site.

- The Project should partner with other NGOs and CBOs to support the provision of information, education and communication campaigns around safe sexual practices and transmission of STDs.

7.2.13 Impacts on Labour and Working Conditions

- The Project should priorities the recruitment of workers and procurement of goods and services from within the Morogoro region then to national companies. This will not apply to the provision of highly technical equipment. The Project should develop a fair and transparent employment and procurement policy and processes to avoid any potential for nepotism or favouritism. The policy should be shared with the Ward and Village Leaders.
- Contractor will notify District Council, Ward and Village leaders of the specific jobs and the skills required for the Project, prior to the commencement of construction phase. This will give the local population time to prepare and apply for the available job opportunities on time. This is mainly applicable to unskilled and semi-skilled workers who will be locally sourced.
- Employment and procurement opportunities will be publicly advertised in appropriate newspapers, District Offices and Ward and Village offices and in all relevant languages in a timely manner, to allow fair competition.
- There will be no requirement for applicants to make payments for applying for, or securing, employment on the proposed Project.
- The Project will ensure that recruitment procedures are transparent and monitored to ensure that those recruited present their actual experience, geographical location, health status, and age and that requirements for local employment are being met.
- The Project will develop and implement a program of up-skilling, training and development for workers to assist them in accessing opportunities associated with the Project and in finding work following completion of their contracts.
- The Project will provide training on health and safety and quality standards required by the Project for provision of goods and services to the Project to ensure that local businesses have the opportunity to benefit.
- The Project will ensure that contracts are unbundled to allow a number of small businesses to provide goods and services rather than the supply being monopolized by one larger sub-contractor.
- Provision of clear and understandable information regarding rights under national labour and employment law, and any applicable collective agreements, including those related to hours of work, wages, overtime, compensation, etc.
- Provision of reasonable working conditions and terms of employment.
- Provision of employment, compensation/remuneration and working conditions, including working hours, based on equal opportunity and fair treatment, avoiding discrimination on any aspects.
- Provision of adequate welfare facilities on site.
- Implementation of a grievance mechanism for the Project workers.
- Adoption and implementation of a sexual harassment policy.
- Adoption of open attitude towards freedom of association.
- Contractor should ensure no employee or job applicant is discriminated against on the basis of his or her gender, marital status, nationality, ethnicity, age, religion or sexual orientation.

- All workers (including those of subcontractors) should, as part of their induction, receive training on worker rights in line with Tanzanian legislation to ensure that positive benefits around understanding labour rights are enhanced. This process should be formalized within the Code of Conduct that would be provided by Contractor.
- All workers (including those of subcontractors and suppliers) should have contracts, which clearly state the terms and conditions of their employment and their legal rights. These contracts should be aligned with Tanzanian labour law, the ILO core conventions and the requirements of AfDB Occupational Health and Safety Guidelines. Contracts should be verbally explained to all workers where this is necessary to ensure that workers understand their rights.
- The Project should put in place a worker grievance mechanism that should be accessible to all workers, whether permanent or temporary, directly or indirectly employed. The worker grievance mechanism should be open to Contractor and the subcontractor workforce in the event that their grievance is not adequately resolved by their direct employer. Contractor would then have the authority to act to resolve this grievance.
- All workers (including those of Contractor and the subcontractor) should have access to training on communicable diseases and STDs and community interactions in general.
- Contractor should undertake surveillance and assurance that no children or forced labour is employed directly, and to the extent possible by third parties related to the Project and primary suppliers where such risk may exist.

7.3 Enhancement measures for the positive impacts during the operation phase

7.3.1 Control of river bank erosion

- Planting trees along the riverbanks and beyond the boundary (buffer zone)
- Controlling agricultural activities to reach the river bank
- Avoiding watering cattle in the river

7.3.2 Improved Flood Protection

- Stabilizing/increasing the riverbed regularly to prevent sedimentation
- Conducting river training and monitoring in all meandering sections and planting trees
- Agricultural activities should not approach the river bank
- Maintaining the river buffer zone

7.3.3 Ecological Uplifting of Rivers

- Avoiding water pollution
- Preventing agricultural activities along the rivers

7.4 Mitigation measures for negative impacts during the operation phase

7.4.1 Aquatic Weeds Formation in River Basin

Although many methods exist for the control of aquatic weeds but best possible measures that can be employed under the circumstances are given as under:

- Aquatic weeds can be controlled biologically by the introduction of various herbivorous species. Grass carp with common carp, turtles, Ducks and Geese are well known as aquatic weed

- feeders. The grass carp and turtles are very effective in controlling aquatic weed because they feed directly on these weeds. The common carp feed on bottom-dwelling plants and sediments and are important to root out of these plants;
- The above measure will be very effective in controlling aquatic weeds although if the problem exists then mechanical aquatic harvester should be employed for cutting and removing all the weeds present in the river water body.

7.4.2 Loss of Access

- WRBWB shall work closely with RUWASA to provide clean water to the communities near the project

7.5 Summary of Impacts Significance Before application of Mitigation Measures

The matrix shown below (Table 6.6) gives the summary of the impacts identified and respective significance ratings prior to application of mitigation measures. The methodology is provided in section 6.6.

Table 7- 1: Summary Significance of impacts before application of Mitigation Measures

S/N	Environmental and Social Impacts	Impact Significance Rating	
		Mobilization and Construction Phase	Operation Phase
1.	Environmental Impacts		
2.	Control of River Bank Protection	Negligible	Major
3.	Flood control and prevention	Negligible	Major
5.	Impacts on water quality	Minor	Negligible
6.	Impact on Biodiversity	Minor	Negligible
7.	Impacts on Air Quality	Negligible	Negligible
8.	Impacts due to Waste Generation	Negligible	Negligible
9.	Occupational Safety and Health	Negligible	Negligible
10.	Impacts due to Increased Noise and Vibration Levels	Negligible	Negligible
11.	Soil erosion	Negligible	Negligible
12.	Aquatic Weed formation	Negligible	Negligible
	Social Impacts		
1.	Employment Opportunities and skills development	Major	Moderate
2.	Growth of local economy	Minor	Moderate
3.	Increased Tanzania Government Revenue	Negligible	Minor
4.	Community Health, Safety and Security Risk	Negligible	Negligible
5.	Gender Based Violence (GBV)	Negligible	Negligible

		Impact Significance Rating	
S/N	Environmental and Social Impacts	Mobilization and Construction Phase	Operation Phase
6.	Gender inequity in employment	Negligible	Negligible
7.	Impacts due to Transmission of Communicable Diseases	Negligible	Negligible
8.	Transmission of Sexually Transmitted Infections	Negligible	Negligible
9.	Impacts on Labour and Working Conditions	Negligible	Negligible
10.	Loss of Access	Negligible	Moderate

Source: Consultant, 2025

CHAPTER EIGHT

8 ENVIRONMENTAL AND SOCIAL IMPACT MANAGEMENT PLAN

8.1 Introduction

Impact Management Plan Plans for the implementation of mitigation measures for the proposed project are provided below. The Plans indicate institutional responsibilities, time to take the action and estimated costs. The proposed costs are only indicative; the proposed development should proceed with the suggested changes, and the developer will work out on actual costs and include them in the overall cost of the project. Based on the EMA, (URT 2004), NEMC is required to ensure compliance of all the agreed conditions for authorization. The measures are given in Table 8- 1. The WRBWB is committed to implementing the mitigation measures suggested by the Environmental and Social Impact Management Plan (ESMP).

8.2 Implementation of the Management Plan

The environmental and social mitigation measures incorporated in the detailed engineering design shall be handed over to the contractor during the 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 the close supervision of the firm representing the WRBWB. During the Operation Phase, the WRBWB shall implement the ESMP.

8.3 Environmental and Social Costs

The principal environmental and social cost includes the cost for implementing the mitigation measures proposed. These costs are indicated in Table 8- 1. WRBWB shall cover all the costs proposed in the ESMP.

Table 8- 1: ESMP for the Proposed interventions within the Mkondoa Catchment.

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
Mobilization and Construction Phase				
Employment opportunities	<ul style="list-style-type: none"> • All construction activities 	<ul style="list-style-type: none"> • The contractor shall be encouraged to employ local unemployed yet willing-to-work hard manpower to the extent viable, subject to a minimum of 50% unskilled labor. This will ensure that local people benefit more from the project. • Employment should be on equal opportunities for both genders, • The employment procedures and arrangements should be in agreement with OS2 • The contractor shall provide on-the-job training. 	Contractor/ WRBWB	3,000,000
Growth of Local Economy	<ul style="list-style-type: none"> • Supply of raw materials, selling of food, employment, etc 	<ul style="list-style-type: none"> • The contractor shall buy most of the construction materials available locally from authorized suppliers. • The contractor shall involve village government for notifying the public as per OS10 and labourers be recruited as per OS2. 	Contractor/ WRBWB	-
Increase of Government Revenue	<ul style="list-style-type: none"> • Importation of Materials and Machines, Employment 	<ul style="list-style-type: none"> • Developer and contractor shall pay all the required taxes and duties promptly • The employment procedures and remuneration should adhere to local laws and OS2 	Contractor/ WRBWB	-
Impact on Water Quality	<ul style="list-style-type: none"> • Site Clearance, Works in the rivers, Washing of Machines, Works in Workshop, waste disposal 	<ul style="list-style-type: none"> • The contractor shall avoid the release of pollutants or, when avoidance is not feasible, minimize and control the concentration and mass flow of their release using the performance levels and measures specified in national law or the OS3, whichever is most stringent. • The surface and groundwater reserves will be adequately protected by installing screens and barriers to protect the source of contamination such as 	Contractor/ WRBWB	50,000,000

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>construction and oily waste that will degrade its potable quality;</p> <ul style="list-style-type: none"> • Suspended sediments would be monitored in the downstream flow and in case of a sudden change for necessary measures; • Wastes will be collected, stored temporarily and taken for disposal site. Similarly, if the sewage after treatment is to be discharged onto the land it will meet the requirements of the primary effluent quality standards (PEQS) for disposal of wastewater. • Regular water quality monitoring according to determined sampling schedule; • Spill kits shall be kept close to the construction sites in case there is an incidental spill off, so that it can be immediately cleaned up; • Refueling, storage, servicing or maintenance of the equipment within 100 m of drainages, water courses, alluvial plains or other sensitive environmental resources will be strictly prohibited. If these activities have to be done at the construction site, all precautionary measures shall be taken to prevent leaks or spills from reaching the soil or nearby water courses; • Ready-mix concrete trucks containing alkaline cement or residues of cement will not be allowed to enter any watercourse. Washout of the concrete trucks shall be performed at the concrete batching plant camp, where appropriate facilities will be provided. If the washout of concrete trucks were necessary at or near the construction site, this shall be done at distance greater than 200 m of any watercourse and never in a very high or high habitat sensitivity area. The washout area will be 		

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>clearly signposted and drivers shall be aware of the designated locations for washout;</p> <ul style="list-style-type: none"> • Handling and storage of lubricants, solvents shall be properly organized as well proper usage of construction equipment; • Storage of substances that are harmful to soils and waters (e.g. fuels for construction machinery) on the construction site shall be minimized. All hazardous substances either products to be used or waste, shall be stored in adequate places, far from sensitive areas (e.g. water courses, habitats with a rich biodiversity) and adequately equipped to prevent any soil, surface water or groundwater contamination); • Undertake regular preventive maintenance of vehicles and construction machinery so as to reduce leakages of lubricants, motor oil and fuel 		
Impact on Biodiversity	<ul style="list-style-type: none"> • Site clearance, Movement of machines and equipment, waste disposal 	<ul style="list-style-type: none"> • For the trees to be removed for the proposed interventions, compensatory tree plantation will be carried out along the embankment. About 50 ha of land are available for this purpose along the priority reach, and a plantation plan will be prepared. The tree plantation will be carried out fully in compliance with the AfDB OS6. In addition to providing ecological service, embankment stabilization, and enhanced aesthetic value, this plantation will also prevent any encroachment over the embankment. A monitoring program will be initiated for the regrowth of the aquatic vegetation along the riverbank revetment. • Since most of the potentially negative impacts of riverbank revetment on the aquatic habitat are expected to be temporary in nature, and since the revetment is 	Contractor/ WRBWB	30,000,000

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>likely to provide habitat for some aquatic species, as stated earlier, no mitigation measures are needed for this activity.</p> <ul style="list-style-type: none"> • Embankment slopes should be given along with the river. The slope is then planted with grasses, sedges and herbs. This will mitigate the permanent loss of habitat for the threaten species of fresh water turtle among others. Planting on such bank slopes would increase the value of habitat by providing vertical structural diversity and will provide a compensation for the lost land-water interface for the movement of reptile and amphibian species. It also provides compensation for clearance of vegetation along banks of river. • Ten (10) trees against each fallen tree of similar floral function on both sides of the proposed alignment should be planted that will help in rehabilitating the floral and faunal activities of the project area. • Forests restoration should be done with native species, e.g., <i>Acacia nilotica</i>. It will enhance the site value and in part will provide compensation for the lost habitat for the species; • The mobility of construction machinery should be planned to minimize the loss of habitat; • Incorporate technical design measures to minimize removal of trees, if possible such as change in the alignment; • The construction camp management plan during the planning stage must consider fencing and gating to check the entry of animals in search of eatable goods; and • Similarly, waste management plan of the camps must 		

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>be considered at the planning stage to prevent wild animals and birds.</p> <ul style="list-style-type: none"> • Barrage and channelization works shall be properly designed to accommodate design flows; • Provision to control flood damages and provision of safety of embankments will be considered during the design of these arrangements; • Control of wastewater and sediment releases to river; • Contractor will be required to implement the water quality management protocols; • Ensure the minimum ecological flow at downstream area; • Inspections by the fisheries officers should be facilitated to facilitate the proper implementation of relevant laws; • All vehicles, machinery, equipment and generators used during construction activities will be kept in good working condition and be properly tuned to minimize the adverse impact on waterfowl habitat, by reducing noise, exhaust and land disturbance; • Communities are given awareness and are involved in the proper protection of the Biota inside and around the project area and • Proper monitoring to check the compliance of laws, regulations and standards will be carried out. • Hunting, poaching and harassing of wild animals shall be strictly prohibited, and Contractor shall be required to instruct and supervise its labor force accordingly and clear orders should be given in this regard; • Proponent must take NOC from the relevant department prior to construction phase; 		

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<ul style="list-style-type: none"> • After consultation with the Wildlife Department, site specific Wildlife Safety Plans should be developed; • Wildlife Conservation Act, 2009 will be followed for compliance; • Similarly, wastes shall be properly disposed of to prevent it being eaten by animals, as it may be hazardous to them. 		
Impact on air quality	<ul style="list-style-type: none"> • Site clearance, movement of machines and equipment, extraction of construction materials 	<ul style="list-style-type: none"> • Effective control of the potential by minimizing the total area of bare earth at the project site during dry periods. • Minimization of the movement of vehicles on unsealed surfaces and strict speed controls shall be implemented for all transport vehicles. • The contractor to ensure that all vehicle loads of soil/aggregates are well covered to prevent fugitive dust along the route. • Further, the contractor should cover surface treating soil / aggregate stockpiles and wet down bare earth areas in dry and windy conditions. • Workers on the site will be issued with dust masks during dry and windy conditions. 	Contractor/ WRBWB	5,000,000
Impacts due to Waste Generation	<ul style="list-style-type: none"> • Domestic activities (cooking, bathing etc), waste management, site clearance, construction works. 	<ul style="list-style-type: none"> • All waste/materials which can be reused at site as follows; <ul style="list-style-type: none"> ○ Salvaging easy-to-remove items like doors, hardware, appliances, iron sheets, and fixtures for reuse. ○ Wood cut-offs can be used for cripples, lintels, and blocking to eliminate the need to cut full length lumber. Scrap wood can be chipped on site and used as mulch or groundcover. ○ Brick, concrete and masonry can be recycled on 	Contractor/ WRBWB	20,000,000

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>site as fill, subbase material or driveway bedding.</p> <ul style="list-style-type: none"> ○ The demolition materials which cannot be reused/ recycled shall be collected as garbage at the transfer station and disposed off at dump site ● Identification and classification of the different waste types that could be generated at the construction site (due to the materials used and waste generated in different sections) according to the Environmental Management Regulations (Hazardous Waste Control), 2009; ● Completely separate hazardous from non-hazardous waste streams at the construction site should be done; ● Immediate removal of waste material (concrete, iron, rocks, etc.) waste from site ● Collection and disposal of district solid alike waste generated in the construction site and camps (food, beverages, packaging waste such as paper, bottles, glass, etc., glass bottles) according to national legislation (separation of recycling waste materials from the waste stream that will be disposed at authorized dumpsite). Recyclable waste shall be given to an authorized recycling company; ● Signing a contract with the company for waste collection (registered by NEMC) and transportation for the collection and transport of the hazardous waste generated at the construction site to authorized dumpsite; ● Ensuring that the contracts signed with the companies dealing with waste recycling and recovery will take delivery and acceptance of the waste streams is performed on a frequent basis so that the construction 		

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>sites remain clean at any time;</p> <ul style="list-style-type: none"> • Reusing excavated soil and construction waste as much as possible; • The separate collection of possible hazardous waste (motor oils, vehicle fuels) and sub-contracting an authorized collector and transporter to transport, recovery or finally dispose the hazardous waste; • Establishing the Temporary Hazardous Waste Storage Points according the national legislation on handling, labelling, storage and management with hazardous waste; • Establishing and following the hazardous waste management procedure; • Ensuring that the hazardous waste is packaged and labelled showing the R and S phrases (risk and safety statements of the hazardous waste) and it is temporary stored on safety storage facility equipped with adequate ventilation, fire resistant conditions especially if there are VOC emissions, mercury containing lamps, asbestos materials form demolition works (if any); • Ensuring that the access to these temporary hazardous waste storage points be only allowed for trained and equipped staff, and entrance prohibited for untrained workers and public; • Promptly cleaning up All waste spills; • Making available for inspections full records of the type of waste stream generated, quantity composition, origin, disposal destination and method of transport for all different waste streams; • Contractors shall cooperate with Village leaders for smooth collection of solid wastes from the project area 		

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<ul style="list-style-type: none"> • Undertaking the selective removal and storage of top soil; • The removal of topsoil from the soil surface so as to serve for reuse in the restoration of disturbed areas not occupied by the proposed project; • The reuse of topsoil to restore cuttings; • Burning and burying of wastes shall be strictly prohibited 		
Occupational Health and Safety Risks	<ul style="list-style-type: none"> • All Construction activities 	<ul style="list-style-type: none"> • Providing basic medical training to specified work staff and basic medical service and supplies to workers; • Complying with the safety precautions for the construction workers as per International Labor Organization (ILO) Convention No. 62, as far as applicable to the Project Contract and requirements of OS2 and OS4; • Training of workers in construction safety procedures, environmental awareness, equipping all construction workers with safety boots, helmets, gloves and protective masks, goggles, shields and monitoring their proper and sustained usage; • The Proponent, through the Contractor, is committed to adherence to the occupational health and safety rules and regulations stipulated in the Occupational Safety and Health Act, 2003. • Appropriate working gear (such as nose, ear mask and clothing) and good construction site management shall be provided. • The contractor will ensure the provision of medicines, first aid kits, ambulances etc. at the camp site; • Work areas will be cordoned off where necessary; • Contractors will instruct their staff to use Personal 	Contractor/ WRBWB	10,000,000

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>Protective Equipment (PPE) (e.g., wire containment, displaying warning signs along the work site, and communicating warnings to mats) to enhance safety;</p> <ul style="list-style-type: none"> • Safety lookouts will be built to prevent people and vehicles from passing at the time of hot or cold work; and • An emergency management plan must be devised by the contractor in close coordination with the emergency services. • A well-stocked First Aid kit (administered by first aider) shall be maintained at each farm area and construction site. The first aider shall also be responsible for the primary treatment of ailments and other minor medical cases as well as providing some health education to the workforce. 		
Community Health, Safety and Security Risks	<ul style="list-style-type: none"> • Transportation of construction materials, influx of labour 	<ul style="list-style-type: none"> • The laborers with different transmittable diseases will be restricted within the construction site; • Ensure that the site is restricted from the entry of irrelevant people, particularly children; • Training of workers in the construction safety procedures, environmental awareness, and equipping all construction workers with safety boots, helmets, gloves, ear plugs, and protective masks, and monitoring their proper and sustained usage; • Provision of proper safety and diversion signage, particularly in urban areas and at sensitive/accident-prone spots; • Setting up speed limits in close consultation with the local stakeholders; • The mitigation measures provided for air and noise 	Contractor/WRBWB	5,000,000

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>shall be adopted to reduce the air pollution, noise pollution and vibrational impacts on nearby community; and</p> <ul style="list-style-type: none"> • The GRM will be prepared and communicated to all workers and the community in line with OS1 and OS10 and reduce this impact. 		
Impacts due to Increase of Noise and Vibration level	<ul style="list-style-type: none"> • Transportation of construction materials, Operation of machines and equipment, extraction of construction materials 	<ul style="list-style-type: none"> • Equipment should be maintained in accordance with the manufacturer's instructions and specifications, training to equipment operators on equipment operational guidelines and standards with dos and don'ts such as "shut off the engine when not in use". • Restricting noisy construction activities to normal working hours (8 am - 5 pm). • Wherever possible, all construction equipment will comply with the requirements of the Tanzania Bureau of Standards (TBS) on noise emission in the environment by equipment for use outdoors. All the equipment shall bear the TBS marking and the indication of the guaranteed sound power level and shall be accompanied by TBS declaration of conformity; • All vehicles and machinery used at the construction sites will be subject to regular maintenance. The vehicles and machines that are excessively noisy due to poor engine adjustment or damaged noise control devices shall not be operated until corrective measures have been taken; • The location of noisy equipment will be chosen as far as possible from sensitive receptors (dispensary, hospital, school, offices). When near sensitive receptors, construction works will be scheduled and provided with the necessary resources so that the time 	Contractor/ WRBWB	2,000,000

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>of exposure is as short as possible;</p> <ul style="list-style-type: none"> • The contractor shall adhere to OS3, which requires observing pollution prevention and energy efficiency technologies. • The Earth moving equipment shall be operated as far away from vibration sensitive areas as possible • Earth moving and ground impacting operations shall be phased so as not to occur in the same time period because vibrations are additive. • Night time activities shall be avoided as people feel more vibrations during night time hours. • Dynamic compaction. A smaller falling weight will produce smaller vibrations; • Avoid vibratory rollers and packers near sensitive receptors. • Monitoring of vibrations during the performance of critical work processes will be undertaken in buildings which are within a distance of 20-30 meters from the area where the these works take place. 		
Soil Erosion	<ul style="list-style-type: none"> • Extraction of construction materials, cut and fill during construction, works during rain season 	<ul style="list-style-type: none"> • There shall be no construction activities on the ground during rainy season • The contractor shall deliberately re-cover exposed soils with pavements for smooth operations and unpaved area shall be covered with grass to overcome erosion by moving water in the area. • Proper drainage channels shall be provided to direct water to designated area. • Proper grading to promote sheet flow and minimize flow concentration on unconsolidated soil. 	Contractor/ WRBWB	8,000,000

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
Gender based violence (GBV), equity, rape and sexual harassment	<ul style="list-style-type: none"> Influx of people for employment 	<ul style="list-style-type: none"> All workers, community and stakeholders will be educated on preventing and responding to sexual harassment, SEAH, and GBV ahead of any project-related work as per OS4. Workers shall be provided with identification cards and shall put on uniforms all the time while at the site The community within the vicinity of the college where construction will take place will also be educated on gender-based violence and sexual offences such as sexual harassment, rape and defilement in the context of labour influx and the prevention and response measures. Strategies such as male involvement will be employed in preventing and responding to GBV and sexual harassment Partnerships will be established with relevant government agencies and NGOs to ensure survivors of GBV and sexual offences access survivor-centered services such as medical care, psychosocial support, legal redress, safety, etc, as and when necessary Impose zero tolerance on sexual harassment, all forms of gender-based violence, and discrimination at all phases of the project 	Contractor/ WRBWB	5,000,000
Gender inequity in employment	<ul style="list-style-type: none"> Employment of project workers 	<ul style="list-style-type: none"> WRBWB and contractor shall ensure that women get adequate employment opportunities during recruitment and job postings. The contractor shall carry out regular sensitization and awareness campaigns for workers to promote gender equity in employment during the construction works and during operation During programme inception, contractor shall 	Contractor/ WRBWB	2,000,000

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>disclose standard operating procedures, guidelines and management systems established to ensure the promotion of gender equality and social inclusion</p> <ul style="list-style-type: none"> • Programme staff and trainers need to include male and female representatives from diverse ethnic groups. They will need to receive training on gender equality and social inclusion within the context of the programme. • The contractor shall provide gender disaggregated data, separate bathing, changing, sanitation facilities for men and women 		
Impacts associated with Transmission of Vector Borne and Communicable Diseases	<ul style="list-style-type: none"> • Influx of people to seek employment, site clearance (creation of ponds), Waste generation and disposal 	<ul style="list-style-type: none"> • Workers should receive training as part of their induction and then at least every 6 months on potential high risk communicable and vector borne diseases, symptoms, preventative measures and transmission routes as well as treatment options. This will be particularly important for diseases with which non-local workers are unfamiliar and in case of any emerging disease outbreaks. • A Worker Code of Conduct should be developed providing a site code of behaviour including worker-worker interactions, worker-community interactions and development of personal relationships with members of the Community. This would apply to all Project workers and visitors to the construction site. • In the event of a new disease, increased transmission or outbreak compared to the baseline, the Project should interact with local health care facilities and workers to ensure there is an appropriate response in place. This involves community education and awareness, training of health care workers etc 	Contractor/ WRBWB	5,000,000

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<ul style="list-style-type: none"> For all contractors and sub-contractors, at worker sites the following will be implemented at a minimum in order to minimize disease transmission: <ul style="list-style-type: none"> Providing workers with appropriate sanitary facilities which are appropriately designed to prevent contamination. Developing a robust waste handling system to avoid the creation of new vector breeding grounds or attracting rodents to the area. Implementing measures to reduce the presence of standing water onsite through environmental controls and source reduction to avoid the creation of new breeding grounds. Ensuring the construction site is kept clean and free from any accumulation of wastes as well as supplied with clean potable water. Ensuring appropriate food preparation and monitoring measures are in place. Monitoring to ensure that all standards are being met by the relevant departments. The workforce will be provided with access to treatment at health facilities near the site. Access to health care should include direct employees, sub-contractors and employees of the supply chain working on based on site. The Project should implement TB prevention measures including testing and referral for treatment for all personnel working on the Project. This approach should be explained clearly to the workforce along with making it clear that there are no consequences for their employment. 		

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<ul style="list-style-type: none"> The Project should monitor the emergence of major pandemics through World Health Organization (WHO) alerts and in the event of a pandemic review mobilization and demobilization of ex-patriate Project personnel and/ or implement appropriate control measures and Emergency Response Plans. 		
Impacts associated with Transmission of Sexually Transmitted Infections	<ul style="list-style-type: none"> Influx of people to seek employment 	<ul style="list-style-type: none"> An HIV/AIDS training course and on-going education on transmission of HIV/AIDS and STDs, to employees, through workshops, posters and informal information sessions; Encouragement of employees to determine their HIV status; Supply of condoms/ femidoms at the construction site(s) and Development of a comprehensive Construction Site Management Plan, including rules for on-site behavior, entrance and exit policies and prohibition of sex workers on site. As part of STD Management Plan, information should be provided to workers on STD prevalence rates in Tanzania as well as the expectations of local communities if a women is made pregnant by a worker (e.g., marriage, financial implications etc.). Workers should have access to confidential health care for the treatment of STDs through medical facilities/ health care at Project site. The Project should partner with other NGOs and CBOs to support the provision of information, education and communication campaigns around safe sexual practices and transmission of STDs. 	Contractor/ WRBWB	30,000,000
Impacts on Labour and	<ul style="list-style-type: none"> Contractor and sub contractors compliance to labour laws 	<ul style="list-style-type: none"> The Project should priorities the recruitment of workers and procurement of goods and services from 	Contractor/ WRBWB	5,000,000

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
Working Conditions		<p>within the Morogoro region then to national companies. This will not apply to the provision of highly technical equipment. The Project should develop a fair and transparent employment and procurement policy and processes to avoid any potential for nepotism or favouritism. The policy should be shared with the Ward and Village Leaders.</p> <ul style="list-style-type: none"> • Contractor will notify District Council, Ward and Village leaders of the specific jobs and the skills required for the Project, prior to the commencement of construction phase. This will give the local population time to prepare and apply for the available job opportunities on time. This is mainly applicable to unskilled and semi-skilled workers who will be locally sourced. • Employment and procurement opportunities will be publicly advertised in appropriate newspapers, District Offices and Ward and Village offices and in all relevant languages in a timely manner, to allow fair competition. • There will be no requirement for applicants to make payments for applying for, or securing, employment on the proposed Project. • The Project will ensure that recruitment procedures are transparent and monitored to ensure that those recruited present their actual experience, geographical location, health status, and age and that requirements for local employment are being met. • The Project will develop and implement a program of up-skilling, training and development for workers to assist them in accessing opportunities associated with the Project and in finding work following completion of 		

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>their contracts.</p> <ul style="list-style-type: none"> • The Project will provide training on health and safety and quality standards required by the Project for provision of goods and services to the Project to ensure that local businesses have the opportunity to benefit. • The Project will ensure that contracts are unbundled to allow a number of small businesses to provide goods and services rather than the supply being monopolized by one larger sub-contractor. • Provision of clear and understandable information regarding rights under national labour and employment law, and any applicable collective agreements, including those related to hours of work, wages, overtime, compensation, etc. • Provision of reasonable working conditions and terms of employment. • Provision of employment, compensation/remuneration and working conditions, including working hours, based on equal opportunity and fair treatment, avoiding discrimination on any aspects. • Provision of adequate welfare facilities on site. • Implementation of a grievance mechanism for the Project workers. • Adoption and implementation of a sexual harassment policy. • Adoption of open attitude towards freedom of association. • Contractor should ensure no employee or job applicant is discriminated against on the basis of his or her gender, marital status, nationality, ethnicity, age, 		

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		<p>religion or sexual orientation.</p> <ul style="list-style-type: none"> • All workers (including those of subcontractors) should, as part of their induction, receive training on worker rights in line with Tanzanian legislation to ensure that positive benefits around understanding labour rights are enhanced. This process should be formalized within the Code of Conduct that would be provided by Contractor. • All workers (including those of subcontractors and suppliers) should have contracts, which clearly state the terms and conditions of their employment and their legal rights. These contracts should be aligned with Tanzanian labour law, the ILO core conventions and the requirements of AfDB Occupational Health and Safety Guidelines. Contracts should be verbally explained to all workers where this is necessary to ensure that workers understand their rights. • The Project should put in place a worker grievance mechanism that should be accessible to all workers, whether permanent or temporary, directly or indirectly employed. The worker grievance mechanism should be open to Contractor and the subcontractor workforce in the event that their grievance is not adequately resolved by their direct employer. Contractor would then have the authority to act to resolve this grievance. • All workers (including those of Contractor and the subcontractor) should have access to training on communicable diseases and STDs and community interactions in general. • Contractor should undertake surveillance and assurance that no children or forced labour is employed 		

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
		directly, and to the extent possible by third parties related to the Project and primary suppliers where such risk may exist.		
		Subtotal 1		180,000,000
		OPERATION PHASE		
Control of River Bank Erosion	<ul style="list-style-type: none"> River training and construction of dykes 	<ul style="list-style-type: none"> Planting trees along the riverbanks and beyond the boundary (buffer zone) Controlling agricultural activities to reach the river bank Avoiding watering cattle in the river 	WRBWB	10,000,000
Control of river bank erosion	<ul style="list-style-type: none"> River training and construction of dykes 	<ul style="list-style-type: none"> Planting trees along the riverbanks and beyond the boundary (buffer zone) Controlling agricultural activities to reach the river bank Avoiding watering cattle in the river 	WRBWB	5,000,000
Ecological Uplifting of Rivers	<ul style="list-style-type: none"> River training and construction of dykes 	<ul style="list-style-type: none"> Avoiding water pollution Preventing agricultural activities along the rivers 	WRBWB	5,000,000
Aquatic Weeds Formation in River Basin	<ul style="list-style-type: none"> River training 	<ul style="list-style-type: none"> Aquatic weeds can be controlled biologically by the introduction of various herbivorous species. Grass carp with common carp, turtles, Ducks and Geese are well known as aquatic weed feeders. The grass carp and turtles are very effective in controlling aquatic weed because they feed directly on these weeds. The common carp feed on bottom-dwelling plants and sediments and are important to root out of these plants; The above measure will be very effective in controlling aquatic weeds although if the problem exists then mechanical aquatic harvester should be employed for cutting and removing all the weeds present in the river water body. 	WRBWB	10,000,000

Identified Impact		Mitigation/Enhancement Measures	Responsible institution	Estimate cost per annum (TZS)
Loss of Access to water	<ul style="list-style-type: none"> Construction of dykes 	<ul style="list-style-type: none"> WRBWB shall work closely with RUWASA to provide clean water to the communities near the project 	WRBWB	50,000,000
		Subtotal 2 (Operation Phase)		80,000,000
		GRAND TOTAL		260,000,000

8.4 ESMP Sub-Plans for the Project

Based on ESIA findings (baseline studies, impacts identified and proposed ESMP), during mobilization phase, the Contractor shall be required to develop additional independent safeguard tools to guide implementation and supervision of environmental and social issues. These tools shall comply to national requirements and AfDB safeguards requirements. The plans, presented below, shall be reviewed and approved both by WRBWB and before rolling out in the field. These tools shall be prepared prior to the implementation of the project development and shall form part of the project contract and must be approved by the Resident Engineer and WRBWB before implementation. These tools will draw the basis for Contractor to abide with the requirements of the implementation of the environmental, social, health and safety mitigation measures. These tools will be updated from time to time by the Contractor on emerging issues and challenging during project implementation or upon the request from WRBWB and/or AfDB

The proposed mandatory safeguard tools shall include:

- i. Health and Safety Management Plan (HSMP);
- ii. Child Abuse Protection Plan (CAPP);
- iii. Gender Based Violence and Protection Plan (GBVPP);
- iv. Grievance Redress Mechanism (GRM);
- v. Emergence Preparedness Plan (EPP);
- vi. Code of Ethical Conduct (CEC); and
- vii. Chance Finds Procedures (CFP).

A brief description and essence of the above mandatory safeguard's tools are given in the following subsections.

8.4.1 Health and Safety Management Plan (HSMP);

The plan should detail the measures taken by the project Contractor to manage the hygiene conditions and medical care in each of the workers' workplaces. It should also address occupational health & safety in alignment with the Labour law of Tanzania, ILO recommendations, and Good Industry Practices. This plan should include (but not limited to) the following topics: (i) Health and safety policy and commitment from management, (ii) Description of project; human resources, definition of roles and responsibilities, (iii) workers accommodation, hygiene facilities and food supply, (iv) Description of material resources including Personal Protective Equipment (PPE) to be used by workers, (v) Health and safety procedures, (vi) Risk assessment, (vii) Pollution prevention and protection, (viii) Health and safety training, (ix) Monitoring of health and safety performance, and (x) Medical checks.

8.4.2 Child Abuse Protection Plan (CAPP);

In line with the Tanzanian Labour Law Act of 2004, the Contractor will formulate and implement a child labour policy as the basis of commitment to find practical, meaningful, and culturally appropriate measures to support the elimination of child labour in workplaces. The policy shall be publicly available throughout the project implementation and clearly communicated to all employees in a manner which it can be understood through induction programs and policy manuals. The implementation of the policy will be the responsibility of the Human Resources Department and the security staff who do not permit minors to enter the workplace.

8.4.3 Gender Based Violence and Protection Plan (GBVPP);

Gender-based violence (GBV) undermines the health, dignity, security, and autonomy of its victims, yet it remains shrouded in a culture of silence. Victims of violence can suffer sexual and reproductive health consequences, including forced and unwanted pregnancies, unsafe abortions, traumatic fistula, sexually transmitted infections and HIV, and even death. (<https://tanzania.unfpa.org/en/topics/gender-based-violence-10>). The Gender Based Violence Action Plan should form part of the ESMP for the project objectively, but prepared separately to guide to mitigate, prevent, and respond to gender based violences during the project's construction and post-construction phases. The action plan should include but not limited to: communities' participation in ending GBV, healthcare for GBV survivors, mental health & psychosocial support to GBV survivors, safety and security of GBV survivors, justice and legal aid, social economic empowerment and referral systems.

8.4.4 Emergency Preparedness Plan (EPP);

A detailed Emergency Preparedness Plan will be prepared and implemented as part of the construction ESMP. The EPP for Common Hazards and Emergency Situations during construction should be structured as such but not limited to:

- Identification of potential emergencies based on hazard assessment
- Procedures to respond to the identified emergency situations;
- Procedures to shut down equipment;
- Procedures to contain and limit pollution;
- Procedures for decontamination;
- Procedures for rescue and evacuation, including a designated meeting place outside the construction camps;
- Protocols for the use of the emergency equipment and facilities;
- Schedule for periodic inspection, testing and maintenance of emergency equipment;
- Clear identification of evacuation routes and meeting points;
- Emergency contacts and communication protocols, including with affected communities when necessary, and procedures for interaction with the government authorities;
- Procedures for periodic review and update of emergency response plans.

8.4.5 Code of Ethical Conduct (CEC);

The Contractor will prepare and implement workers' Code of Ethical Conduct (CEC) attuned to Part III (Employment Standards), Section 14 (Contracts with employees) of the Tanzanian Employment and Labour Relations Act No. 6 of 2004. The CEC will set out guidelines i.e. "dos" and "don'ts" intended to support ethical behavior and decision making for all employees of the Contractor. The term 'employees' here include all management, staff, volunteers, students, subcontractors and others who provide services for the organization.

8.4.6 Chance Finds Procedures (CFP).

During construction works, archaeological findings may be encountered and potentially damaged or disturbed. Culturally sensitive areas (where cultural practices occur) may become affected by both construction and operation works, by modifying the religious or cultural value of a certain area.

8.5 GRIEVANCE REDRESS MECHANISM (GRM)

The mechanism has been designed to allow communities to present their concerns about the project and channel them through established committees at different levels, i.e., village, ward, district, and regional level. However, all cases related to Gender-Based Violence/sexual exploitation and Abuse (GBV/SEA-SH) will be managed in close consultation with the communities and local governments residing along the project corridor.

8.5.1 Grievances Mechanism, Channels, and Handling Procedures

8.5.1.1 Channels to Report Complaints

The stakeholders may report complaints at the level of the Village/Ward, the district/Municipal, and the implementing agency. The channels for submitting complaints include the following:

- i. A dedicated email address of institutions implementing the project
- ii. Basin Water Boards (barua@wrbwb.go.tz);
- iii. Ministry (malalamiko@maji.go.tz)
- iv. Website: **www.wrbwb.go.tz**
- v. A dedicated telephone number for:
- vi. Wami/Ruvu BWB (**0800114031 or 0800114032**)
- vii. Feedback boxes are located at selected points where the project activities are implemented.
- viii. Project/site offices will also receive grievances through Community Liaison Officers.
- ix. Letters to be sent to the WRBWB through the following address

Permanent Secretary,
Ministry of Water,
Government City,
Maji Street,
P.O Box 456.
DODOMA.

Basin Director,
Wami/Ruvu Basin,
P.O. Box 826,
MOROGORO

8.5.2 Grievance Committee Members

There shall be established project grievance redress Committees to perform the responsibilities as provided in this GRM. The Committees shall be as follows: -

8.5.2.1 Village Grievance Redress Committee

This Committee shall be composed of: -

- i. Village Chairperson – Chairperson;
- ii. Village Executive Officer (VEO) – Secretary;
- iii. Neutral Person – Member;
- iv. Representative from the PAPs Members;
- v. Extension officers from the Ward (CDO, Agriculture Officer, Livestock officer);

- vi. Representative from NGO at village level - Member

8.5.2.2 Ward Grievance Redress Committee

This committee shall be composed of: -

- i. Ward Councillor – Chairperson;
- ii. Ward Executive Officer (WEO) – Secretary;
- iii. Neutral Person – Member;
- iv. Representative from the PAPs Members;
- v. Extension officers from the Ward (CDO, Agriculture Officer, Livestock Officer)
- vi. Representative from NGO at Ward level - Member

8.5.2.3 District Grievance Redress Committee

This Committee shall be composed of: -

- i. District Commissioner – Chairperson
- ii. District Executive Director – Secretary
- iii. District Administrative Secretary- Member
- iv. District land officer - Member
- v. GRM focal person at District
- vi. Lawyer - Member
- vii. Representative from BWB - Member
- viii. Neutral Person – Member
- ix. PAP representative - Member
- x. Local NGO within District- Member
- xi. Consultant - (depend on complaint)

8.5.2.4 Regional Grievance Committee

This Committee shall be composed of: -

- i. RC – Chairperson
- ii. RAS – Secretary
- iii. Regional Land Assistant Commissioner - Member
- iv. Basin Director – Member
- v. Respective DC – Member
- vi. Respective District Director - Member
- vii. Regional Community Development Officer - member
- viii. Neutral Person
- ix. PAP
- x. NGO

8.5.2.5 Ministerial Grievance Redress Committee

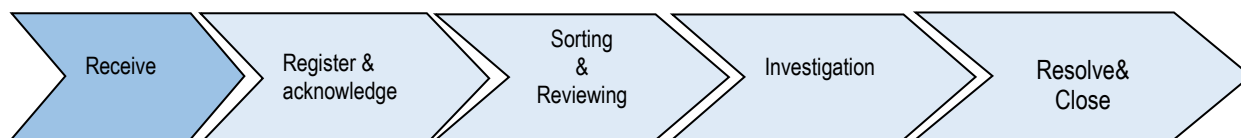
This Committee shall be composed of: -

- i. Director Legal Service Unit (DLSU) – Chairperson
- ii. Head of Environmental Management Section – Secretary
- iii. Respective Division implementing the project (DWR)
- iv. GRM Focal - Social Specialist (CDO) from MoW
- v. Ministry's Complaints Officer

The committee may invite any person who is not a member to attend any meeting of the committee where his /her expertise required in that meeting.

8.5.3 PROCEDURES OF GRIEVANCE HANDLING

8.5.3.1 *Receiving Complaints*



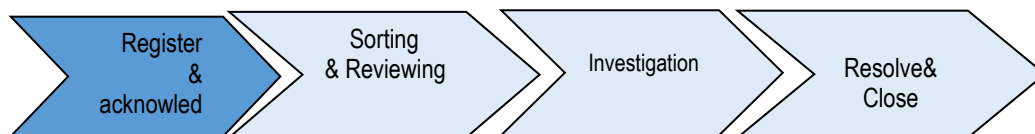
The designated person receiving the complaint will complete the Grievance Registration Form appended as **Form No.1 of Annex A** or make the form available to the complainant to fill out directly. Grievance forms shall contain the Tracking Number indicated as **WRBWB/District /Ward/Village/001**.

Grievances will be submitted to the respective addresses of the Implementing Agency as indicated in Section 8.5.1. The designated grievance focal person at the respective level (Village, Ward, District, Basin Offices, Ministry) will collect/receive and compile the complaints on a need-basis or daily basis until the project construction is completed. Complaints may be received through the channels indicated in paragraph 8.5.2 above.

When a complaint or grievance is submitted, the complaint must be noted and recorded in writing using Form No.1 of Annex A. The Grievance Officer/focal person must read and explain what has been recorded to the complainant to confirm the complaint or grievance has been recorded properly.

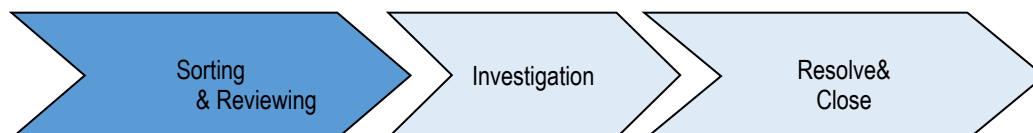
Where the grievance has been received by someone other than the Grievance Officer/Focal Personal, all forms must be handed over to the Grievance Officer/Focal Person within 24 hours.

8.5.3.2 *Register and Acknowledge of Complaint*



The received complaints shall be registered in Grievance Register book; the Complainant shall be given a grievance acknowledgement Form No.2 appended in Annex A. The acknowledgement form will give the Complainant room of making follow up on his/her complaint according to tracking number on the form. Suggestions and questions should also be received and registered for project communication.

8.5.3.3 *Sorting and Reviewing of Complaint*



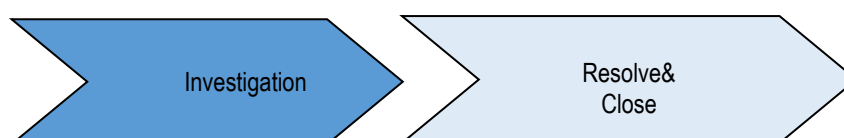
Once a complaint has been registered, the GRM focal point/person will sort the complaints according to grievance category and refers the cases to the Grievance Redress Committee for review of the complaints. The review will propose the modality of resolution.

Below are the categories that could be used to sort the complaints. In case of any received complaint which shall not fall under the mentioned categories, the Committee shall propose nature of the grievance.

Table 8- 2: GRM Categories

No.	Grievance category
Category 1	Safeguards, including compensation disputes, land allocation and delays in compensation
Category 2	Grievances regarding violations of national policies, guidelines and procedures
Category 3	Grievances regarding contract violations
Category 4	Grievances regarding the misuse of funds/lack of transparency, or other financial management concerns
Category 5	Grievances regarding abuse of power/intervention of project by government officials
Category 6	Grievances regarding Project Implementation staff performance
Category 7	Report on injuries/ damages to person or property caused by project activities.
Category 8	Suggestions
Category 9	Appreciations

8.5.3.4 Investigation



The person responsible for investigating the complaint will gather facts in order to generate a clear picture of the circumstances surrounding the grievance. Verification normally includes site visits, review of documents, a meeting with the complainant (if known and willing to engage) and a meeting with those who could resolve the issue (including formal and informal village leaders, or other leaders).

The results of the verification and the proposed response to the complainant will be presented for consideration to the Grievance Committee. Once the decision has been made on the course of action and on the response to be provided to the complainant, the Investigating Officer shall describe the actions to be taken in the grievance form (Form No. 1 of Annex A), along with the details of the investigation and the findings, and submits it to the Grievance Committee.

8.5.3.5 Resolve and Close of Complaint



The Grievance Redress Committee will review the proposed actions if they fulfil the resolution of the complaint. GRM focal point/person will communicate the proposed actions to the complainant via letter, email, or verbally, as received. The complainant will also be informed on how she/he can appeal the action decided in the initial case.

The GRM focal point/person will request feedback from the complainant as to whether she/he find the action(s) satisfactory, and this will be recorded along with the details of the resolution and the response taken in the Grievance Resolution Form appended as Form 3 of Annex A.

If a grievance can be managed at the first (rapid) assessment, the following requirements must be met:

- i. The resolution must be in accordance with the Grievance Focal Person's delegated authority.
- ii. The resolution must be in accordance with project procedure and the agreed position on the subject matter of the grievance.
- iii. The Grievance Focal Person must be satisfied that the resolution will likely bring finality to the grievance; and
- iv. The complainant is satisfied with the resolution and will provide the required written confirmation at the earliest time possible.

8.5.4 Appeal and Reference

8.5.4.1 Appeal

If the complainant is not satisfied with the response or resolution, she/he may appeal to the next level committee (**Figure 8.1**) as may be appropriate within three (3) days from the date the resolution was made. The respective implementing agency will be involved at all levels of grievance resolution.

For purposes of this GRM, the decision/resolution by the Ministerial Grievance Redress Committee shall be final. If the complainant is not satisfied with the resolution made by the Ministerial Grievance Redress Committee, they may seek redress by referring the grievance to another competent authority that has jurisdiction to determine the same.

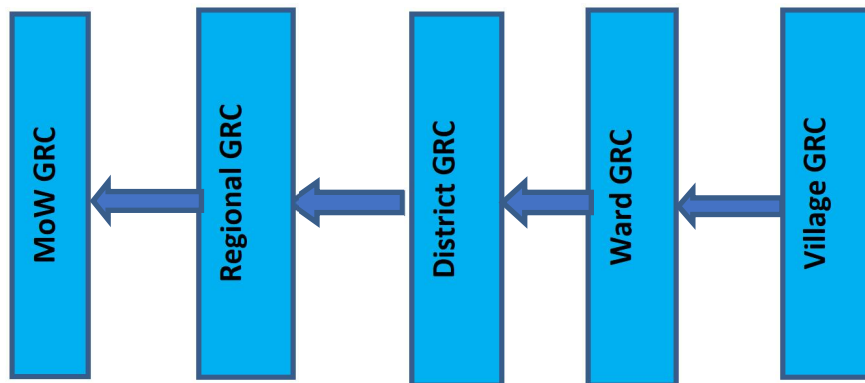


Figure 8- 1: Appealing levels of complains handling mechanism

8.5.4.2 Reference

Where, after receipt of complaints, the committee has determined that it is unable to investigate and resolve the complaint, it shall, as soon as practicable, refer the complaint to the appropriate committee and inform the complainant.

Processing of complaints shall follow the following steps upon receipt of investigation under section 6.2.3-

- i. Once complaints are received at village level, the Grievance focal person shall sort the complaints and categories before submitting them to the Village Grievance Committee (VGC) for investigation and decision. The Person aggrieved shall receive an acknowledgement from the village office.
- ii. Upon receipt of the grievance, the committee members shall mediate and resolve the problem amicably with the active participation of the aggrieved party within seven (7) working days from the date of the filing of the grievance. If the grievance is resolved and the aggrieved person is satisfied, a report shall be prepared and copies given to the person and local authority office for records and the case is closed.
- iii. In the event that the aggrieved person is not satisfied with the decision of VGC, with the assistance of the Village leader, an appeal will be logged and decision made within seven (7) days from the date of submission to the Ward Grievance Committee (WGC).
- iv. In the event that the aggrieved person is not satisfied with the decision of WGC, with the assistance of the Ward leader, an appeal will be logged and decision made within Seven (7) days from the date of submission to the District Grievance Committee.

The District Grievance Redress Committee (DGRC) chaired by the respective District Commissioner shall handle all complaints from the complainant, including decisions made by lower levels. The GRC shall make its decisions within fourteen days of receiving each complaint. Beyond this level, the complainant may continue their appeal to the Regional and Ministry GRC, or ultimately to the judiciary, if an amicable resolution can still not be reached.

CHAPTER NINE

9 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

9.1 Introduction

Monitoring refers to the systematic collection of data through a series of repetitive measurements over a long period to provide information on characteristics and functioning of environmental and social variables in specific areas over time. 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 the establishment, operation and decommissioning phases 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 the mitigation programme, designed to diminish or compensate for adverse effects of the project.

This ESIA has adopted Baseline monitoring and Compliance Monitoring. To ensure that mitigation measures are properly done, monitoring is essential. Table 9- 1 provides details of the attributes to be monitored, frequency, institutional responsibility and estimated costs. These costs are only approximations and, therefore, indicative. Costs that are to be covered by the developer should be included in the project cost.

Table 9- 1: Environmental and Social Monitoring Plan for proposed project

Environmental Aspect	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimate (Tsh)
Pre Construction Phase								
Biodiversity	Vegetation	Once	Project Site	m²	Measurements/ Observations	River boundary	WRBWB	1,000,000
Air Quality	SOx	Once		mg/Nm3	Mult Gas Detector	0.06-0.09		1,000,000
	NOx					<0.12		
	CO					<0.5		
Noise pollution	Noise level	Once	Project site	dBA	Noise Level Meter	<55 day <45 day		500,000
Water Quality	Turbidity	Once (during rainy season)	Mkodoa sub basin (Miyombo, kisangata, and Mkundi rivers	NTU	Turbidity Meter	30	WRBWB	1,000,000
	pH			-	pH meter	6.5-9.0		
	BOD			Mg/l	Winkler method	<30		
	COD			Mg/l	Dichromate	<60		
Soil erosion	Extent of erosion	Once	Mkondoa subbasin rivers in project	Ha	Observation/ measurement	Zero	WRBWB	500,000
Construction Phase								
Biodiversity	Vegetation	Quarterly	Project Site	m²	Measurements/	River		10,000,000

Environmental Aspect	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimate (Tsh)
					Observations	boundary	Contractor	
Air Quality	SOx	Quarterly		mg/Nm3	Mult Gas Detector	0.06-0.09		1,000,000
	NOx			<0.12				
	CO			<0.5				
Noise pollution	Noise level	Monthly	Project site	dBA	Noise Level Meter	<55 day <45 day		750,000
Water Quality	Turbidity	Once (during rainy season)	Mkodoa sub basin (Miyombo, kisangata, and Mkundi rivers)	NTU	Turbidity Meter	30	Contractor	1,000,000
	pH	Quarterly		-	pH meter	6.5-9.0		80,000
	BOD			Mg/l	Winkler method	<30		500,000
	COD			Mg/l	Dichromate	<60		
GBV rape and Sexual harasment	GBV case	Twice a year	Project areas	Number of GBV Records	Inquiries and records	Zero cases of GBV	Contractor	3,000,000
Impacts Associated with Transmission of Sexually Transmitted Infections	Project Community and Contractor's Workers	Twice a year	Project site	Number of workers who got ill from STDs	Record review	Records Zero (0		2,000,000

Environmental Aspect	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimate (Tsh)
Impacts on Labour and Working,	Conditions of Contractor Workers	Daily	Project Site	Preparation and implementation of Human Resources Policy, Labor, and Employment Plan	Records, Observations	Presence of the Plan and Enforcement	Contractor	1,000,000
Soil erosion	Extent of erosion	Quarterly, especially during rainfall	Mkondoa subbasin rivers in project	Ha	Observation/ measurement	Zero	Contractor	Included in construction budget
Flooding	Flood extent	Rainfall season	Meandering sections in project area	-	Observation	No flooding	Contractor	Included in construction budget
Health and safety	PPE Provision	Quarterly	Project site	PPE	Observation and records	Zero injury	Contractor	1,000,000
Grievances Redress Mechanism	Properly Working GRM	Quarterly	Project areas	Number of Grievances received and resolved	Records	All grievances collected and resolved on time	Contractor/ WRBWB	Included in construction budget
Operation Phase								
Soil erosion	Extent of erosion	during rainfall season	Mkondoa subbasin rivers in project/cattle	Ha	Observation/ measurement	Zero	WRBWB	8,000,000

Environmental Aspect	Parameters	Monitoring frequency	Sampling Area	Measurement Units	Method	Target level/ Standard	Responsibility for monitoring	Annual costs estimate (Tsh)
			watering section					
Flooding	Flood extent	Rainfall season	Meandering sections in project area	Level of damage	Observation	Zero erosion	WRBWB	
Grievances Redress Mechanism	Properly Working GRM	Quarterly	Project areas	Number of Grievances received and resolved	Records	All grievances collected and resolved on time	WRBWB	2,000,000
GRAND TOTAL								27,330,000

CHAPTER TEN

10 PRELIMINARY DECOMMISSIONING PLAN

10.1 Introduction

The eventual decommissioning of infrastructure components within this ecosystem restoration project - such as river training structures, dykes, and cattle troughs - will likely occur in the distant future. Therefore, specific decommissioning circumstances and environmental conditions remain uncertain at this stage.

Before any decommissioning activity is undertaken, the Wami Ruvu Water Basin Authority must develop a comprehensive decommissioning strategy in consultation with relevant authorities and stakeholders. The strategy will focus on ensuring environmental protection, public safety, and the restoration of affected areas to a stable, usable condition. This chapter provides a conceptual decommissioning plan as a guideline for that future process.

10.2 Preliminary Decommissioning Plan

This plan outlines the framework and necessary actions for dismantling, demolishing, or removing project components if and when decommissioning becomes necessary, ensuring minimal environmental and social disruption.

10.2.1 Type of Structures/Installations to be Decommissioned

- **Mkondoa River Training Structures:** earth embankments, gabions, riprap protection, and channel alignment works.
- **New Mkondoa Dyke:** earthen and stone masonry structures with floodgates and ancillary drainage features.
- **Rehabilitated Mkondoa Dyke:** similar structures, with older sections to be dismantled where needed.
- **Cattle Troughs:** reinforced concrete or masonry units located at strategic livestock watering points.

10.2.2 Decommissioning Methods

Before work begins, the contractor will prepare a detailed decommissioning and environmental management plan for approval. Indicative methods include:

- Manual and mechanical removal of non-structural elements and small installations.
- Excavators and loaders for dismantling earthen and stone dykes and river training structures.
- Specialized hydraulic breakers for reinforced concrete cattle troughs.
- Temporary shoring and erosion prevention during structure removal.
- Restoration of riverbanks and catchment areas through re-vegetation and stabilization.

10.2.3 Materials Handling

Material handling will be performed using excavators, trucks, and loaders. Materials will be sorted for reuse, recycling, or disposal.

- Salvageable stone, gabions, and metal elements will be stockpiled for reuse.
- Non-reusable material such as broken concrete and eroded soil will be disposed of at authorized disposal sites.
- Hazardous wastes, if any (e.g., contaminated soil), will be handled following EMA 2004 and other relevant regulations.

A Decommissioning Waste Management Plan will be submitted to the relevant District Councils (Gairo, Mvomero, and Kilosa) outlining:

- Waste minimization and recycling targets.
- Arrangements for waste transport and disposal.
- Documentation of waste volumes and destinations.

10.2.4 Proposed Sequence

Before works commence, the contractor will provide:

- Dilapidation Survey of nearby properties and ecosystems.
- Decommissioning Waste Management Plan.
- Site Safety and Environmental Management Plan.

Decommissioning sequence:

- i. Disconnection of water supply points to cattle troughs.
- ii. Dismantling of trough structures and removal of foundation.
- iii. Removal of stone and earth components of dykes and river training structures.
- iv. Grading and stabilization of affected areas.
- v. Restoration planting and erosion control measures.

Estimated timeframe: 4-6 months depending on weather and site conditions.

10.2.5 Protective Measures

- Secure fencing and warning signage around active decommissioning zones.
- Erosion control measures including silt fences, sedimentation basins, and temporary diversion channels.
- Dust suppression through regular water spraying.
- Safe traffic and pedestrian management around the work areas.

10.2.6 Traffic Management

A Traffic Management Plan will control vehicle movement and material transport during decommissioning. Measures will include:

- Designated access routes within project sites.
- Speed restrictions and controlled crossings.
- Avoidance of public roadways for heavy truck access during peak community hours.

10.2.7 Occupational Health and Safety

A comprehensive Occupational Health and Safety Plan will be developed, including:

- Use of personal protective equipment (PPE) for all workers.
- Regular site safety briefings and hazard identification.
- Emergency response procedures for injuries, floods, or environmental incidents.

10.2.8 Environmental Management Plan

A project-specific Environmental Management Plan (EMP) will address:

- Waste management procedures.
- Soil erosion and sediment control.
- Noise and dust mitigation.
- Ecosystem restoration post-decommissioning.

10.2.9 Potential Impacts and Mitigation Measures

10.2.9.1 Dust and Noise Pollution

Expected Issues:

- Earthworks, demolition of dykes and structures, and transport activities will produce dust and noise.

Mitigation Measures:

- Water spraying on dry surfaces.
- Covering of transported materials.
- Use of modern, low-noise machinery.
- Providing ear protection for machine operators.
- Community notifications on high-impact activity periods.

10.2.9.2 Increased Waste**

Expected Issues:

- Demolition debris, excavated soil, broken concrete, metal, and organic material.

Mitigation Measures:

- Reuse and recycling wherever possible.
- Proper classification and disposal of non-reusable waste.
- Regular collection and off-site transport to authorized facilities.

10.2.10 Costs for Undertaking the Mitigation Measures

The estimated cost for mitigation measures during decommissioning is Tsh 65,000,000, covering environmental management, safety measures, waste management, community engagement, and post-decommissioning restoration activities.

CHAPTER ELEVEN

11 SUMMARY AND CONCLUSION

11.1 Summary

The Environmental and Social Impact Assessment (ESIA) study for the Enhancing Climate Resilience of Water Resources in Mkondoa Catchment Project has been conducted in accordance with the Environmental Management Act No. 20 of 2004, the Environmental Impact Assessment and Audit Regulations (2005) and its 2018 amendments, as well as African Development Bank (AfDB) operational safeguard policies for ESIA. The project, implemented by the Wami Ruvu Water Basin Water Board (WRWB), is designed to strengthen the resilience of the Mkondoa Catchment against the adverse effects of climate variability through a combination of civil works and ecosystem restoration initiatives across Gairo, Mvomero, and Kilosa Districts within Morogoro Region.

The ESIA has specifically assessed civil works interventions under Component Two: Climate-Resilient Infrastructure and Ecosystem Restoration of the project. The proposed activities include river training and bank stabilization works in the Kisangata, Miyombo, and Mkundi Rivers to reduce erosion and improve flood resilience. The project also involves the rehabilitation of existing Mkondoa dykes located in the villages of Behewa, Kichangani, and Mkwatani in Mbumi and Kasiki Wards within Kilosa District. New dykes will be constructed in the villages of Mkadage, Kiyangayanga, Rose, and Mbwanaji within Magomeni Ward, also in Kilosa District. Additionally, the project will establish cattle troughs to address human-livestock conflict over water resources in the villages of Mvumi in Kilosa District, Makuyu in Gairo District, and both Matale and Makuyu in Mvomero District. These interventions aim to protect riverbanks, secure reliable water points for livestock, restore degraded ecosystems, and enhance the adaptive capacity of local communities.

Stakeholders Consulted; The ESIA process involved thorough consultations with a broad range of stakeholders at regional, district, ward, and village levels to gather local insights, document concerns, and incorporate community expectations into the project's planning and management framework. In Gairo District, consultations were held with the District Council, specifically the Environmental Officer, Community Development Officer, and District Planner. Engagements also included meetings with Chakwale Ward Executive Office and a public meeting at Nguvami Village. In Kilosa District, consultations involved the Executive Director, Environmental Officer, Agricultural Engineer, and Community Development Officer. Additional sessions were held at Dumila Ward Executive Office and through public meetings in the villages of Mvumi, Miyombo, Zombo, and Dumila. In Mvomero District, the ESIA team met with the District Administrative Secretary (DAS), Environmental Officer, Irrigation Engineer, and Community Development Officer, and convened meetings at Magole Ward Executive Office, as well as public meetings in Magole, Makuyu, and Matare villages.

In addition to district and local government structures, consultations extended to national and sectoral agencies and institutions whose operations intersect with the project area. These included the Tanzania Rural and Urban Roads Agency (TARURA), Tanzania National Roads Agency (TANROADS), Tanzania

Railways Corporation (TRC), Tanzania Electric Supply Company Limited (TANESCO), and the Rural Water Supply and Sanitation Agency (RUWASA) in Morogoro. Further engagements involved the Occupational Safety and Health Authority (OSHA), the Fire and Rescue Forces in Morogoro, Mkulazi Holding Company, and UWAWAKUDA, an irrigation association operating within Mvomero District. These consultations provided essential technical insights and verified alignment with regulatory, infrastructure, and environmental management obligations.

During the stakeholder engagement process, concerns emerged about potential water pollution and loss of river access due to river training and dyke construction. Communities worried that dredging could increase sediment and pollutants, threatening water quality for consumption and agriculture. They requested measures for sediment control and alternative water access points. Additionally, affected residents sought support for alternative income-generating activities, such as poultry keeping and agroforestry, to mitigate livelihood disruptions.

The ESIA study identified various environmental and social impacts during the construction and operational phases of the project. Positive impacts include job creation for local residents and economic stimulation through the demand for labor and services. However, adverse impacts were noted, such as loss of biodiversity, water quality degradation from dredging, increased dust and solid waste, and occupational health risks. Community health concerns include potential disease spread and increased gender-based violence. Other negative impacts include soil erosion, noise pollution, unequal employment opportunities, and restricted access to river water for local communities.

During the operational phase, the project may enhance flood protection, riverbank stability, and ecosystem restoration, but risks include aquatic weed proliferation and community complaints regarding restricted river access near dykes and restored banks.

11.2 Conclusions

It can therefore be concluded that the proposed Enhancing Climate Resilience of Water Resources in Mkondoa Catchment Project will deliver significant environmental, social, and economic benefits to the affected communities in Gairo, Mvomero, and Kilosa Districts, and to the broader ecosystems within the Mkondoa Catchment. The project's benefits in terms of strengthened climate resilience, enhanced water security, reduced flood risks, restored ecosystems, and improved livelihoods through infrastructure and ecosystem-based adaptation interventions will substantially outweigh the manageable, localized adverse impacts identified.

The ESIA has determined that the identified negative environmental and social risks are predictable, temporary, and can be effectively managed through the full and timely implementation of the Environmental and Social Management Plan (ESMP). The Wami Ruvu Water Basin Water Board (WRWB) has demonstrated a firm commitment to integrating environmental safeguards, gender considerations, stakeholder engagement, and alternative livelihood support into the project framework. With this commitment and the application of appropriate mitigation measures, the project is not expected to result in significant or long-term adverse impacts.

12 REFERENCES AND BIBLIOGRAPHY

- i. Ministry of Water, URT, September 2023, Undertaking River Infrastructure Inventory and Risk Assessment, Design and Construction Supervision of River Infrastructure and River Training, Final Interim 2 Report, prepared by JV of Yekom/Beyond Nature in association with Witek Company limited.
- ii. Ministry of Water, URT, July 2020, Integrated Water Resources Management and Development Plan (IWRMDP) for Wami/Ruvu Basin (WRB), Component III – Volume 3: IWRMDP for Mkondoa Catchment, prepared by Yekom.
- iii. African Development Bank’s Environmental and Social Operational Safeguards
- iv. Kilosa District Socio Economic profile, 2022
- v. Mvomero District Socio Economic profile, 2023
- vi. Gairo District Socio Economic profile, 2023
- vii. United Republic of Tanzania ,2005, Environmental Impact Assessment and Auditing Regulations (2005), Dar es Salaam, Tanzania
- viii. United Republic of Tanzania ,2014, The Environmental Management (Standards for control of noise and Vibrations) Regulations 2014 Dar es Salaam, Tanzania
- ix. United Republic of Tanzania ,2021 The Environmental Management (Hazardous Waste Control & Management) Regulations 2021 Dar es Salaam, Tanzania
- x. United Republic of Tanzania ,2021, The Environmental Management (Fees and Charges) Regulations 2021 Dar es Salaam, Tanzania
- xi. United Republic of Tanzania ,2021, The Environmental Management (Control & Management of Electric & Electronic Equipment Waste) Regulations 2021 Dar es Salaam, Tanzania
- xii. United Republic of Tanzania 2007, The Environmental Management (Registration & Practice of Environmental Experts) Regulations 2007 Dar es Salaam, Tanzania
- xiii. United Republic of Tanzania 2007, The Environmental Management (Soil & Quality Standards) Regulations 2007 Dar es Salaam, Tanzania
- xiv. United Republic of Tanzania 2007, The Environmental Management (Water Quality Standards) Regulations 2007 Dar es Salaam, Tanzania
- xv. United Republic of Tanzania, (2008) “National Employment Policy”: Ministry of Labour, Employment and Youth Development
- xvi. United Republic of Tanzania, 1992. Energy Policy (1992), Dar es Salaam, Tanzania

- xvii. United Republic of Tanzania, 1995. Land Policy (1995), Dar es Salaam, Tanzania
- xviii. United Republic of Tanzania, 1997. National Environmental Policy (2021), Dar es Salaam, Tanzania
- xix. United Republic of Tanzania, 1997. The Architects and Quantity Surveyors Act (1997), Dar es Salaam, Tanzania
- xx. United Republic of Tanzania, 1997. The Contractors Registration Act (1997), Dar es Salaam, Tanzania
- xxi. United Republic of Tanzania, 1999. The Land Act, 1999, Dar es Salaam, Tanzania
- xxii. United Republic of Tanzania, 2001, The National Policy on HIV/AIDS (2001) Dar es Salaam, Tanzania.
- xxiii. United Republic of Tanzania, 2002, The National Water Policy (URT, 2002) Dar es Salaam, Tanzania
- xxiv. United Republic of Tanzania, 2002. National Gender Policy (2002), Dar es Salaam, Tanzania
- xxv. United Republic of Tanzania, 2003, The National Health Policy (URT, 2003) Dar es Salaam, Tanzania.
- xxvi. United Republic of Tanzania, 2003. Construction Industry Policy (2003), Dar es Salaam, Tanzania
- xxvii. United Republic of Tanzania, 2003. Occupational Health and Safety (2003), Dar es Salaam, Tanzania
- xxviii. United Republic of Tanzania, 2004. Employment and Labour Relations Act No. 6 (2004), Dar es Salaam, Tanzania.
- xxix. United Republic of Tanzania, 2004. Environmental Management Act No. 20 (2004), Cap.191, Dar es Salaam, Tanzania
- xxx. United Republic of Tanzania, 2009, Solid waste Management Regulation, 2009 GN. NO.263 Dar es Salaam, Tanzania
- xxxi. United Republic of Tanzania, 2009. Public Health Act (2009), Dar es Salaam, Tanzania
- xxxii. United Republic of Tanzania, 2019. Water Supply and Sanitation Act No. 12 (2019), Dar es Salaam, Tanzania
- xxxiii. United Republic of Tanzania, HIV & AIDS (Prevention & Control) Act (2008) Dar es Salaam, Tanzania
- xxxiv. United Republic of Tanzania, Regional & District Act No 9, 1997, Dar es Salaam, Tanzania
- xxxv. United Republic of Tanzania, Workers Compensation Act (2015) Dar es Salaam, Tanzania
- xxxvi. United Republic of Tanzania, 2007, The Environmental Management (Air Quality Standards) Regulations, 2007 Dar es Salaam, Tanzania

APPENDICES

Appendix I: Approved Terms of Reference

DRAFT TERMS OF REFERENCE FOR THE PROPOSED RESTORATION INTERVENTIONS FOR THE DEGRADED CATCHMENT ECOSYSTEMS ALONG THE MKONDOA RIVER IN KILOSA, GAIRO, AND MVOMERO DISTRICTS – MOROGORO REGION

**UNITED REPUBLIC OF TANZANIA
MINISTRY OF WATER**



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Submission Date: 17th April 2025

**DRAFT TERMS OF REFERENCE FOR THE PROPOSED RESTORATION INTERVENTIONS FOR THE
DEGRADED CATCHMENT ECOSYSTEMS ALONG THE MKONDOA RIVER IN KILOSA, GAIRO, AND
MVOMERO DISTRICTS –
MOROGORO REGION**

1. INTRODUCTION

Tanzania Mainland is divided into nine major basins, one of them is the Wami/Ruvu Basin, located in the east-central part of the country, covering an area of 66,899 km². The Wami/Ruvu Basin is made up of three sub-basins: Wami, Ruvu, and Coast. The Wami Sub-basin, which spans 44,233 km², is further divided into three catchments: Kinyasungwe (16,538 km²), Mkondoa (12,960 km²), and Wami (14,735 km²). Similarly, the Ruvu Sub-basin, covering 17,843 km², is subdivided into the Upper Ruvu (7,663 km²), Ngerengere (2,913 km²), and Lower Ruvu (7,267 km²) catchments. Due to its relatively small size of 4,823 km², the Coast Sub-basin is treated as a single catchment. The Basin intersects six Regions namely Dar es Salaam, Pwani, Morogoro, Dodoma, Tanga and Manyara; and 27 districts. The climate of Wami/Ruvu Basin is determined as “other tropical areas” by the migration of the Inter-Tropical Convergence Zone (ITCZ). The mean annual rainfall varies from 1100 mm in the coast to 600 mm inland. The highest mean annual rainfall occurs in Uluguru and Nguru Mountains. The coast area is characterized by two rainy seasons while the inland areas have unimodal type of rainfall.

The Government of Tanzania through the WRBWR is implementing “Enhancing Climate Resilience of Water Resilience in Mkondoa Catchment Project” which is financed by African Development Bank (AfDB). The primary objective of the project is to enhance resilience of Mkondoa catchment to withstand and adapt to the adverse impacts of climate change. This involves the implementation of a holistic strategy aimed at enhancing the catchment's capacity to withstand the immediate impacts of climate variability and fostering its ability to adapt over the long term. By addressing vulnerabilities within the Mkondoa Catchment, the project aims to create a robust and adaptable ecosystem that can thrive despite the challenges posed by a changing climate, ultimately ensuring the sustainability of water resources and fostering resilience in the face of future climatic uncertainties. The project has three components including;

Component 1: Strengthening of Hydro-meteorological Monitoring Stations

The component will focus on ensuring the availability of data through construction and rehabilitation of hydro-meteorological and water quality monitoring stations; Strengthen the capacity of data observers, field hydrometeorologist and technicians on data collection, processing and validation; and Integrating monitoring information into existing Early Warning System (EWS). This will improve the accuracy of flood and drought predictions, ultimately elevating the level of preparedness and readiness within society.

Component 2: Climate-Resilient Infrastructure and ecosystem Restoration

This component aims to enhance climate resilience in the Mkondoa Catchment by increasing water storage, restoring 1,200 hectares of degraded ecosystems, and improving infrastructure to reduce flood and drought risks. Key interventions include developing two groundwater sources, riverbank stabilization, and dyke rehabilitation and construction in targeted villages. The project promotes ecosystem-based adaptation practices such as agroforestry, fish farming, tree nurseries, and beekeeping to support livelihoods. It also supports integrated land-use planning in 10 villages and constructs four cattle troughs to reduce human-

livestock conflict at water sources, with strong community involvement through Water User Associations and environmental groups.

Component 3: Institutional Strengthening and Project Delivery

This component aims to strengthen the Project Implementation Team (PIT) and key stakeholders for effective, climate-resilient water resource management. Activities include training on climate policies, finance, procurement, and contract management, along with a gender-sensitive manual for water managers. Two Water Users Associations and one catchment committee will be formed and strengthened. Capacity building will target technical staff and Community-Based Organizations, especially women and youth, to access climate finance. Financing models will support community-led water source protection. Environmental school clubs will also be supported to promote sustainable water and climate adaptation practices, enhancing resilience across the Mkondoa Catchment.

The main goal of the proposed project is to enhance the capacity of the Mkondoa catchment to withstand and adapt to the immediate impacts of climate variability. Specifically this project aim to undertake river training and bank stabilization in Kisangata, Miyombo and Mkundi Rivers, Rehabilitation of existing Mkondoa dyke at Mitaa of Behewa, Kichangani and Mkwatani (Mbumi and Kasiki Ward, Kilosa TC), Construction of new Mkondoa dikes at Mitaa of Mkadage, Kiyangayanga, Rose and Mbwamaji (Magomeni Ward, Kilosa TC) and Construction of cattle troughs at Villages of Mvumi (Kilosa DC), Makuyu (Gairo DC), Matala and Makuyu (Mvomero DC). These efforts are part of the solution for ecosystem interventions within the Mkondoa Catchment area in the Morogoro Region.

In accordance with the categories identified in the First Schedule to Environmental First Schedule to Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018 number 9 (d), construction and/or expansion of ports and harbours are listed in Type A projects (EIA Mandatory projects). According to the regulations, type A projects are those with high impacts, hence a full EIA is mandatory.

The detailed scope for undertaking Environmental and Social Impact Assessment is intended to guide the Consultant to address relevant environmental and social issues during the assessment process. Among others, the EIA shall be conducted in accordance with the requirements of the Environmental Management Act (2004). The Consultant shall do everything necessary to meet the objectives of the services and not less than the following task that should be undertaken during the Environmental and Social Impact Assessment. In the process of consultation (Scoping process) with relevant stakeholders like environmental authorities, the Consultant may further be required to finalize the TOR according to the agreement with these stakeholders.

2. SCOPE OF WORK

Task 1: Description of the Proposed Project

The Consultant shall provide a brief description of the relevant parts of the project using maps of appropriate scale where necessary and include the following information: Project justification; Location; General layout, size, and capacity; Area of influence; Pre-construction activities; Construction activities; Schedule of project activities; Staffing and support; Facilities and services; Operation and maintenance activities; Life span etc

Task 2: Description of the Environment

Assemble, evaluate, and present baseline data on the relevant environmental characteristics of the study area. Include information on any changes anticipated before the project commences. Modify the lists below to show the critical information for this project category or which is relevant to it. Environmental characteristics of the study area shall be presented on a map to facilitate the understanding of the study area

- (a) Physical environmental: This shall cover geology; topography; soils; climate and meteorology; physical structures at site, utilities and services available.
- (b) Biological environment: All flora and fauna present at the project site.
- (c) Socio-cultural environmental; population, land use; planned development activities community structure; goods and services; recreation; public health; Gender issues and HIV/AIDS, Cultural/historic properties and attitudes to the project.

Task 3: Legislative, Policies, Administration Framework

Describe the pertinent regulations and standards governing environmental quality, health and safety, protection of sensitive areas, protections of endangered species, siting, and land use control at international, national regional and local levels, The Consultant shall undertake a review of policies, legislation and administrative framework within which the environmental management of the proposed development Mkondoa River catchment restoration interventions will be carried out. The following and any other relevant legislation and policies shall be reviewed: -

- Environmental Management Act No. 20 of (2004), Cap. 191
 - **Policies**
 - National Environmental Policy (NEP) of 2021
 - The National Water Policy (URT, 2002)
 - Construction Industry Policy (2003)
 - National Land Policy (1995)
 - National Human Settlements Development Policy (2000)
 - National Gender Policy (2002)
 - Energy Policy (1992)
 - The National Health Policy (URT, 2003)
 - National Transport Policy (2003)
 - **Acts and Regulations**
 - Environmental Management Act No. 20 of (2004), Cap. 191
 - Water Resources Management (Amendment) Act 2022
 - The Water Supply and Sanitation Act No. 12 of 2009
 - The Land Act, 1999
 - The Urban Planning Act (2007)
 - Occupation Health and Safety (2003)
 - Employment and Labour Relations Act No. 6 Of 2004
 - Engineers Registration Act and its Amendments 1997 and 2007
 - The Contractors Registration Act (1997)
 - The Architects and Quantity Surveyors Act (1997)
 - The Local Government Laws (Urban Authorities) Act (1999)
 - Public Health Act 2009

- The Tanzania Development Vision 2025
- Fire and Rescue Act (2007)
- Environmental Impact Assessment and Auditing Regulations (2005)
- The Environmental Regulations (Standards for control of noise and Vibrations, 2014)
- The Environmental Management (Air Quality Standards) Regulations, 2007
- Solid waste Management Regulation, 2009 GN. NO. 263

Task 4: Assist in Interagency Coordination and Public/NGO Participation

Assist in coordinating the ESIA with other government agencies, in obtaining the views of affected groups, and in keeping records of meetings and other activities, communications, and comments and their disposition. Establish the views of the public with regards to the potential impacts of the proposed development Mkondoa River catchment restoration interventions. Identify the different groups of stakeholders, and then use the most appropriate method to establish their views. Particular attention shall be paid to the disadvantage groups (e.g. children, the elderly and women) that may be affected by proposed development Mkondoa River catchment restoration interventions.

The Consultant shall undertake an open and transparent consultation process to ensure that the views of interested and affected parties are and approximately incorporated in the project design.

Task 5: Analysis of Alternatives to the Proposed Project

Describe alternatives that were examined in the course of developing the proposed project and identify other alternatives, which would achieve the same objectives. The concept of alternatives extends to siting, design, technology selection, construction techniques and phasing, and operating and maintenance procedures. Compare alternatives in terms of potential environmental and social impacts; capital and operating costs; suitability under local conditions; and institutional, training, and monitoring requirements. When describing the impacts, indicate which are irreversible or unavoidable and which can be mitigated. To the extent possible, qualify the costs and benefits of each alternative, incorporating the estimated costs of any associated mitigating measures. Include the alternative of not constructing the project to demonstrate environmental and social conditions without the project. Various environmental and social criteria should be developed to select the best alternatives.

Task 6: Identification, Analysis and Assessment of Potential Impacts

The Consultant shall identify, analyze and assess environmental and social impacts of the proposed development Mkondoa River catchment restoration interventions. The Consultant shall distinguish between positive and negative impacts, direct and indirect impacts, and immediate and long-term impacts. Identify impacts that are unavoidable or irreversible. Wherever possible, describe impacts quantitatively, in terms of environmental components affected (area, number), environmental and social costs and quality of available data, explaining significant information deficiencies and any uncertainties associated with the predicted impacts.

The assessment should focus on the potential for negative environmental and social impacts caused by planned and unplanned (spontaneous) Traffic Congestion; Air and noise pollution; Safety and health risks and increased pressure on social services and utilities.

The significance of impacts of the proposed development Mkondoa River catchment restoration interventions shall be assessed, and the basis of this assessment shall be specified. The Consultant should take into consideration existing by-laws, national and international environmental standards,

legislation, treaties, and conventions that may affect the significance of identified impacts. The Consultant shall use the most up to date data and methods of analyzing and assessing environmental and social impacts. Uncertainties concerning any impact shall be indicated.

Task 7. Mitigation Measure

The Consultant shall suggest cost-effective measures for minimizing or eliminating adverse impacts of the proposed development Mkondoa River catchment restoration interventions. The costs of implementing these measures shall wherever possible be estimated and presented. If compensation is recommended as one form of mitigation, the Consultant shall identify all the names and physical addresses of people to be compensated.

Task 8. Environmental and Social Management Plan (EMP)

The Environmental Management Plan focuses on three generic areas: implementation of mitigation measures, institutional strengthening and training, and monitoring. The Consultant shall prepare an Environmental and social Management Plan, which will include proposed work programme, budget estimates, schedules, staffing and training requirements and other necessary support services to implement the mitigation measures. Institutional arrangements required for implementing this management plan shall be indicated. The cost of implementing the monitoring and evaluation including staffing, training and institutional arrangements must be specified. Where monitoring and evaluation will require inter-agency collaboration, this should be indicated.

Identify institutional needs to implement environmental assessment recommendations. Review the authority and capability of institutions at local, regional, and national levels and recommend how to strengthen the capacity to implement the environmental and social management and monitoring plans. The recommendations may cover such diverse topics as new laws and regulations, new agencies or agency functions, inter-sectoral arrangements, management procedures and training, staffing, operation and maintenance training, budgeting, and financial support.

Prepare detailed arrangements to monitor the implementations of mitigating measures and the impacts of the project during construction and operation. Include in the plan an estimate of capital and operating costs and a description of other required inputs.

REPORTING

The ESIA reports should be concise and limited to significant environmental Issues. The Main text should focus on findings, conclusions, and recommended actions supported by summaries of the data collected and citations for any references used in interpreting data. Detailed or un-interpreted data are not appropriate in the main text and should be presented in appendices or separate volume. Unpublished documents used in the ESIA may not be readily available and should also be assembled in appendices. Organized the ESIA may not be readily available and should also be assembled in appendices. In organizing the ESIA reports according to the outline in the Environmental Impact Assessment and Audit Regulations (2005). The main report contains separate an Executive Summary both in English and Swahili. The following is the tentative Schedule that shall be followed for completion of the work;

S/N	EIA Process	Reports Submitted To NEMC/DoE	Approval From NEMC/DoE	Actors	Time Allocated
1.	Scoping and Screening	Scoping Report and Draft ToR	Approved ToR and Budget for site verification	Consultant/ NEMC	14 Days
2.	Environment Impact Assessment	Draft EIA Report	N/A	Consultant	2 weeks
3.	Site Verification	N/A	N/A	Client, Consultant, NEMC, Sector	1 week
4.	TAC Meeting	N/A	Comments to be Incorporated in the Final EIA	Client, Consultant, NEMC, Sector Ministries, Selected Stakeholders	2 weeks
5.	Submission of Final EIA	Final EIA	N/A	Consultant, NEMC	1 Week

4. STAFFING

The Consultant should employ an Environmental Impact Assessment Expert (registered), Environmental Engineer, Water resources expert and Sociologist to carry out the EIA study. In addition, the Consultant may wish to absorb other supporting staff to facilitate efficient expedition of the work.

Appendix II: Screening Letter by NEMC



THE UNITED REPUBLIC OF TANZANIA

VICE PRESIDENT'S OFFICE

NATIONAL ENVIRONMENT MANAGEMENT COUNCIL (NEMC)



In reply please quote:

Ref: HK. 145/88/47/02

Date: 16/04/2025

Director,
Wami/Ruvu Basin Water Board (WRBWB),
P. O. Box 826,
MOROGORO.

Re: **SCREENING DECISION ON THE PROPOSED RESTORATION
INTERVENTIONS FOR THE DEGRADED CATCHMENT ECOSYSTEMS
ALONG THE MKONDOA RIVER IN KILOSA, GAIRO, AND MVOMERO
DISTRICTS - MOROGORO REGION**

The heading above refers.

2. The National Environment Management Council (NEMC) acknowledges receipt of your submitted documents for the above captioned project. Please, be informed that your project has been registered and assigned with Reference Number **EC/EIA/2025/57917**. You are advised to quote this registration number in all of your future correspondence regarding this project
3. Having reviewed the submitted documents, the Council found your project to be a Type A project; hence mandatory for full Environmental Impact Assessment (EIA). Therefore, you are required to review the report, prepare and submit the **Scoping Report** and **Terms of Reference (ToR)** for further steps.
4. Please take note that the Scoping Report should first be submitted to relevant authorities for their comments, and proof (**evidence of service**) be submitted to the Council along with the Scoping Report and ToR. This is in accordance with Regulation 10(2) & (3) of the Environmental Impact Assessment and Audit Regulations, 2005 as amended in 2018.
5. We look forward to your continued cooperation on this matter.

Arnold L. Mapinduzi
For: **Director General**

Cc: George Joseph Kimaro, P. O. Box 31121, DAR ES SALAAM.

Morogoro Rufiji Zone Office, 2nd Floor - 2D Complex Building, Old Dar es Salaam Road, P.O. Box 1342, 67106
Morogoro, Phone: +255 738 953 787 Email Address: nemcmorogoro@nemc.or.tz Website: www.nemc.or.tz

Appendix III: Approval of ToR Letter by NEMC



THE UNITED REPUBLIC OF TANZANIA

VICE PRESIDENT'S OFFICE

NATIONAL ENVIRONMENT MANAGEMENT COUNCIL (NEMC)



In reply please quote:

Ref: HK. 145/88/47/04

Date: 21/04/2025

Director,
Wami/Ruvu Basin Water Board (WRBWB),
P. O. Box 826,
MOROGORO.

Re: **APPROVAL OF TERMS OF REFERENCE (ToR) TO UNDERTAKE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED RESTORATION INTERVENTIONS FOR THE DEGRADED CATCHMENT ECOSYSTEMS ALONG THE MKONDOA RIVER IN KILOSA, GAIRO AND MVOMERO DISTRICTS - MOROGORO REGION**

The heading above refers.

2. The National Environment Management Council (NEMC) acknowledges receipt of your submitted documents for the above captioned project. Please, be informed that your project has been registered and assigned a Registration Number **EC/EIA/2025/57917**. You are advised to quote this registration number in all of your future correspondence regarding this project.

3. Having reviewed the submitted documents, the Council found the Terms of Reference (ToR) to be generally adequate to guide the ESIA study; hence, they are approved. You are therefore required to proceed with the study and submit the report according to the EIA and Audit Regulations. As you proceed with the study, you are required to observe the following:

- a) The ESIA study should not be undertaken by a public officer as per Regulation 32 of the Environmental Management (Registrations and Practice of Environmental Experts) Regulations, 2021 as amended in 2022;
- b) Detailed description of project components, designs, size, capacities, technology to be used, as well as their alternatives;
- c) Detailed description of activities to be undertaken during each project phase as well as management of waste which will be generated;
- d) Detailed consultation with key stakeholders including but not limited to Occupational Safety and Health Authority (OSHA), Tanzania Meteorological Authority (TMA), Kilosa District Council, Mvomero District Council, Gairo District Council, Ward and Village offices as well as Project Affected People (PAP). Their views and concerns should be responded to and incorporated in the EIS;
- e) Occupational health and safety issues should be clearly discussed;

- f) Detailed description of potential environmental, economic and socio-cultural impacts of the proposed project and their enhancement and management/ mitigation measures to be taken during and after project implementation;
 - g) Presentation of detailed Environmental Management and Monitoring Plans;
 - h) Provision of specific and most current baseline data on physical, biological, socio-economic and cultural environment. Sources of data should be authentic, for example climate data should be sourced from the TMA; and
 - i) The EIS should include but not limited to the following attachments:
 - i. Evidence of land ownership;
 - ii. Copies of relevant technical studies like geotechnical, hydrological and hydrogeological studies;
 - iii. Readable project designs and site layout plan; and
 - iv. Copies of evidence of service.
4. Having completed the study, you will be required to submit the EIS online and six (06) original signed hard copies of the same as per regulation 21 of the Environmental Impact Assessment and Audit Regulations, 2005. Having received the EIS, the Council will arrange for a cross-sectoral Technical Advisory Committee (TAC) meeting to review the submitted report.
5. Based on section 81(1) of the Environmental Management Act Cap. 191, the proponent is required to undertake the EIA study at his own cost. Therefore, you will be required to pay to the Council a review cost (excluding transport cost to and fro the project site) as indicated in the Proforma Invoice generated by the system.
6. In the review process there will be a site verification visit in which you will be required to provide transport to the verification team as per section 88(1) of the Act.
7. Should you need any further clarifications on this matter please, do not hesitate to contact us through Telephone No. +255 789 352 582, from Monday to Friday, 8:00am to 04:00pm or e-mail address: nemcmorogoro@nemoc.or.tz.
8. We are looking forward to your cooperation on this project.



Arnold L. Mapinduzi
For: **Director General**

Cc: George Joseph Kimaro,
P. O. Box 31121,
DAR ES SALAAM.

Appendix IV: Water Quality Analytical Report

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF WATER



MOROGORO WATER QUALITY LABORATORY

WATER QUALITY ANALYTICAL REPORT FOR WRBWB

Prepared by :
Morogoro Water Quality Laboratory
P.O.BOX 826, Morogoro
email: morolab@maji.go.tz

April, 2025

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF WATER



Telegram: "MTO"
Telephone: 255-023-2614748
Fax No. 255-023-2613519
Email: mgrolab@maji.go.tz

In reply quote Lab.No. MGWQL358-2024/25

Morogoro Water Laboratory
P.O. Box 826,
Maji Yard, Mazimbu Rd
Morogoro
Tanzania

03th April, 2025.

1.0 GENERAL DESCRIPTION

Analysis requested by... WRBWB ... Region...Morogoro...

District.... Kilosa... Ward...Mvumi... Village/Street...Mvumi....

Sampling Location.... Mvumi. Sampling Date...20.03.2025... Received Date...20.03.2025...

Source of water.... River.... Type of Water...Natural Water... Purpose...Baseline survey...

Sample collected by ..Client..

2.0 WATER SAMPLE ANALYTICAL RESULTS

2.1 Physicochemical results

	Parameter	Units	Results	Tanzania Standards for Receiving Waters (TSS 2068:2017) Category 1
1.	Temperature	°C	28.93	nm
2.	Turbidity	TCU	110	nm
3.	Color	mg/L Pt Co	291	nm
4.	pH	-	7.54	6.5-8.5
5.	Electrical Conductivity (E.C)	µS/cm	203	nm
6.	Total Dissolved Solids (TDS)	mg/L	102	2000
7.	Chloride (Cl ⁻)	mg/L	10.70	200
8.	Total Iron (Fe)	mg/L	3.14	1.0
9.	Manganese	mg/L	1.57	0.5
10.	Nitrate (NO ₃)	mg/L	0.21	50
11.	Phosphate (PO ₄)	mg/L	0.108	nm
12.	Total suspended solid (TSS)	mg/L	108.00	nm

nm - not mentioned

3.0 REMARK

- Water contains high concentration of Iron and Manganese

4.0 RECOMMENDATION

- Human activities should not be done near or along the source in order to minimize the concentration of the elevated parameters.
- Water quality monitoring should be done at least quarterly per year.


Reporting Officer

03/04/2025
Date



THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF WATER



Telegram: "MTO"
Telephone: 255-023-2614748
Fax No. 255-023-2613519
Email: morolab@mail.go.tz

In reply quote Lab.No. MGWQL359-2024/25

Morogoro Water Laboratory
P.O. Box 826,
Maji Yard, Mazimbu Rd
Morogoro
Tanzania

03th April, 2025.

1.0 GENERAL DESCRIPTION

Analysis requested by... WRBWB ... Region... Morogoro...

District... Kilosa... Ward... Dumila... Village/Street... Magole....

Sampling Location.... Magole. Sampling Date... 20.03.2025... Received Date... 20.03.2025...

Source of water.... Mkundi River..... Type of Water... Natural Water... Purpose... Baseline survey ...

2.0 WATER SAMPLE ANALYTICAL RESULTS

2.1 Physicochemical results

	Parameter	Units	Results	Tanzania Standards for Receiving Waters (TZS 2068:2017) Category 1
1.	Temperature	°C	28.93	nm
2.	Turbidity	TCU	1000	nm
3.	Color	mg/L Pt Co	679	nm
4.	pH	-	7.95	6.5-8.5
5.	Electrical Conductivity (E.C)	µS/cm	2134	nm
6.	Total Dissolved Solids (TDS)	mg/L	1071	2000
7.	Chloride (Cl ⁻)	mg/L	328.70	200
8.	Total Iron (Fe)	mg/L	1.58	1.0
9.	Manganese	mg/L	0.76	0.5
10.	Nitrate (NO ₃)	mg/L	0.31	50
11.	Phosphate (PO ₄)	mg/L	0.101	nm
12.	Total suspended solid (TSS)	mg/L	400	nm

nm - not mentioned

3.0 REMARK

- Water contains high concentration of Iron and Manganese

4.0 RECOMMENDATION

- Human activities should not be done near or along the source in order to minimize the concentration of the elevated parameters.
- Water quality monitoring should be done at least quarterly per year.

.....
Reporting Officer

03/04/2025
.....
Date



THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF WATER

Telegram: MTO
Telephone: 255-023-2614748
Fax No: 255-023-2613519
Email: morolab@mai.go.tz

In reply quote Lab.No. MGWQL360-2024/25



Morogoro Water Laboratory
P.O. Box 826,
Maji Yard, Mazimbu Rd
Morogoro
Tanzania

03th April, 2025.

1.0 GENERAL DESCRIPTION

Analysis requested by...WRBWB ... Region...Morogoro...

District.... Kilosa... Ward...Masanze... Village/Street...Miyombo....

Sampling Location.... Miyombo. Sampling Date...20.03.2025... Received Date...20.03.2025...

Source of water.... Miyombo River Type of Water...Natural Water... Purpose... Baseline survey ...

2.0 WATER SAMPLE ANALYTICAL RESULTS

2.1 Physicochemical results

	Parameter	Units	Results	Tanzania Standards for Receiving Waters (TZS 2068:2017) Category 1
1.	Temperature	°C	29.06	nm
2.	Turbidity	TCU	186	nm
3.	Color	mg/L Pt Co	482	nm
4.	pH	-	7.38	6.5-8.5
5.	Electrical Conductivity (E.C)	µS/cm	228	nm
6.	Total Dissolved Solids (TDS)	mg/L	114	2000
7.	Chloride (Cl ⁻)	mg/L	12.09	200
8.	Total Iron (Fe)	mg/L	0.52	1.0
9.	Manganese	mg/L	0.26	0.5
10.	Nitrate (NO ₃)	mg/L	0.27	50
11.	Phosphate (PO ₄)	mg/L	0.038	nm
12.	Total suspended solid (TSS)	mg/L	121	nm

nm - not mentioned

3.0 REMARK

- Water conform to the Tanzania standard for receiving water according to category 1 requirement's.

Note:

Category 1 means water that can be processed for drinking water supplies, swimming pools, food and beverages, manufacturing industries, pharmaceuticals manufacturing industries, or industries requiring a water source of similar quality.

4.0 RECOMMENDATION

- Water quality monitoring is recommended at least quarterly per year.

Reporting Officer

Date

03/04/2025

MOROGORO WATER QUALITY
LABORATORY
Head of Water Laboratory
MAJI YARD, MAZIMBU ROAD
P.O. BOX 826,
MOROGORO

Appendix V: Meeting Minutes and Signed Stakeholder Consultation Attendance

21/03/2025.

MUHITASARI WA KIKAO CHA HAITASHALAI NA
WATAALAM KUTOKA BONDE LAWAMIRUW.

AGENDA.

1. KUFUNGUWA KIKAO
2. UTAMBULISHO
3. KUTOA ELIMU KUHUSU UTUNZAJI WA VYANZO VYA MAJI.
4. MASUALI KWA WAJUMBE
5. KUFUNGA KIKAO.

AGENDA YA KUWANZA KUFUNGUWA KIKAO.

Mwenyekiti alifunga kikao mnamo saa 10:00 asubuhi kwa kuwashukuru wajumbe na wataalamu kwa kufika kikaoni napia kwa omba wajumbe kuwasikiliza wataalamu na kuwasiliza maswali kuhusu luo mradi.

AGENDA NO. 2. UTAMBULISHO.

Viongozi wa kijiji cha matole na waliji tambulisha kwenye kikao na pia kuwatahisha wataalamu nao pia kujitambulisha kwenye kikao.

AGENDA NO. 3. KUTOA ELIMU KUHUSU UTUNZAJI WA VYANZO VYA MAJI.

Wataalamu walisimama nakitodzeeza kwa ufasi zaidi kuhusu mradi wao pia walitodzeeza kuhusu lengo lao nikaona kugusa maji na kuhifadhi vyanzo vya maji. Pia watahishia unuhusu uo kuhifadhi vyanzo vya maji na kuwita shughuli za kibinafsi ambazo zina haliko vyanzo vya maji.

Wataalamu wataeleza shughuli ambazo zina hatibu vyanzo vya maji kama, konywesha mifugo, kuchiimba madini, kulima kwenye vyanzo vya maji.

Wataalamu wataja na mpango ili kuzuia uafugaji wasiende konywesha mifugo katika bonde la mto, watasema kuwa watachimba kisima cha maji na kutengeneza mifereji ya konywesha mifugo.

Wataalamu pia wataja na mpango wa kuzuia uale wanao fanya shughuli za kilimo katika vyanzo vya maji. Watasema kuna baadhi ya mazaotunayo wote kufanya uale wataadua kulima kwenye vyanzo kama kulima kakafo, kulima kaka, kulima paradidii, umuagiliaji wa matone, ufugaji wa nyuki pia ufugaji wa samaki.

AGENDA NO: 4. MASWALI NA MAJIBU.

Wataalamu watalitoa mada za viongozi wa kijiji kua kuuliza maswali yoyote yanayohusika huo mada.

Swali: Je mtatujenge mifereji ya konywesha mifugo min mingapi?

Jibu: Kuwa sasa hii muanzo ita uafugaji wataalamu ambao watafanya tathmini ya uale wa chumbe kisima. Pia tutapata mpendeuzo ya kijiji.

Swali: Je hakuna utaratibu wa kupanda mti kwenye kingo za mto kuzia mmomonyoko wa ardhi?

Jibu: Hilo wazo tunalo pia, tona mitakati wa kutoa elimu kwa uale wanao fanya kilimo kingoni mwa mto kufanya kilimo msito.

Swali: Anauliza ghatema za hiyo mifereji ya konywesha ngombe ni bei gani?

Jibu: Tukishajenge mifereji tona watabiti wafugaji kwenye kikundi alpo ghatema watafanga wafugaji ghatema nafu.

ETSA MTENDAJI
CHAMA

AGENDA NO. 5. KUFUNGA KIKAO.

Mwanzo kiti alipanga kikao mrano saa 13:20 ndani kwa kuzashukwa wa kadaru, na uajumbe na warandi kwa kuchangia na mahudhuro yao.

MWENYEKITI.

Bimbara
KITI W
KIJU' CHA MATALE

KATIIBU.

L.B. Nyagiro
KITI W
KITI CHA MATALE

KIKAO CHA NDANI

21/03/2025.

JINA	CHEO	SAINI
1. BAKARI H. MGAZI	MWIKI.	Bimbara
2. LAMECK BUTYALI NYAGIRO	VEO.	L.B. Nyagiro.
3. Fredrick osodo Kosodo	mjumba	Sumu
4. Hadja Hadifa Saidi	nyumba	HADIJ
5. MOHAMED SUMA OMAR	MW/KITONGOSI	Sumu
6. CHARES DAUD MACHAKU	MWENYEKITI	Kitongozi
7. JEMINA E. KIGOLU	MJUMBE	Kitongozi
8. TERESIA PEIRO	MJUMBE	T. PEIRO
9. MUSTAFA PEIRO MJUMBE	0785134773	
10. MARTINA M. MAJOLA	MJUMBE	M. Majola
11. EGIDI. EMIAS CHAUO	MWNYKITI	EZ
12. ALOYUS. C. DAUDI	MJUMBE	Sumu
12. CHARLES DAUD MACHAKU	MWNYKITI	Sumu
13. KAMU DABU KAUZENI	NAZI	



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



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FOMU YA MAHUDHURIO

21/03/2025

No.	JINA KAMILI	CHEO	TAASISIKIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
1	BAKARI H. MUSA	MW/KILI		0738059040	✓		<i>[Signature]</i>
2	LAMUKO B. MACHO	VEO		0763030816	✓		<i>[Signature]</i>
3	SHIDA R. MACHO	VAED		0712734357	✓		<i>[Signature]</i>
4	TERESA PETURA	MJUMBE	MATALE	0684442913		✓	T. PETURA
5	HADIJA ALIEN	MJUMBE	MATALE	0692603894		✓	HADIJA
6	MARTINA MACHO	MJUMBE	MATALE	0783905452		✓	M. MACHO
7	JENIMA R. KIGORI	MJUMBE	MATALE	0738950043		✓	R. KIGORI
8	FREDRICK ORODO	MJUMBE	MATALE	0796883367	✓		<i>[Signature]</i>
9	MUSTAFA SAIDI	MATALE		0285134773	✓		<i>[Signature]</i>
10	MUHAMMEDI SADIKI	MJUMBE	MATALE	0785146061	✓		<i>[Signature]</i>

PEWA MIENGAJ
SABABU CHA MATALE



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



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FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISIKIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
11	THABITI S. MACHO	MJUMBE	MATALE	0753088770	✓		<i>[Signature]</i>
12	MUHAMMED SUMA	MW/KIGORI	MATALE	0795704436	✓		<i>[Signature]</i>
13	ABIMAHADANI ORODO	MW/KIGORI	MATALE	0738333609	✓		<i>[Signature]</i>
14	CHARLES DAUZI	MWENYE	MATALE	0738333168	✓		<i>[Signature]</i>
15	EGIDI CHIDVO	MW/KIGORI	MATALE	0658670548	✓		<i>[Signature]</i>
16	ALOYCE CHARLES	MJUMBE	MATALE	0714862702	✓		<i>[Signature]</i>
17	HALFANTH MACHO	MJUMBE	MATALE	0717514656	✓		<i>[Signature]</i>
18	RASHIDI KIGORI	KIGORI	MATALE	0737451610	✓		<i>[Signature]</i>
19	FARIDAH HALFANTH	MJUMBE	MATALE	0776957296		✓	<i>[Signature]</i>

PEWA MIENGAJ
SABABU CHA MATALE

MUHTASARI WA KIKAO CHA HALMASHAURI YA KISI
CHA MAKUYU KILICHOFANYIKA TAREHE 21/03/2025

AGENDA

01. KUFUNGA KIKAO
02. UTAMBULISHO
03. ELIMU YA USIMAMIZI WA RASILIMALI MAJI
04. KUFUNGA KIKAO

AGENDA 01: KUFUNGA KIKAO

Mwenyekiti alifunga kikao mnamo mudo wa saa 8:15 mchana, alianza kwa kuwasahimisha wajumbe na kisha kuwakaribisha katika kikao.

AGENDA 02: UTAMBULISHO

Utambulisho ulifanyika kwa wajumbe wa Halmashauri na kwa hageni waliotoka kijiji kwa siku hiyo kutoka ofisi ya Maji Bonde la Wami/Ruru (WRBW).

AGENDA 03: ELIMU YA USIMAMIZI WA RASILIMALI MAJI

Katika agenda hiyo Mhandisi ABDULLAH MSHONA kutoka ofisi ya Maji Bonde la Wami/Ruru (WRBW) aliwieza wajumbe lengo lao la kuhika kijiji. Ambapo alieleza wamehika kijiji kuamisha madi wa kuhifadhi na kulinda vyanzo ya maji rasilimali maji katika kidakio cha into MKONDA/DUMILA.

Ambapo alivaeleza wajumbe ofisi ya maji Bonde la Wami/Kuru wamefika kijiji kupata maoni ya Serikali ya kijiji na Wananchi kwa yujumu kuhusu mradi huo

MAAZIMU

Katika hili wajumbe walijadiliana kwa kina na kisha kwa pamoja walikubaliana kuupokea mradi huo. Pia wajumbe walikubaliana mabiriko yatajengwa katika kitongoji cha Kibukura na MATANGI

AGENDA YA: KUFUNGA KIKAO

Mwenyekiti alifunga kikao mnamo mudi saa 9.40 alisiri kwa kuwashukua wajumbe kwa mchango wao juu ya agenda zilizokuna mezani. Kisha alitamka kikao kamukarishwa

~~A. Kikoti~~

KASOUH A. KIKOTI

MWENYEKITI WA SERIKALI
YA KIJJI MAKUYU

~~Mambira M. Mambira~~

MAMBIRA M. MAMBIRA
AFISA MTENDAJI
KIJJI CHA MAKUYU



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



CS CamScanner

FOMU YA MAHUDHURIO

Na.	JINA KAMILI	CHEO	TAASISUKIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
1.	KANOUTI HUKU	Mus/Kiti		078658752	✓		Kanouti
2.	NYIRABIA WAGWA	VED		0675329765	✓		Nyirabia
3.	NGOME MOHAMED	MJUMBE	KIBULINGHE	0784226160	✓		Ngome
4.	SALUM BAKARI	MSUMBE	NTONGOLO	079890833	✓		Salum
5.	SABOLA SAGHA	MJUMBE	NTONGOLO	0776255511	✓		Sabola
6.	HAMISI BASHA	MJUMBE	MKOCHEZI	0658592653	✓		Hamisi
7.	MARIAM A. ANTONY	MJUMBE	NTONGOLO	0652435007		✓	Mariam
8.	MWANAAMBAI FUMBE	MJUMBE	CHAMUA	0710022172		✓	Mwanaambi
9.	ALI H. KASUMBE	MUSIKITI	MATUNGU	0712734188	✓		Ali
10.	PHILIPPA HAMIS	MJUMBE	NTONGOLO	0689183266	✓		Philippa

KWENYE(ITI) WA BODI YA KIJUJI MAHURU



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU
S. L. P. 826, MOROGORO
Tovuti: www.wrbwb.go.tz Barua Pepe: barua@wrbwb.go.tz
Simu (BURE): 0800114031 / 0800114032



CS CamScanner

ORODHA YA MAHUDHURIO

MAHUDHURIO

NA	JINA KAMILI	JINSE	CHEO	TAASISI	EMAIL	SIMU NAMBA	SAINI
11	ROBERT GIBO	ME	MS/MKOCHEZI			0654065475	Robert
12	HAMISI ATUMMAN	ME	MS/HAMISI			07861978	Hamisi
13	MARIA SAMUKI NDOGE	KE	MS/MJUMBE			0718168220	Maria
14	SALUM J. MARIAMBA	MS	MS/MJUMBE			0705-522625	Salum
15	LUKA M. MARIAMBA	ME	MS/MJUMBE			0486097294	Luka
16	DANIELI FUNGE	ME	MJUMBE			0710773451	Danieli
17	FATUMA HASSANI	KE	MS/MJUMBE			0653242733	Fatuma
18	FREDRICK D. MUMUNY	ME	VED			0659797910	Fredrick
19	MARIAM A. MARIAMBA	MS	MJUMBE			0788393735	Mariam
20	PRINCE S. TENGU	ME	MJUMBE			0788393735	Prince
21	TALISI C. M. CHAKA	KE	MJUMBE			0683670081	Talisi
22	SALAM S. MARIAMBA	KE	MJUMBE			0776667043	Salam
23	WEMA I. HASSANI	KE	MJUMBE			0656389317	Wema
24	ELIMBA S. MALIBALI	KE	MJUMBE			0716647926	Elimba

KWENYE(ITI) WA BODI YA KIJUJI MAHURU

JAMHURI YA MUUNGANO WA TANZANIA

TAWALA ZA MIKOA NA SERIKALI ZA MITAA

HALMASHAURI YA WILAYA YA KILOSA.

MUHTASARI WA KIKAO CHA HALMASHAURI MBILI
ZA VIJISI PAMOJA NA WATAALAMU WA KUTOKA WAMI
RUVU.

AGENDA:

1. KUFUNGUA KIKAO
2. UTAMBULISHO.
3. MRADI WA KUXABILIANA NA MABADILIKO YA TABIA
YA NCHI ILI KUNUSURU VYANZO VYA MATI.
4. KUFUNGA KIKAO.

1. KUFUNGUA KIKAO.

Mwenyekiti wa kikao alifunga kikao mmama saa nne na dakika kumi na tano za asubuhi (10:15) kwa kuwashukuru wajumbe waliokuwepo kikao hicho. Pia mwenyekiti wa kikao aliwaza kuwashukuru wageni waliotoka kutoka bonde kwa kufika ili waweze kutueleza jambo walilo kuja nalo.

2. UTAMBULISHO.

Katika agenda hii katibu wa kikao aliwaomba wajumbe waliokuwa wamehudhuria kikao kujitambulisha kwa majina na vyeo vya. Hivyo baada ya katibu kuruhusu utambuli-
sho huo wajumbe wote walijitambulisha kwa majina yao na nyadhifa zao.

Pia wageni waliokuwepo kikao hicho nao walopa nafasi ya kujitambulisha kwa majina yao na walopa nyadhifa zao.

3. MRADI WA KUKABILIANA NA MABADILIKO YA TABU YA NCHI ILI KUNUSURU VYANZO VYA MAJI.

Katika agenda hii mwenyekiti wa kitao alitoa nafasi kwa wataalamu ili waweze kutoa ufafanuzi wa agenda hii. Mtaalamu kutoka bonde alisimama na kuanza kutoa ufafanuzi kuhusu agenda hii kwa kusema kuwa Mradi wa kukabiliana na mabadiliko ya tabu ya nchi ili kunusuru vyanzo vya maji, unafadhiliwa na Bank ya Afrika. Hingo tumeamua kuja ili kutoa taarifa kwa upo mradi ambao unatarajiwa kutekelezwa katika eneo la mto Mkomdi, ambayo itakuwa Sambamba na ujenzi wa Makurwa matano.

Baada ya ufafanuzi wa kina kutoka kwa wataalamu, wajumbe walichangia hoja kwa kuanza kupenda kazi kwa.

Kabla mradi haujaanza ni lazima watu wafanye Survey ili kubaini maeneo korofi ili mradi ndo uanzwe kutekelezwa.

Pia wajumbe walihoji kuwa jamii itanufaika na Mradi.

Mtaalamu kutoka bonde alijibu hoja kwa kufafanua kuwa kuanza vijana watakata giza waonapatika katika eneo huu.

Pia wanawake watakata giza za kupika wakati wa utelco bezi wa mradi.

Pia mtaalamu alisema kuwa kutamuhwa Kamati ya Ufualili'aji wakati wa utekelezaji wa mradi.

Hingo wajumbe kwa Pamoja walikubaliana na uji' wa mradi huo.

Baada ya wajumbe kukubaliana na uji' wa mradi mwenyekiti aliwaomba wajumbe kuhudhuni mkutano wao ^{kwenye mkutano} aliwaomba wajumbe kuhudhuni mkutano wao andaliwa nje ili kupata maoni ya wanaoichi, ulio


Baada ya kutoka Katika Mkutano wa wananchi. Wala
 Mu kutoka bonde (Wami Ruvu) walipewa nafasi ya kujitambuli-
 Sha na kuweza kutoa ufafanuzi mbele ya wananchi kuhusu
 agenda iliyopo mezani. Mwenyekiti wa mkutano aliweza kumkam-
 bisha mtaalamu aweza kutoa ufafanuzi kuhusu agenda ya
 utunzaji wa vyanzo vya maji. Mtaalamu alisema kuwa upo
 mradi wa kutabiliana na mabadiliko ya tabia ya nchi ili
 kumusuru vyanzo vya maji. Lengo la mradi huu ni ujenzi
 wa Mabelewa, na kumudisha mto uliopoteza mwelekeo wake.
 Pia kumelabisha kingo za mto, pia wananchi watapa elimu
 kuhusu kilimo, kwani haturuhusiwe kulima kwenye kingo
 za mto. Mtaalamu pia alieleza kuwa mto mkundi uneanzika
 ukanda wa juu. Pia Mtaalamu pia alionbo vijana kujitokeza
 ili wakati mradi kutelekezwa.

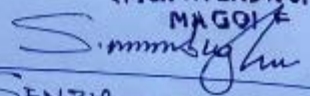
MAONI NA MASWADI KWA WANANCHI.

- Mradi tunanmba ufanikiwe ili wataalamu mnapoanza
 kutekeleza ukishindwa mradi mtueleze.
- Mradi ukija tunaupokea. Pia mtaalamu alisema kuwa
 watu wote wanaolima pembezoni watapatiwa malitaji yao
 ili kupisha maeneo ya mita 60.

(4) KUFUNGA MKUTANO:

Mwenyekiti wa mkutano aliweza kufunga mkutano
 mnamo Saa tisa na dakika kumi na nane alafini (15:18)
 kwa kuwashukuru wananchi wazo huothunika mkutano huo
 kwa kusema wananchi tunapokea mradi kwa mizoco
 miwili.


 AZIZI SAID OMARY
 MWENYEKITI.

FISA MTENDAJI KATA
 MAGOFI

 SENZIGAE M. KIMESHA
 KATIBU.



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

Na.	JINA KAMILI	CHEO	TAASIS/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
41	HUSSEINI S. SALUM	MKULIMA	MAGOLE	065262593	✓		H. SALUM
42	MURUGWA SHABDI	MKULIMA	MAGOLE	0673218506	✓		M. SHABDI
43	SADY HAYATI	MKULIMA	MAGOLE	0653564359	✓		S. HAYATI
44	STANLEY YASIA	MKULIMA	MAGOLE	0719767478	✓		S. YASIA
	HABISIMUSI AFARIKIDIO	MAGOLE	MAGOLE	068385359	✓		H. AFARIKIDIO
46	KHALIDU N. TOSHI	MAGOLE	MAGOLE	0714471410	✓		K. TOSHI
47	AZIZI SOMAB	MAGOLE	MAGOLE	0657262328	✓		A. SOMAB
48	HEDAT ASMATA LFO	MAGOLE	MAGOLE	0713726000	✓		H. ASMATA
49	SENZIGHE KIMBA	WEO	MAGOLE	0719909672	✓		S. KIMBA



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

Na.	JINA KAMILI	CHEO	TAASIS/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
21	ATUMUJI MUMBE	MUMBE	MAGOLE	0219085532	✓		A. MUMBE
22	HASSAN DH. CHANGI	MUMBE	MAGOLE	0682548086	✓		H. CHANGI
23	IRAHIMU LUKINDI	MUMBE	MAGOLE	0710445454	✓		I. LUKINDI
24	ALLY ISA	MUMBE	MAGOLE	0482506490	✓		A. ISA
25	OMARI MUMBE	MUMBE	MAGOLE	0717309009	✓		O. MUMBE
26	Rajab Ali - fcsa	MUMBE	MAGOLE	0715029382	✓		R. ALI
27	Ramadhani MUMBE	MUMBE	MAGOLE	0710902972	✓		R. MUMBE
28	IDDIA CHIDAKO	MUMBE	MAGOLE	0686994963	✓		I. CHIDAKO
29	SHAHIM S. ADIRI	-	-	0673600694	✓		S. ADIRI
30	JULIUSI SAMA	-	-	0713400371	✓		J. SAMA



JAMHURI YA MUUNGANO WA TANZANIA

WIZARA YA MAJI

BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

Nr.	JINA KAMILI	CHEO	TAASISIKIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
11	KHADI KAWITA	Makulima	MAGOLE A		✓		
12	ALICE FOMBI	Makulima	MAGOLE A		✓		
13	ANNA JOHN	Makulima	MAGOLE A	070943891		✓	A. John
14	FRISCA ANTON	Makulima	MAGOLE A	0652130506		✓	P. A.
15	HELENA GOSPEY	Kijiji	MAGOLE A	0621611897		✓	H. Gospey
16	HAFSA TUMU	Makulima	"B"		✓		H. Tumu
17	WAGIDI M. GOMBE	Makulima	MAGOLE A	0713175881	✓		W. G.
18	IZZI A. MIONDE	Makulima	MAGOLE (B)	0714780512		✓	I. A.
19	KASSIM MCHUMU	Makulima	MAGOLE B	0714970626	✓		K. M.
20	JOHANNI S. KENDO	Makulima	MAGOLE A	0716649610	✓		J. K.



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISU/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
1	Pile Mshige	Mshige	MAGOLE A	0718664585		✓	Mshige
2	Sitoni Zambaka	Mshige	MAGOLE A	0719 56711		✓	Sitoni Zambaka
3	Gibson Mshige	Mshige	MAGOLE A	078289992	✓	✓	Gibson Mshige
4	Alon Chambo	Mshige	MAGOLE A	0655207075	✓	✓	Alon Chambo
5	Amos Mshige	Mshige	MAGOLE A		✓	✓	Amos Mshige
6	Gabriel F. Mshige	Mshige	MAGOLE A	0711326879	✓	✓	Gabriel F. Mshige
7	Rafaeli Mshige	Mshige	MAGOLE A	0714078801	✓	✓	Rafaeli Mshige
8	Hamis Mshige	Mshige	MAGOLE A	0774075117	✓	✓	Hamis Mshige
9	Emmanuel Mshige	Mshige	MAGOLE A	0853592571	✓	✓	Emmanuel Mshige
10	Rama Salum	Mshige	MAGOLE A	0659-188441	✓	✓	Rama Salum



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

Na.	JINA KAMILI	CHEO	TAASISI/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
31	BAHATI THORAT	MAKUMIA	MAGOLE	067721029	ME		<i>[Signature]</i>
32	IMANI ABDULHAMID	✓	MAGOLE	0653-550155	✓		<i>[Signature]</i>
33	ELIA A. QUSONGELA	✓	MAGOLE	05569335	✓		<i>[Signature]</i>
34	Omar S. MUSA	MAKULIMA	MAGOLE A'	067394700	✓		O. MUSA
35	ALLY H. MLUNGU	-	MAGOLE A	0672390634	✓		Ag
36	O MARI	ABDALLA	MAGOLE	0657947910	✓		
37	AFRUMU A. SALAMA	MAKULIMA	MAGOLE	0718011647	✓		<i>[Signature]</i>
38	SHABWU N. MAGE	-	-	0719547466	✓		<i>[Signature]</i>
39	SIGMAN W. MAGE	MAKULIMA	MAGOLE	0626735181	✓		<i>[Signature]</i>
40	JOSEPH PETRO	MAKULIMA	MAGOLE		✓		Jesse

AFISA MTENDAJI KIJIKI,

KIJIKI CHA MAAKULU

SLP 40

GAIRO

26-03-2025.

MKURUGAZI MTENDAJI (A)

HALVASHAKI YA WILAYA YA GAIRO

SLP 40

GAIRO

YAM: KUSAFIKISHA MATHAKA NA MLLAD CHA H/KIJIKI CHA MAAKULU
KIICHOFAWYILA 24/03/2025 KWA MSILI YA KUTAMBULISHA MRAZI
WA MAAKULU YA FARIA NCHI

Husika na kilele cha kilele cha kilele ya
Napenda kusafikisha mathakani ilio uliofanyika hapo kiji
cha makuu kwa ajili ya kutambulisha mazi ilio.

John S. Mwanu
AFISA MTENDAJI KIJIKI
MAKUYU

MUNTAALI NA KIKAO CHA HAKUMATU YA KUTANI CHA MACHUZI
KULICHOFANYIKA 26/03/2025 KWA AJILI YA KUSI FAMBALANA MRAO

AG. OJ - UTAMBULSKO.

Zocari la ntambulisho tefanyika kux nute wakio kumepo ulumbi
ni Halij; kumbulisha nafasi gao na kumaliza

AG-02 - ^V ^D K4FWGua KLLAO

mfikiti wa #Kijiji alifunzwa kilele kichwa munda wa saa
02.22 mchana kuu kuu wakubwa wazungu wote walio-hudhuria
kilele wa kuu kuu bisha wazungu wa majini jira

AG-03 - Kullabillada na maraashiliko ya tobra nati.

mtaalamu mwingi kutoka idara ya maging'io wilaya ya Gairo
kwa miaka ya mkuuzing'io alimwambia mtaalamu kutoka kambi
la wami kwamba kutoka mbele ya ujio wa. Naye alieleza
kwa maji kazi yao. Ndipo alifika kila mwanzi. na maji
abodages kwa kina, kwa maging'io ya kazi yao kama wata wa
maging'io ni kuhitikiwa maji ya kambi, ipakayo. pia
alifika mishi wa maji na maji ni kuhitikiwa kwa
maji ya kambi ipakayo na kazi kazi maging'io kwa
kazi mching'io. Alifika kila kazi kwa kazi kwa kazi
kwa mambi wa kazi. Kisiwa la kambi la kazi
maji ili kambi maging'io safi na alifika mishi kwa
kwa kwa kazi kila kazi kwa kazi mambi wa kazi
ya arali mambi la kazi kazi mambi kwa kazi
mambi kwa kazi kazi kazi kazi kazi kazi kazi
kazi na mambi kwa kazi kazi kazi kazi kazi kazi
na kazi mambi na wambi. Kazi ya kazi kazi
kazi kazi mambi mambi na wambi kazi kazi
kazi kazi mambi kwa kazi kazi kazi kazi kazi.

AG-04 - KeefmGA Works

AD-07 - Mammals

Mtali alifunga kila kicho munda wa pes 0330 alasili na
kuna tiki na guelluri magari na
kuna tiki bawala na

ALEX - LICH DUNG A

Orange.

AWENYEKITI WA SERIKALI YA KIJUJ
MAKUYI

JOHN D. MARTIN

26-03-2025
AFISA NTENDAJI KIJU
MAGOTO



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



CS CamScanner

FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISUKIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
1	ALEX L. CHIBUNGA	MWIKINI KIGI	KUJILI CHA MAKUJU	0789661694	✓		Alex Chibunga
2	JOSHUA M. MASHA	MJUMBE	" "	089416447	✓		Joshua M. Masha
3	JASTIN M. MASHA	MJUMBE	" "	0692788662	✓		Jastin M. Masha
4	SARAFI M. MASHA	MJUMBE	" "	0656661681	✓		Sarafi M. Masha
5	JOSAPH S. MASHA	MWIKINI KIGI	MAKUTU	0784193884	✓		Josaph S. Masha
6	ANDREW M. MASHA	MJUMBE	MAKUTU				Andrew M. Masha
7	BENJAMIN M. MASHA	MJUMBE	MAKUTU	0717817303	✓		Benjamin M. Masha
8	JEMAL M. MASHA	MJUMBE	MAKUTU	0689671624	✓		Jemal M. Masha
9	REGINALD M. MASHA	MJUMBE	MAKUTU	0699665605	✓		Reginald M. Masha
10	THEOPHILUS M. MASHA	MJUMBE	MAKUTU	0688334558	✓		Theophilus M. Masha



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



CS CamScanner

FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISUKIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
11	ISAIAH M. MASHA	MJUMBE	MAKUTU	0786046916	✓		Isiah M. Masha
12	OKREY M. MASHA	" "	" "	0689449293	✓		Okrey M. Masha
13	BRENDAN M. MASHA	MJUMBE	MAKUTU	0699720937	✓		Brendan M. Masha
14	ANDREA M. MASHA	K/TARI	" "	0687034408	✓		Andrea M. Masha
15	ABDULLAH M. MASHA	MJUMBE	WRBWB	0657964414	✓		Abdullah M. Masha
16	NATHAN M. MASHA	MJUMBE	WRBWB	0782484478	✓		Nathan M. Masha
17	ALEXANDER M. MASHA	DEMOKRASI	MAKUTU	0757061886	✓		Alexander M. Masha
18	PIASON P. MASHA	MJUMBE	MAKUTU	0765866208	✓		Piason P. Masha
19	TILIZA A. MASHA	MJUMBE	MAKUTU	0683233897	✓		Tiliza A. Masha
20	AULENTI M. MASHA	MJUMBE	MAKUTU	0695452237	✓		Aulenti M. Masha



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



CS CamScanner

FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISIKIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
21	MILPO S. SHIDI	MUKU KIMBO		0699-131149	✓		Shidi
22	FATI FOF. MASHAUA	MUKU KIMBO		0686130714	✓		Fof. Masha
24	RAMADHANU	MUKU KIMBO	MAKUTU	063876320	✓		Ramadhan
25	ABDUL K. SAKI	MUKU KIMBO	MAKUTU	0692932391	✓		Saki
26	MICHAEL YOHAN	MUKU KIMBO	MAKUTU	069253006	✓		Michael
27	OMBONI MUKU	MAKUTU	MAKUTU		✓		Omboni
28	GASUNI JAHN	MAKUTU	MAKUTU		✓		G. Jahen
29	HENRY SAKI	BODA	MAKUTU	0692054573	✓		H. Saki
30	JACKSON MUKU	BODA	MAKUTU	0729733133	✓		Jackson
31	BAKATI BIKEN	FUNDI	MAKUTU	0733998933	✓		B. Biken



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



CS CamScanner

FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISIKIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
32	TUNG'ENO MIMUNDO	BODA	" "	0699402219	✓		Tung'eno
33	JAMES JUSTIN	BODA	" "	0681327412	✓		J. M. Munda
34	CLEMENT MTEGETA	BODA	" "	0786077009	✓		C. Mtegeta
35	HERBERT RICHARD	BODA	" "	0686214113	✓		Herbert
36	RAMADHANU KIMBO		" "	0629359023	✓		Ramadhan
37	FARAJA MSAUGE	MUKULIMA	" "	0785640608	✓		F. Msaugi
38	KALMEL ALGSI	MUKULIMA	" "	0697321861	✓		K. Algsi
39	ALPHONU NGAU	KINYOZI	" "	068997579	✓		A. M
40	JOHN MBIKO	BODA	" "	0653688437	✓		J. M
41	ELIA LUKA	BODA	" "	0696940004	✓		E. Luka

MUHESARI wa kicao/Kitano wa HABARA uliofanyika KATI ya WANACHA wa MIBUNI na WATAALAM kutoka BONDE la WAHU RUHA

AGENDA ZA NEČITANJE

- 1) Ioufengou
- 2) Utzambuletto
- 3) Blumou LA. kukao
- 4) Mengineyo
- 5) Ioufengou

1. Krefenbrun

Akutano ulifunguliwa awamo saa 8:00 asubuhi, ambapo amwengeli aliwakaribisha wananchi wote waliohudhuria kutokana na kuanzisha kwa kufuata lengo la kuitisha kutano huo wa hudhara.

2. trans-but-2-ene

Baada ya ufupuzi wa kutano amonyeketi alina
 tawbulisha waranchi kwa makundi mtaliabali ya
 kiwano makundi ya vijana, kiwano na wazee to
 shuhua waliohudhuria, lakini pia alitoa nafasi
 kwa wageni waliotambuka kato yote kuyitambua
 sha kwa nafasi zao.

3. Stimulus/Lento La Abstracción

3. Wananchi wote wanapaswa kuwa wakulima
Baada ya kutambulisha kwenye kitu alimkaribisha na
alamu kutoka bonde la ~~Wani~~ Kurn ili aweze-
kueleza kwa kina kengo la madi mawanyima
kuanzishwa kabla ya kutoa ya mabuni.

6. VITANA wafuwe futa ya afida.

Waranchi wameomba waranchi wa kati ya kibuni wapone kipanushete katika futa za giza na rafesi ya kufanyasthug huli za yasiyahali katika eneo la mudi.

7. SHENIA ndofonibwa zimone.

Waranchi wameomba waranchi na wongazi wawe makabizi na kurehinda mudi kwa kuthenga shenia ndogondogoni kurehinda kuta kati.

8. Kufunga kikapu.

Baada ya masani hayo kutoka kwa waranchi, mwenyeki alivashukuma waranchi kwa aashuhuri pamoja anasui na kumwomba waketekeze yote yote ambayo wa taalamu wawachekesha na kumwomba wawe na balosi na kuthenga aazingira na wakawse wakioziwa mudi unaotarajia kuanzishwa katika kati zetu.

Mtendaji wa kati.

SHENIA ndofonibwa.
SHENIA ndofonibwa.

Shenia kati ya masani.

SHENIA



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO - Kikao Hapa - MBumi

No.	JINA KAMILI	CHEO	TAASISI/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
1	BEATRICE NJENI	WFO	Ofisi ya KATA	0654436162		✓	<i>[Signature]</i>
2	SABANI A. MARIKWA	MBUMI		0657795849	✓		<i>[Signature]</i>
3	ADOLF P. HOYA	AFO	KULIMO / KATA	0692388147	✓		<i>[Signature]</i>
4	DHARI H. LUKUNGU	MUKOTI 'B'	OFISI JA KATA	076643120	✓		<i>[Signature]</i>
5	YUSUF D. MARIKWA	MUKOTI 'A'	OFISI JA KATA	0655879040	✓		<i>[Signature]</i>



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISI/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
1	JOHNS MENDI	MJUMBE	MBUMI 'A'	0719-546204	✓		<i>[Signature]</i>
2	Kaba E. D. Chacha	MJUMBE	MBUMI 'B'	0686131213	✓		<i>[Signature]</i>
3	HARPOKKE A. FRANCIS	MKULIMA	" "	0755256133	✓		<i>[Signature]</i>
4	YUSUF H. KIWAMBWA	MJUMBE	MBUMI 'B'	0655116006	✓		<i>[Signature]</i>
5	ATIHUAMANI K. A. GUMBE	MKULIMA	MBUMI "B"	0787333895	✓		<i>[Signature]</i>
6	ISA J. SWENI	MKULIMA	MBUMI "A"	0716047133	✓		<i>[Signature]</i>
7	ALET J. MARIKWA	MJUMBE	MBUMI "A"	0719297070	✓		<i>[Signature]</i>
8	MARIKWA S. MARIKWA	MJUMBE	MBUMI 'B'	0785906856	✓		<i>[Signature]</i>
9	MARIKWA S. MARIKWA	MKULIMA	MBUMI 'B'	0656546194	✓		<i>[Signature]</i>
10	MARIKWA S. MARIKWA	MJUMBE	MBUMI 'B'	0716671493	✓		<i>[Signature]</i>



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI

BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASIS/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
11	SAREHE - S. MUDHIMILI	MJUMBE	MBUMI 'A'	0612 3474 68	✓		SAREHE
18.	ISSA - R. ABUWAGHA	MSUMBE	MBUMI 'B'	0987 8824 28	✓		ISSA
18:	ABDULLAH - KIBALABA	MSUMBE	MBUMI 'B'	0653 5870 80	✓		A. KIBALABA
14	GODFREY A. MUSEGER	MSUMBE	MBUMI 'B'	0987 - 113002	✓		GODFREY
15.	SHEHA - M. YUSUFI	MSUMBE	MBUMI 'B'	0654 9015 12		✓	S. M.
16.	ALLY - S. MUEGAMBA	MSUMBE	MBUMI B.	0782 6401 58	✓		ALLY
17:	SALUMU - S. KINDE	MSUMBE	MBUMI B.	071823 6033	✓		S. KINDE
18.	AMUWA - R. SEIFUWA	MSUMBE	MBUMI B.	0652-556814		✓	A. SEIFUWA
19:	WILHELM SALEHE	MSUMBE	MBUMI B.			✓	WILHELM
20:	SHANI - R. KASANGA	MSUMBE	MBUMI B.	0754 665205		✓	SR



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI

BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASIS/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
21.	HAJIBI - S. DILANGALI	MSUMBE	MBUMI 'B'	0675 630878		✓	HAJIBI
22:	MAMBAHARI - N. MASHI	MSUMBE	MBUMI 'B'	0673 34476		✓	MAMBAHARI
23	DUBU - S. NYONGO	MSUMBE	MBUMI 'B'			✓	D. NYONGO
24.	HARUNA - H. MOMBANI	MSUMBE	MBUMI 'B'	0917 058255		✓	H. H
25.	MARWA - S. YAMWA	MSUMBE	MBUMI B.	0698 580372		✓	M. D
26	EWARISI - HAMIS	MSUMBE	MBUMI B.			✓	E. H
27	IBRAHIM - MASHI	MSUMBE	MBUMI B.	0715-016625	✓		IBRAHIM
28	SAIDI - H. SAMBA	MSUMBE	MBUMI B.	0714227289	✓		SAIDI
29	ABDUL - MASHI	MSUMBE	MBUMI B.	0714093992		✓	ABDUL
30	ELNEST - JALIKWA	MSUMBE	MBUMI B.	0699695582	✓		ELNEST



JAMHURI YA MUUNGANO WA TANZANIA

WIZARA YA MAJI

BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISI/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
31.	MWISUMA TEAREKA	MJUMBE	MBUMI 'B'	0788 534350		✓	MITENGA
32.	MWANAFISEA BASID	MJUMBE	MBUMI 'B'	0652-097726		✓	MASULI
33.	MWAFIRIKI LUMBI	MJUMBE	MBUMI 'B'	0654-266664		✓	MUMBI
34.	FOTIKIRI TAFIRI	MJUMBE	MABWAZI BUNDA	0789366715	✓		
35.	KAGOMA A. BASHA	FP. KECOS	KEB CROSS	077051156	✓		
36.	KELVIN T. DUGO	FP. KECOS	KEB CROSS	0678-124929	✓		
37.	MJUMBE	MJUMBE	MBUMI 'B'		✓		
38.	A. A. SARI	MJUMBE	MBUMI 'B'	0692 925803	✓		
39.	SHARAFU A. BASHA	MJUMBE	MBUMI (A)	0712-007809	✓		
40.	KASABURA	MJUMBE	MBUMI (B)	0796-463171	✓		



JAMHURI YA MUUNGANO WA TANZANIA

WIZARA YA MAJI

BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISI/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
41.	FATUMA K. ASHIMU	MJUMBE	MBUMI 'A'	0686 147307		✓	P. ASHIMU
42.	PETERA R. MAFUWA	MJUMBE	MBUMI 'B'	0652 016168		✓	M. MAFUWA
43.	BABATI A. SALUM	MJUMBE	MBUMI 'B'	065649090		✓	A. SALUM
44.	JOSIA P. MAFUWA	MJUMBE	MBUMI 'B'	0718525982	✓		
45.	NDEGAS G. KIKI	MJUMBE	MBUMI IN	0718 525099	✓		

MKUTANO WA WANANCHI WOTE MVUMI GONGWE 27/3/2025

AGENDA ZA MKUTANO:

1. KUFUNGA MKUTANO
2. UTAMBULISHO
3. MAELEKEZO KUHUSU MRADI WA BONDE WAMI RUVU
KUHUSU MRADI WA UTENGENEZASI WA MTO KISANGARA
4. KUFUNGA MKUTANO

AGENDA NO 1 KUFUNGA MKUTANO

Katibu wa mkutano huo alimkeniisha Mh. Biwani Aweze kufunga mkutano huo ili mkutano uendeleo Mh. Biwani alisimama na kufunga mkutano muda wa saa 5.45 asubuhi kuwa kenisha wananchi na kuwambia wawe huu keli ke mkutano

AGENDA NO 2 UTAMBULISHO

Katika mkutano huo viongozi walio hudhura wali tambulishwa keli ke mkutano huo ili kundi hata wananchi wa vijiji mote vwa mvumi-gongwe kisha wajumbe wa helima shauri zote mbili.

AGENDA NO 3 MAELEKEZO KUHUSU MRADI WA KUTENGENEZA MTO KISANGARA

Kutoa mado alizungumza na wananchi kuhusu mradi wetu wa kuteleleka na mabodhiko ya teta hizi gani laudi shu mto keli ke mta yake ya kawai da kare chinyo keli ke mta yake ya mta yake Himo mradi huu unatakiwa utambuliwe keli ke andiko la mikataba kuwa wananchi wameshwa kisha keli ke zoezi hili wananchi kwa mji mta wali poka maelekezo hayo na kisha - kuli bali andiko hili na mradi uendeleo ndani ya kijiji cha mvumi. Himo wetu wessha hae zoezi hili keli ke maeneo yetu.

Dia yapo maeneo ya watu binafsi yataikayo
piti wa wa mradi tumeomba ushirikiano wa
kutoa maeneo hayo pesipo viashirika wa vumbe
Wamondhi walitambuli ana ne maeleke hayo
mradi uendeleze.

AGENDA NO 4 KUFUNGA MIAZIMO:

Mwenyekiti alifunga miazimo huo muda
wa Saa 6.40 mchango kwa kuwashukuru wana
ndhi kwa mchango wao mimi wa mawazo na
hesa kutambuli mradi uwezo kufika eneo lili.

~~SAINI~~
SAINI YA MWENYEKI

~~SAINI~~
GABRIEL E. ERNEST
SAINI YA KATI BU
JEISA MTENDAJI KIJI
MUNI

KIKAO CHA HALMASHAURI YA KIJISI MUMI NA VIONGOZI WA BONDE:

AGENDA

- Kufungua Kikao
- Utambulisho
- Maelezo kuhusu Mradi wa bonde la Wami Ruru
- Kufunga Kikao

KUFUNGUA KIKAO

Kikao kilifunguliwa na Mh Duwini mnamo saa 3 asubuhi kwa kuwakanibisha wajumbe wote kwa maana ya wajumbe wa halmashauri zote mbili, wataalamu mbalimbali na wataalam wa bonde.

UTAMBULISHO

Baada ya Kufungua Kikao zoezi la Utambulisho lilifuata. Utambulisho huo ulianza na halmashauri ya Kijiji cha Mumi, ikafuata Gongwe, Wataalamu wa Kata, Viongozi wa Siasa, Pamoja na Viongozi/wataalamu wa bonde.

MAELEZO KUHUSU SJALA LA BONDE LA WAMI RURU

Wataalamu wa bonde alianza kueleza baadhi ya kazi wanaozofanya ikiwemo ukusanyaji wa takwimu mbalimbali, kuandishi wa Maandiko mbalimbali. Akaeleza kuwa leo hawatambulishi mradi isipokuwa wanaendelea walipoishia.

Akieleza shughuli wanazowenda kufanya kwenye
mradi huu ambazo ni Ujenzi wa Tuta,
MAE Kurendisha Mto kabika Uelekeo wake, Urekebishi
wa Mto Durnila, kufanya utatiti wa Maji chini
ya Ardhi. Akieleza kuwa baada ya tar 31 mwezi
huu mradi utanza. Na akasema kuanzia tar
21/03/2025 kutakuwa na wataalamu wa Maji na
akasisitiza endapo kutaonelika kuna maji yameone-
kana kwenye eneo hilo bari mba awe willing
kutua eneo kuu moyo wote. Akieleza kuwa kutu-
kuwa na ajira mbalimbali na Kipaumbele ni
Wazamu wa eneo husika. Na akasisitiza kuwa
tuwe wastanabu wakati wote wa Mradi. Mwisho
akawomba Ushirikiano kuu Kipindi hicho cha
Mradi. Mtaalamu mwingine /Mshauri alisimama
akasema baada ya hapo wataenda mboni Kuangalia
hali halisi na kutangazi lengo kuandaa andiko la
Mradi. Baada ya hapo maswali na Maoni yakaone
Alianza Ndugu Kisia Ally kutoka Mvumi akauliza
vipi kuhusu wanaotimika kandokando ya Mto. Mtaalamu
akajibu kuwa kiukweli Sababu kubwa ya Mto kuhama
ni shughuli za kibinadamu Kando ya Mto.
Ndugu Mwanaharusi Mabala Alitua Shukurani kuu
Wote walioshiriki kuandaa andiko mpaka kufikia
hapo akieleza kuwa jambo hili limegusa sana
tabizo la Wananchi. Wataalamu wakieleza kuwa
huu mradi unafanyika kwenye halmashauri tatu

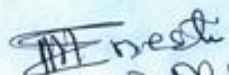
cairo, Kilosa na Mwomero. Athumani Kadde pia
kwanza alishukuru kwa Mradi na Pili alitoa
Angalizo kwa wanandi kwa kuwe makini na
uaminifu kwenye vifaa vitakavyoletwa vya Mradi.
Baada ya hapo wenyeviti wa Vijiji walipeua nafasi
ya kuzungumza machache. Alianza Mwenyekiti wa
Kijiji cha Gongwe, Alivashukuru sana wataalamu
kwa elimu waliyotoa na ameahidi kushirikiana
na wataalamu wote watakwokuwepo kipindi chote
cha Mradi. Alifuata Mwenyekiti wa Msumi naye
Alianza kwa shukurani na akasisitiza kwa watu
wote kutelekeza nguru zebu kwenye Miradi mbali-
mbali inayolebwa hapa Kucha. Akasisitiza Uzalendo
Kipindi chote cha Mradi. Na akasisitiza wataalamu
wa bonde Ushirikiano wa hali ya juu. Kiongozi
wa Jiasa pia alisisitiza Uaminifu ili Mradi uende
vizuri. Baadaye Wataalamu walipeua nafasi ya
kuzungumza na wote hasa walishukuru na kuahidi
Kubwa Ushirikiano Kipindi chote cha Mradi. Baada
ya hapo Mh. Diwani alitoa nasaha zake, kwa
alivashukuru Mwa wataalamu maana kuna maeneo
mengi yanachangamoto lakini wameona wanae
mumu. Akasimba wanandi wawapokee vizuri wata-
alamu wote watakwakuja Kutelekeza Mradi.

UNGA KIKAO

Kikao kilifungwa na Mh. Diwani mnamo saa
11:03 asubuhi kwa kuwashukuru Wajumbe
Wote waliohudhuria Kikao.



Mwenyekiti


Godrick E. Bweti

Katibu
HEISA NTENDAJI KIJIVI
MUMU



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISIKIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
1	ARDU A TUMU	M/KIT	KIISI MUMU	067777240	ME	✓	<i>[Signature]</i>
2	GOODRICK BURET	VED	KIISI-MUMU	0689892234	✓		<i>[Signature]</i>
3	MEAUMGIMBANGA	M/KIT	KIISI MUMU	0782520044	ME		<i>[Signature]</i>
4	AGNES MUMALI	H/KIISI	H/KIISI MUMU	0685232433	KE	KE	A. MUMALI
5	REHEMA MUMU	H/KIISI	H/KIISI MUMU	0622666402		KE	<i>[Signature]</i>
6	REHEMA MUMU	H/KIISI	H/KIISI MUMU	0685214282		KE	R-D
7	REHEMA S. DEBE	V/MUMU	KIISI MUMU	0685957854		KE	R.
8	MARY MUMU	H/KIISI	KIISI MUMU	0680998465		KE	<i>[Signature]</i>
9	ASMA R. SIMBA	H/KIISI	KIISI MUMU	0686-173477		KE	<i>[Signature]</i>
10	MATHEW CHUMU	M/KIT	KIISI MUMU	0693729321	ME		<i>[Signature]</i>



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISIKIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
11	AFIYUWANI S. MUMU	M/KIT	KIISI MUMU	0694023296	ME		<i>[Signature]</i>
12	SARAH STEPHENSON	MUMU	KIISI MUMU	0684763731	KE	KE	S.S
13	SELEMA S. MUMU	H/KIISI	KIISI MUMU	0780402559	ME		<i>[Signature]</i>
14	BENARD MUMU	H/KIISI	KIISI MUMU	0782933318	ME		<i>[Signature]</i>
15	ELIAS JOSEPHU	M/KIT	KIISI MUMU	0692898490	ME		<i>[Signature]</i>
16	KISIA A. MUMU	H/KIISI	KIISI MUMU	0783391150	ME		<i>[Signature]</i>
17	ZENA SALEHE	H/KIISI	KIISI MUMU	0699550965	KE		Z.S
18	TATU MUMU	H/KIISI	KIISI MUMU	0687692170	KE	KE	<i>[Signature]</i>
19	COBA SPRIAN	H/KIISI	MUMU		ME		C.S
20	JUMA MUMU	H/KIISI	MUMU	0719002599	ME		J.M



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISU/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
21	SASA MACHIBYA	H/KUUT	Mwami	0786375466	ME		<i>[Signature]</i>
22	Haji Issa	H. KUTU	Mwami	0695478592	ME		<i>[Signature]</i>
23	UDU MUNDILO	H/KUTU	Mwami	0788294572	ME		<i>[Signature]</i>
24	REHETA MACHIBYA	H/KUTU	Mwami	0685214232		KE	<i>[Signature]</i>
25	PERPETUA MUSA	CEO	KATA Mwami	0688310759		KE	<i>[Signature]</i>
26	ABU/SA MACHIBYA	KE	GONAWA	078:640460		KE	<i>[Signature]</i>
27	JOHN JAMES NGALEWE	PEFO	Mwami	0782560163	ME		<i>[Signature]</i>
28	SAMORU MALOGI	Mwami	Mwami	0684727717	ME		<i>[Signature]</i>
29	MACHIBYA MACHIBYA	SAFO	Mwami	067745370		KE	<i>[Signature]</i>
30	HASSAN NIKO	Mwami	Mwami	0786133876		ME	<i>[Signature]</i>



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

No.	JINA KAMILI	CHEO	TAASISU/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
1	SAYO ZOU	Mwami	KISIJI CHA GONAWA	0785939570	ME		<i>[Signature]</i>
2	CHIKU MACHIBYA	VED	MWISI CHA GONAWA	068562845		KE	<i>[Signature]</i>
3	ASIA MIRAJI	Mwami	KISIJI CHA GONAWA	0788339082		KE	<i>[Signature]</i>
4	DORIS P. MADIBA	Mwami	" " "	0786947013		KE	<i>[Signature]</i>
5	JO PAPA MACHIBYA	Mwami	KISIJI CHA GONAWA	0787849179		KE	<i>[Signature]</i>
6	HALIMA MACHIBYA	Mwami	KISIJI CHA GONAWA	078749773		KE	<i>[Signature]</i>
7	MALIA MACHIBYA	Mwami	KISIJI CHA GONAWA	0687124821		KE	<i>[Signature]</i>
8	MALIA SAYS	Mwami	KISIJI CHA GONAWA	0686472109		KE	<i>[Signature]</i>
9	FELIX CHA MACHIBYA	Mwami	KISIJI CHA GONAWA	0782079596	ME		<i>[Signature]</i>
10	SAYO H. CHURU	Mwami	KISIJI CHA GONAWA	0686148364	ME		<i>[Signature]</i>



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMRUUVU



GAIRO

FORM YA MAHUDHURIO KATIKA MUKUNDU WA MABALI YA MABALI

NA.	JINA	CHEO	TAASISI/ KITUO/ KIKUNDI	NAMBA YA SIMU	SAHINI
1	ARITA M. MARWA	Ag. BCB	GAIRO HO	0754767737	Arta
2	IDDJ S. MISHA	MWANAISI	WANA/RUVU	0672851212	I-H
3	MAGRETH S. MUSA	DLDO	GAIRO DC	0755892820	Mag
4	BALIMARARY JAMES	PCO	GAIRO DC	0623195534	B
5	NELSON ELIA	FO	GAIRO DC	0673393854	N
6	ELICA M. SIGWA	HRO	GAIRO DC	0656107011	E
7	DR. ARNOLD JAMES	DVO	GAIRO DC	0746574692	Arnold

Jina la Afisa Mhusika: Sahihi: Tarehe: / 20.....

Office Manager - Dar es Salaam
G.P. 1110 014 - Dar es Salaam
Tel: 022 255 5555

30 Vionjo Road P.O. Box 10000
Dar es Salaam 65001
Tel: 022 255 5555

Office Manager - Dodoma
P.O. Box 1110 014 - Dodoma
Tel: 022 255 5555



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMRUUVU



FORM YA MAHUDHURIO

NA.	JINA	CHEO	TAASISI/ KITUO/ KIKUNDI	NAMBA YA SIMU	SAHINI
8	Alexander Samba	Bemo	GAIRO DC	0757961886	A

Jina la Afisa Mhusika: Sahihi: Tarehe: / 20.....

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JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMIRUVU



FORM YA MAHUDHURIO - Kiti Jimbo Mwanasabiti MRAZI Kwa Wadhamini

NA.	JINA	CHEO	TAASISI/ KITUO/ KIKUNDI	NAMBA YA SIMU	SAHIHI
1	ASINA B. YAMKINGO	WEO	CHAKWALE	0759321927	
2	IDDI S. MSAZI	MWANDISI	WAMI/ RUMU	0622851212	
3	YUNUS HASI	LPO	CHAKWALE	0656121204	
4	Alexander SINDIGA	BOND	CHAKWALE	0790618888	
5	Paskalis BAZI	PHC	WRBWB	0752658610	

Jina la Afisa Mhusika: Sahihi: Tarehe: / 20.....

30 Mawimba Road S.L.P. 825, Morogoro
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Tovuti: jamhuri@tanzania.go.tz | Bamba Pape: jamhuri@tanzania.go.tz

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Bamba Pape: jamhuri@tanzania.go.tz

Ofisi Mkozi - Dodoma
Mji Yari, P.O. 8037, 100 Dodoma
Bamba Pape: jamhuri@tanzania.go.tz



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMIRUVU



FORM YA MAHUDHURIO - Kiti Jimbo Mwanasabiti MRAZI - Kiti Kiamani Uvonge

NA.	JINA	CHEO	TAASISI/ KITUO/ KIKUNDI	NAMBA YA SIMU	SAHIHI
1	ANDREW W. ANDREW	WEO	KISIJI UHA KILIMANI	06240368110	
2	IDDI S. MSAZI	MWANDISI	WAMI/ RUMU	0622851212	
3	Alexander SINDIGA	BOND	CHAKWALE	0790618888	

Jina la Afisa Mhusika: Sahihi: Tarehe: / 20.....

30 Mawimba Road S.L.P. 825, Morogoro
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JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMIRUVU



FORM YA MAHUDHURIO

NA.	JINA	CHEO	TAASISI/ KITUO/ KIKUNDI	NAMBA YA SIMU	SAHIHI
	Saidi H Sisul'u	M/Kiti	H/Kiti CHA DUMILA	0719 107048	<i>[Signature]</i>
	KIPATINDWA W. KIPATINDWA	M/Kiti	H/Kiti CHA MATONIBILO	0656 744723	M. MUSA
	ISSA E. MUKANGI	KITANGA	H/Kiti CHA DUMILA	0712336370	<i>[Signature]</i>
	SALGHU MANGUMBA	M/Kiti	Kiti CHA DUMILA	0656 950172	<i>[Signature]</i>
	KORANSE E. KADIBHANGA	YOCUNTEK	KUWI CHA DUMILA	0714 844122	<i>[Signature]</i>

Jina la Afisa Mhuuika: Sahihi: Tarehe: / / 20.....

Ofisi Moyo - Dar es Salaam
S.L.P. 450 DARA - Mbaraka-Haji, 420 Mbaraka Road
Barua/Paper: 0000000000000000

30 Mbaraka Road S.L.P. 420, Mbaraka
Simu (BURE): 0000014001 / 000014002
Tarehe: 00000000000000000000

Ofisi Moyo - Dodoma
Maj/Yard, P.O. BOX 450 Dodoma
Barua/Paper: 0000000000000000



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMIRUVU



FORM YA MAHUDHURIO Kikao cha Kutambuliwa MRAD - DUMILA

NA.	JINA	CHEO	TAASISI/ KITUO/ KIKUNDI	NAMBA YA SIMU	SAHIHI
2	IDDI SAIDI	M/ANDISI	WAMIRUVU	0622 851212	<i>[Signature]</i>
3	DOUGLAS MANGUMBA	Dumara	Chata ya DUMILA	0715 560222	<i>[Signature]</i>
4	MUSA R. MURORA	M/Kiti DUMILA	H/Kiti CHA DUMILA	0715 956458	<i>[Signature]</i>
5	TAFARA BAKIBHANGA	M/Kiti MATONIBILO	H/Kiti CHA MATONIBILO	0712 974155	<i>[Signature]</i>
6	ALLY DUMARA		H/Kiti CHA DUMILA	0719 012838	<i>[Signature]</i>
7	JACOBINI JOSEPH	M/Kiti KUMANGA	H/Kiti CHA KUMANGA	0684 790017	<i>[Signature]</i>

Jina la Afisa Mhuuika: Sahihi: Tarehe: / / 20.....

Ofisi Moyo - Dar es Salaam
S.L.P. 450 DARA - Mbaraka-Haji, 420 Mbaraka Road
Barua/Paper: 0000000000000000

30 Mbaraka Road S.L.P. 420, Mbaraka
Simu (BURE): 000014001 / 000014002
Tarehe: 00000000000000000000

Ofisi Moyo - Dodoma
Maj/Yard, P.O. BOX 450 Dodoma
Barua/Paper: 0000000000000000



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMIRUVU



FORM YA MAHUDHURIO / STAKEHOLDER AWARENESS

NA.	JINA	CHEO	TAASISI/ KITUO/ KIKUNDI	NAMBA YA SIMU	SAHIHI
1	IDA S. MSANGI	ENG	WRBWB	0672551212	I. K...
2	MAMUNA A. MAKUUKA	ENGINEER	MVOMERO DC	0715-653248	...
3	WILBARD C. OLONI	MEUJIA	MUKUWAKUDA LTD	0912765726	...

Jina la Afisa Mhusika: Sahihi: Tarehe: 13.1.2025

35 Mwanika Road S.L.P. 408, Morogoro
Simu (CUPE): 0800154601 / 0800114083
Tovuti: www.wrbwb.co.tz | Barua pepe: info@wrbwb.co.tz

Ofisi Mdogo - Dar es Salaam
S.L.P. 4103 CSM | Ubungo-Maji, 425 Morogoro Road
Barua pepe: info@wrbwb.co.tz

Ofisi Mdogo - Dodoma
Maji Vani P.O. BOX 450 Dodoma
Barua pepe: info@wrbwb.co.tz



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMIRUVU



FORM YA MAHUDHURIO - KUTAMBULISHA MAFANIKIO

NA.	JINA	CHEO	TAASISI/ KITUO/ KIKUNDI	NAMBA YA SIMU	SAHIHI
1	SALID H.S. NENYA	DAT	MWOMERO DC	07022102913	...
2	IDA S. MSANGI	MWOMERO DC	WAMI/ RUVU	0672551212	I. K...

Jina la Afisa Mhusika: Sahihi: Tarehe: 13.1.2025

35 Mwanika Road S.L.P. 408, Morogoro
Simu (CUPE): 0800154601 / 0800114083
Tovuti: www.wrbwb.co.tz | Barua pepe: info@wrbwb.co.tz

Ofisi Mdogo - Dar es Salaam
S.L.P. 4103 CSM | Ubungo-Maji, 425 Morogoro Road
Barua pepe: info@wrbwb.co.tz

Ofisi Mdogo - Dodoma
Maji Vani P.O. BOX 450 Dodoma
Barua pepe: info@wrbwb.co.tz



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMIRUVU



FORM YA MAHUDHURIO - UTATHIBULISHA WA MAFUJI - MICHANGA CHA MAFUJI

NA.	JINA	CHEO	TAASISI/ KITUO/ KIKUNDI	NAMBA YA SIMU	SAHIHI
1	RAMADHAN STIJA	Milki Wua	Mtaa Mto Wapaa Bakura - Iringa	0739131463	RW
2	ENG. H. MAKUNDA	IRIKATIONEN	MWAZI ICH	0789240912	DH
3	IDA S. MANGI	Mitandisi	WAMIRUVU	0622851212	I-Mangi
4	MICHA. DADO	CHO	/	083748591	DR
5	Joseph D. Kintye	Mhambao	WIRIWA	0765905207	HKP

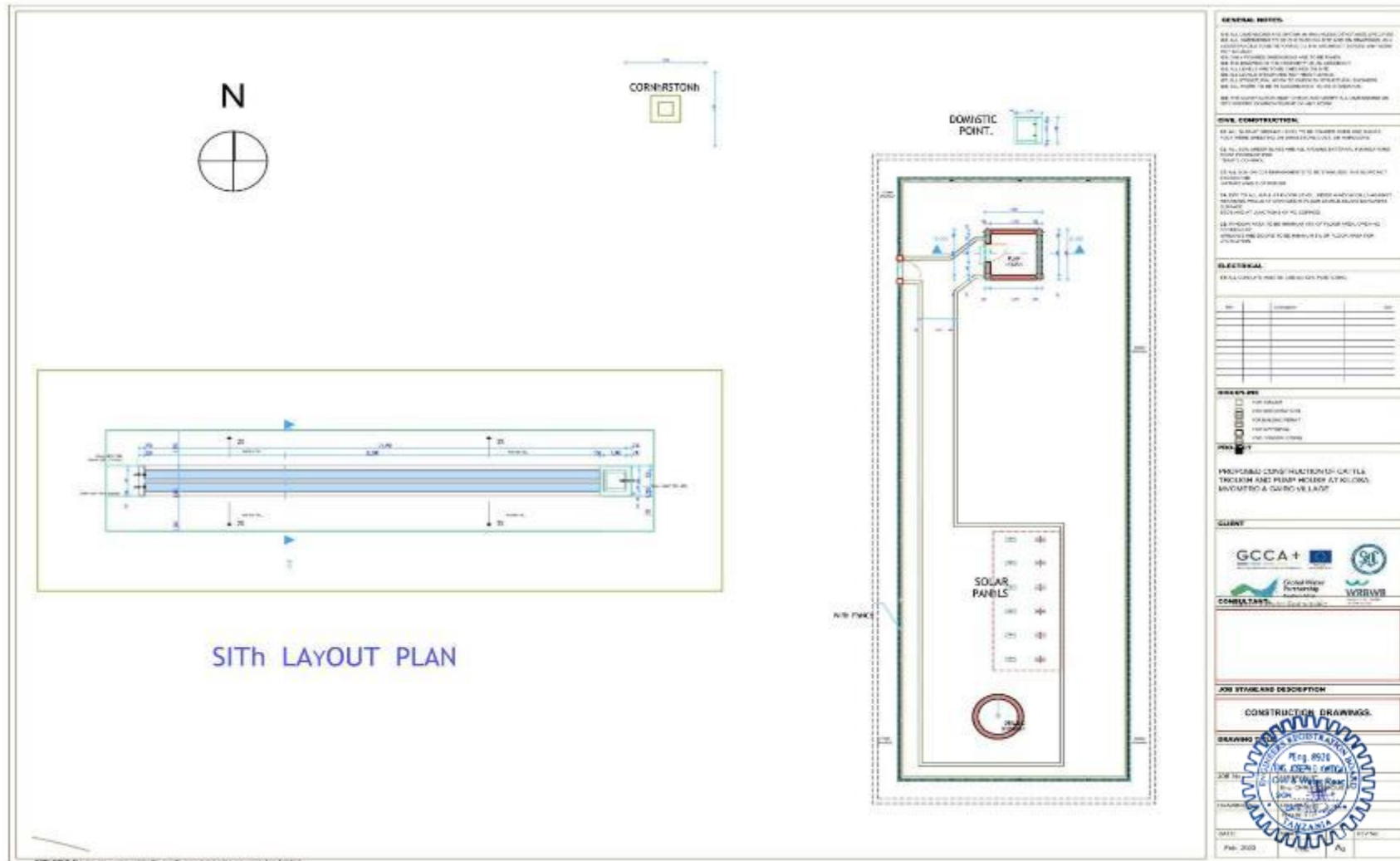
Jina la Atezi Mhwaliko: Sahihi: Tarehe: / 28

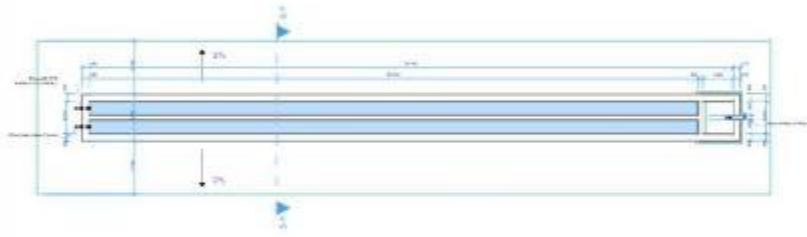
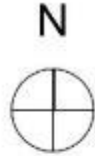
30 Mamba Road S.L.P. 628, Morogoro
Simu (CUPE): 020250831 / 0830110892
Tovuti: info@boda.gov.tz | BodaPoa: 020250831

Ofisi Moyo - Dar es Salaam
P.O. Box 151/001 - Ubungo Road, 104 Morogoro Road
BodaPoa: boda@boda.gov.tz

Ofisi Moyo - Dodoma
P.O. Box 103, 204, 404 Dodoma
BodaPoa: boda@boda.gov.tz

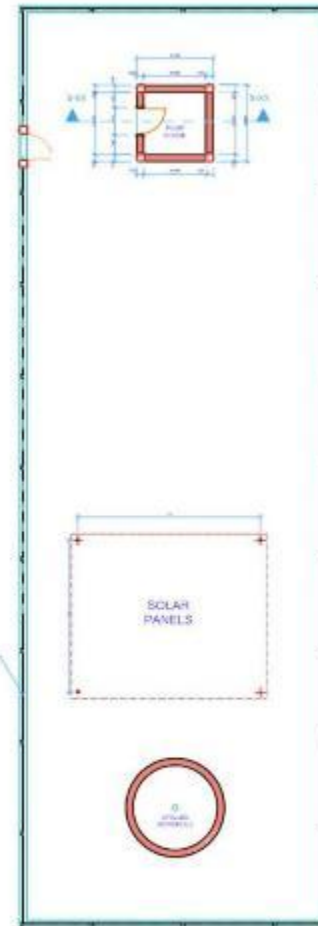
Appendix VI: Engineering Design for Cattle Troughs





SITE LAYOUT PLAN

WIRE POWER



GENERAL NOTES

1. ALL DIMENSIONS ARE GIVEN IN METERS UNLESS OTHERWISE SPECIFIED.
2. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
3. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
4. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
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10. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.

LEVEL CONSTRUCTION

1. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
2. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
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9. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
10. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.

ELECTRICAL

1. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.

Item	Description	Qty
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

CONCRETE

1. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
2. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
3. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
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9. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
10. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.

PRODUCT

1. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
2. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
3. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
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7. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
8. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
9. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.
10. ALL DIMENSIONS TO BE GIVEN TO THE CENTER OF THE STRUCTURE UNLESS OTHERWISE SPECIFIED.

CLIENT



Tanzania Water Partnership

CONSULTANT



CONSTRUCTION DRAWINGS

DRAWING TITLE

DATE	SCALE	BY	CHK
Feb 2023	1:100	As	

Appendix VII: Land donation and letter of consent for Matala Cattle Trough Site

JAMHURI YA MUUNGANO WA TANZANIA



**HATI YA KURIDHIA KUTENGA ARDHI KWA AJILI YA KUCHIMBA
KISIMA NA UJENZI WA BIRIKA LA KUNYWESHEA MAJI MIFUGO
KATIKA KIJJI CHA MATALE, KATA YA MVOMERO
WILAYA YA MVOMERO, MKOA WA MOROGORO**

KATI YA

MFADHILI

**MKURUGENZI MKUU, BODI YA MAJI BONDE LA WAMI RUVU
S. L. P 824
MOROGORO**

NA

MTOA ARDHI

**MWENYEKITI WA KIJJI CHA MATALE
S. L. P 663,
MVOMERO – MOROGORO**

MAY, 2025

HATI YA UCHANGIAJI WA ARDHI KWA HIYARI¹

HATI YA KURIDHIA KUTENGA ARDHI KWA AJILI YA KUCHIMBA KISIMA NA UJENZI WA BIRIKA LA KUNYWESHEA MAJI MIFUGO KIJIKI CHA MATALE KATA YA MVOMERO, WILAYA YA MVOMERO

Hati ya kuridhia kutenga ardhi kwa ajili ya kuchimba kisima na ujenzi wa birika la kunyweshea maji mifugo katika kijiji cha Matale unafanyika leo tarehe 06/05/2025.

KATI YA

MKURUGENZI MKUU, Bodi ya Maji Bonde la Wami Ruvu ambaye katika hati hii na nyaraka zote atajulikana kama mfadhili kwa upande mmoja

NA

Mtoa ardhi **Mwenyekiti wa kijiji cha Matale**

Mimi, Bw./Bibi BAGARI HASSANI MATLIN ambaye ni MWENYEKITI WA KIJIKI niliyeweka saini yangu hapa chini leo tarehe 06/05/2025 kwa idhini ya wanakijiji wa Matale, ninakiri kuwa nimechangia kwa kutoa ardhi yenye ukubwa wa mita za mraba EKA MIBU (2) inayopatikana katika majira-nukta (316021, 9313630) ililopo katika Kijiji cha MATALE, kata ya MVOMERO Wilaya ya MVOMERO katika Mkoa wa Morogoro itumike kwa ajili ya uchimbaji wa kisima na ujenzi wa birika la kunyweshea maji mifugo ikiwa ni sehemu ya kuchangia mradi wa Kuimarisha Ustahimilivu wa Rasilimali za Maji katika Kukabiliana na Mabadiliko ya Tabia Nchi katika Kidakio cha mto Mkondoa unaofadhiliwa na Benki ya Maendeleo ya Afrika (AfDB) katika Jamhuri ya Muungano wa Tanzania. Ardhi ninayoitoa ni mali ya Serikali ya kijiji ambayo ilitengwa kwa ajili ya Malisho. Makubaliano haya yanatoa sehemu ya ardhi hiyo ili itumike kwa ajili ya uwekezaji tajwa hapo juu.

Ninatenga ardhi tajwa hapo juu kwa hiyari yangu kwa idhini ya wananchi wa kijiji cha Matale bila malipo yoyote, nikiwa na uelewa, na bila ya kulazimishwa au kutishwa, na baada ya kujulishwa kikamilifu juu ya haki ya kutopewa fidia kabla ya utwaaji wa ardhi hiyo ambayo itatumika kwa ajili ya matumizi ya maendeleo ya umma (ujenzi wa kisima na birika la kunyweshea maji mifugo). Hakuna mwanajamii/familia yeyote itakayokuja kudai umiliki wa ardhi niliyoitoa kwa hiyari yangu kwa idhini ya wanakijiji cha Matale.

¹ Fomu hizi zitatumika kwa muktadha wa nchi husika na kushuhudiwa na mwanasheria kwa kuzingatia sheria husika.

Ninathibitisha kuwa uchangiaji huu hautaathiri maisha yangu au ya wanakijiji wenzangu kwa sasa, baadae na hata siku zijazo.

Nimeamua kwa uwazi kutenga ardhi tajwa kwa manufaa ya jamii ya MATALE..... ili litumike kwa ajili ya ujenzi wa miundombinu iliyotajwa hapo juu². Kwa hiyo, ardhi niliyotenga haiwezi kwa namna yoyote ile kutumika kwa madhumuni mengine, wala kuhamishwa, na wala kupangwa matumizi mengine. Hivyo basi, uchangiaji huu utakuwa batili ikiwa dhumuni la utoaji wa ardhi hautatekelezwa ndani ya muda uliobainishwa kuwa muda wa mradi.

KWA KUSHUHUDIA, taarifa hii imeandaliwa na kusainiwa ili itumike na iwe halali kwa namna ilivyoelezwa hapo juu.

Imetolewa hapa

JINA: BAKARI HASSANI MATALE.....

SAINI: ERNI KITI W SERU KIJU' CHA MATALE

TAREHE: 06/05/2025

CHEO: MWENYEKITI WA KIJIKI CHA MATALE ikifuatiwa na maneno "Nimesoma na Nimeidhinisha") Nimesoma na nimeidhinisha.....

Mashahidi³ /Mwakilishi wa Jamii/kijiji

I. JINA: FARIDA HAMISI HALFAN.....

SAINI: Halfan.....

TAREHE: 6/5/2025.....

CHEO: MJUMBE HALMASHAUR..... ikifuatiwa na maneno "Nimesoma na Nimeidhinisha") NIMESOMA NA NIMEIDHINISHA.....

II. JINA: Mohamed Sabiki MARIKHAH.....

SAINI: Mari.....

TAREHE: 6/5/2025.....

CHEO: MJUMBE wa Halmashauri..... ikifuatiwa na maneno "Nimesoma na Nimeidhinisha") NIMESOMA NA NIMEIDHINISHA.....

² Baada ya kukamilika kwa usimikaji wa miundombinu tarajiwa, ardhi itasajiliwa kwa jina la jamii nufaika.

³ Kila shahidi anatakiwa kuwa na umri ulioruhusiwa kisheru kushuhudia au kuingia mukubaliano na mwenye haki za kiraia, na awe mufaika kwa anayetoa ardhi.

III. JINA: LAMECK BUTALI NYAGIRO
SAINI: L.B. Nyagiro
TAREHE: 06/5/2025
CHEO: AFISA MTENDAJI WA KIJILI CHA MATALE (ikifuatiwa na maneno
"Nimesoma na Nimeidhinisha"). Nimesoma na Nimeidhinisha

KWA NIABA YA HALMASHAURI YA WILAYA YA MVOMERO

IV. JINA: LOUIS PETER
SAINI: [Signature]
TAREHE: 13/5/2025
CHEO: DEO
MKURUGENZI MTENDAJI HALMASHAURI YA WILAYA YA MVOMERO



V. JINA: TUSUPH A. NIMSUMA
SAINI: [Signature]
TAREHE: 15/5/25
CHEO: MUKUJI H.W. NYAMBERO
MWENYEKITI WA HALMASHAURI YA WILAYA YA MVOMERO

MBELE YA MWANASHERIA WA HALMASHAURI YA WILAYA YA MVOMERO

VI. JINA: SEBERTHIA VERA RUFUNDI
SAINI: [Signature]
TAREHE: 15/5/2025
CHEO: MWANASHERIA WA HALMASHAURI YA WILAYA YA MVOMERO
MWANASHERIA WA HALMASHAURI YA WILAYA YA MVOMERO

MVOMERO DISTRICT COUNCIL
DISTRICT LEGAL OFFICER
P.O. Box 663
MOROGORO

KWA UPANDE WA BODI YA MAJI BONDE LA WAMI RUVU

vii. JINA: PASCAL JOSEPH QUTAY
SAINI: PKS
TAREHE: 16-05-2025
CHEO: KAIMU MKURUGENZI



MKURUGENZI MKUU, BODI YA MAJI BONDE LA WAMI RUVU

Umesainiwa mbele ya

viii. JINA: ALOYCE B. Ulimu
SAINI: AB-L
TAREHE: 16-05-2025
CHEO: WAZIWA WA SERIKALI

MWANASHERIA WA BODI YA MAJI BONDE LA WAMI RUVU

MUHTASARI WA KIKAO CHA HALMASHAURI YA
KIJISI NA WATAALAMU KUTOKA BONDE LA WAMIRUVU
KILICHO FANYIKA TAREHE 21/03/2025.

AGENDA

1. KUFUNGUWA KIKAO
2. UTAMBULISHO
3. WATAALAMU WA BONDE KUZUNGUMZA NA HALMASHAURI YA KIJISI.
4. MAPENDEKEZO YA WAJUMBE
5. KUFUNGA KIKAO.

AGENDA: 1. KUFUNGUWA KIKAO

Mwenyekiti alifunga kikao mramo saa 10:00 asubuhi kwa kuwashukwa wajumbe na wataalamu kwa kupika kikaoni na pia kuwaamba wajumbe kuwasikiliza wataalamu na kuwatiza maswali kuhusu mradi.

AGENDA: 2. UTAMBULISHO

Viongozi wa Kijiji na wajumbe wa halmashauri ya Kijiji cha Matale walijitambulisha kwenye kikao na kuwakaribisha wataalamu nao pia kujitambulisha kwenye kikao.

AGENDA: 3. WATAALAMU WA BONDE
KUZUNGUMZA NA HALMASHAURI
YA KIJISI.

Mwenyekiti aliwakaribisha wageni kutoka bonde la WAMIRUVU kuzungumza na ku sema ualicho kuja nadio kwenye halmashauri ya Kijiji.

Wataalamu walisisimama nakutoeleza kwa upasala zaidi kuhusu mradi wao pia walitoleza kuhusu jukumu lao ni kugawa maji na kutifadhi vyanzo vya maji.

Pia wataoleza umuhimu wa kulinda vyanzo vya maji na kuwia shughuli za kibinadamu

ambazo zina karibu vyenye vya maji. Shughuli hizi ni kama konywesha mifugo, kulima kwenye vyenye vya maji, uchimbaji wa madini kwenye vyenye vya maji. n.k.

Wataalamu wa bonde la wamururu wataja na mpango ili kuzazwa wafugaji wasiende konywesha mifugo katika bonde la mto, watasema kuwa watachimba kisima cha maji na kutengeneza mifeteji ya konywesha mifugo. (Birika la konywesha mifugo).

Baada ya maeleza ya wataalamu wajumbe walisema maoni yao kuhusu mto, mijumbe wa kwanza alisema kutingana na mazingira ya kijiji chetu mtahijengea mabirika manggaji ya konywesha mifugo? Mijumbe wapili alitea mapendekete kuwa kwanini usiwepo utaratibu wa kupanda miti kwenye kingo za mto kuzia mmenyeko wa ardhi? Mijumbe wa tatu akauliza ni gharama kiasi gani za konywesha mifugo kwenye birika?

Wataalamu wa bonde la wamururu walijibu kama ifuatavyo, kuhusu mabirika manggaji watajenga walisema kuwa sasa wataanza na birika moja ila hapo mbeleni watafanya tathmini zaidi. Kuhusu kupanda miti kwenye kingo za mto walisema hili uzozi wanalo pia, wana mitakati wa kutoa elimu kuwakale wanao fanya kilimo kingoni muamto kupanya kilimo msitu. Kuhusu gharama za konywesha mifugo kwenye birika, walisema watahijenga birika watakabidhi kwenye kijiji na ofisi ya kijiji itakaa na wafugaji ili wawere kuweka utaratibu mzuri wa kuendesha birika.

AGENDA: 4. MAPENDEKEZO YA WAJUMBE.

Baada ya taarifa na lengo la wataalamu kutoka bonde la WAMUNGU na kujidili kwa kina wajumbe wa lalmoshari ya kijiji cha MATALE walipendekera yafuatayo la kuanza waliipokea samiradi na ualiona kwa mradi huo utoleka manipa katika kijiji chetu.

Pendekero la pili wajumbe walipendekera litolewa eneo la kijiji katika lile eneo lililokuwa linafungua kwa ajili ya malisho kiasi cha ekari mbili eneo hilo litomike kwa kujengea birika la konywesha mifugo. Eneo hilo linapatikana katika kitongoji cha Matale.

AGENDA: 5. KUFUNGA KIKAO.

Mwenyekiti alifunga kikao mnamo Saa 13:20 melana kwa kushukuru wataalamu na wajumbe kwa kuchangia na maludiano yao.

MWENYEKITI

BALLA H. MCHIZI

MEMBETI W
KIJJI CHA MATALE
Bingo

KATIBU.

L.B. Nyagira.

CHA MATALE
KATIBU

	JINA KAMILI	CHEO	SAINI
1.	BAKARI 4-MGATA	Mwaki	Bungaro
2.	LAMECK B. NYAGIRO	VEO	L.B. Nyagiro
3.	ZABIBU J. RAMADHANI	MJumbe	Z
4.	FATUMA H. NGELEKO	MJumbe	Shung
5.	CHARES DAUDI	MWENYEKITI	
6.	ELIAS WILISOWI	KUTUPAKI DO	Shung
7.	MOSES YOHANA	MJumbe	Shung
8.	Fredrick Osoo Koso	M. Hiti: H. Tugaj	Shung
9.	SIMONDI NYALANGU NDASAKA	MJumbe	Shung
10.	FARIDA H. HALFAN	MJUMBE	Shung
11.	ELIZA SONI	MJUMBE	Shung
12.	STOMADHAI KOURU	VEO	Shung
13.	PAUL MUKHUMBI	MJumbe	Shung
14.	JEMINA R. KIGOLO	MJumbe	Shung
15.	MOHAMED. S. MARISHARI	MJumbe	Shung
16.	BOYCE C. DAUD	MJumbe	Shung
17.	SALUM SHABAN. KIGLA	MJumbe	Shung
18.	MOHAMED. JUMA OMAR	MJumbe	Shung
19.	IBRAHIM JUMA SAMZIMBA	MJumbe	Shung
20.	MICHAEL VITALIS LUTUMBU	MJumbe	Shung
20.	Sharon MOHA. MAL	MJumbe	Shung

SHIRAZI MENDAU
MENDAU MENDAU

MUHTASARI WA MKUTANO WA WANANCHI WA
KIJISI CHA MATALE NA WATAALAMU KUTOKA BONDE
LA WAMIRUVU ULIOFANYIKA TAREHE 21/03/2025.

AGENDA:

1. KUFUNGUUA KIKAO
2. UTAMBULISHO
3. WATAALAMU WA BONDE WAMIRUVU KULETA MRADI KWA WANANCHI.
4. MAARAZIMIO
5. KUFUNGA KIKAO.

AGENDA: 1. KUFUNGUUA KIKAO.

Mwenyekiti alifungua kikao mnamo Saa 14:00 mbaraka kwa kuwasilishwa wakarochi na wataalamu kwa kufika kwenye mkutano na pia kuwa omba wakarochi kuwasikiliza wataalamu na kutoa maoni kuhusu mradi.

AGENDA: 2. UTAMBULISHO.

Viongozi wa Kijiji na wataalamu walijita mbulisha kwenye mkutano wa wakarochi wa Kijiji cha matale na kuwa karibisha wakarochi kwenye mkutano.

AGENDA: 3. WATAALAMU WA BONDE
LA WAMIRUVU KULETA MRADI KWA
WANANCHI.

Baada ya kikao cha ndani, wataalamu walitoka kuajili ya kuwagomiza na wakarochi kuwafafanua na kuwaeleza kwa kina kuhusu mradi. Pia walikuwaeleza lengo na dhimoni la huo mradi kwenye Kijiji chetu.

Kama halmashauri ya Kijiji ilikutaliana na kupokea mradi na kutoa mapendeleo yafafanua kuanza watalipokea mradi kwa mkeno mkuu kuwasilisha mradi huo vitoleta manufa kwenye Kijiji chetu.

Vendekero la pili ni litolewe eneo la Kijiji katika eneo lile lililokuwa limetengwa kwa ajili ya malisto kiasi cha ekari mbili, eneo lile linapatikana katika kitongoji cha mabale.

Baada ya elimu, mapendekero namadere kutusu mradi baadhi ya uwaranchi walisheji yafuatayo, muwaranchi wa kuwaa aliviza vipi kutusu ghatama za kunyweshea mifugo katika birika, muwaranchi wa pili aliviza kutusu watakiibiti vipi kutusu shughuli nyingine zinazofanyika pembezoni mwanito.

Wataalamu walisheji wa kazi za uwaranchi kama yafuatayo, kutusu ghatama walisema baada ya vjenzi wa birika wendeshaji utasimamiwa na Kijiji kwa ghatama nafuu za wendeshaji tu. Pia walisema kutusu kudhibiti shughuli nyingine kariboni ya mto, kwa sasa wameanza na lili la birika ili baadaye wataangalia nini kufanyika kudhibiti hizi shughuli.

AGENDA: 4. MAAZIMIO.

Baada ya majadiliano yote uwaranchi walikubaliana na mapendekero yawaajumbe wa halmashauri ya Kijiji, kuwa wamepokea mradi kwa mikonzo mivili na pia wafuatua eneo la ekari mbili katika eneo lilotengwa kwa ajili ya malisto ya mifugo, ili lijengwe birika kwa ajili ya kunyweshea mifugo, eneo lile linapatikana katika kitongoji cha mabale.

MAA MENDAI
CHAMA CHA KALU

AGENDA: 5. KUFUNGA KIKAO.

Mwenyekiti alifunga kikao mnamo
Saa 16:30 jioni kwa kuwashukwa wananchi
wataalamu na wajumbe wa halmashauri ya
Kijiji kwa kuchangia na maludiano yao.





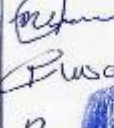

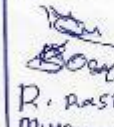
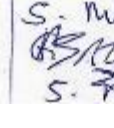
MWENYEKITI

MEMBETI W ^{JEKII}
KIJILI CHA MATALE
Bngaa

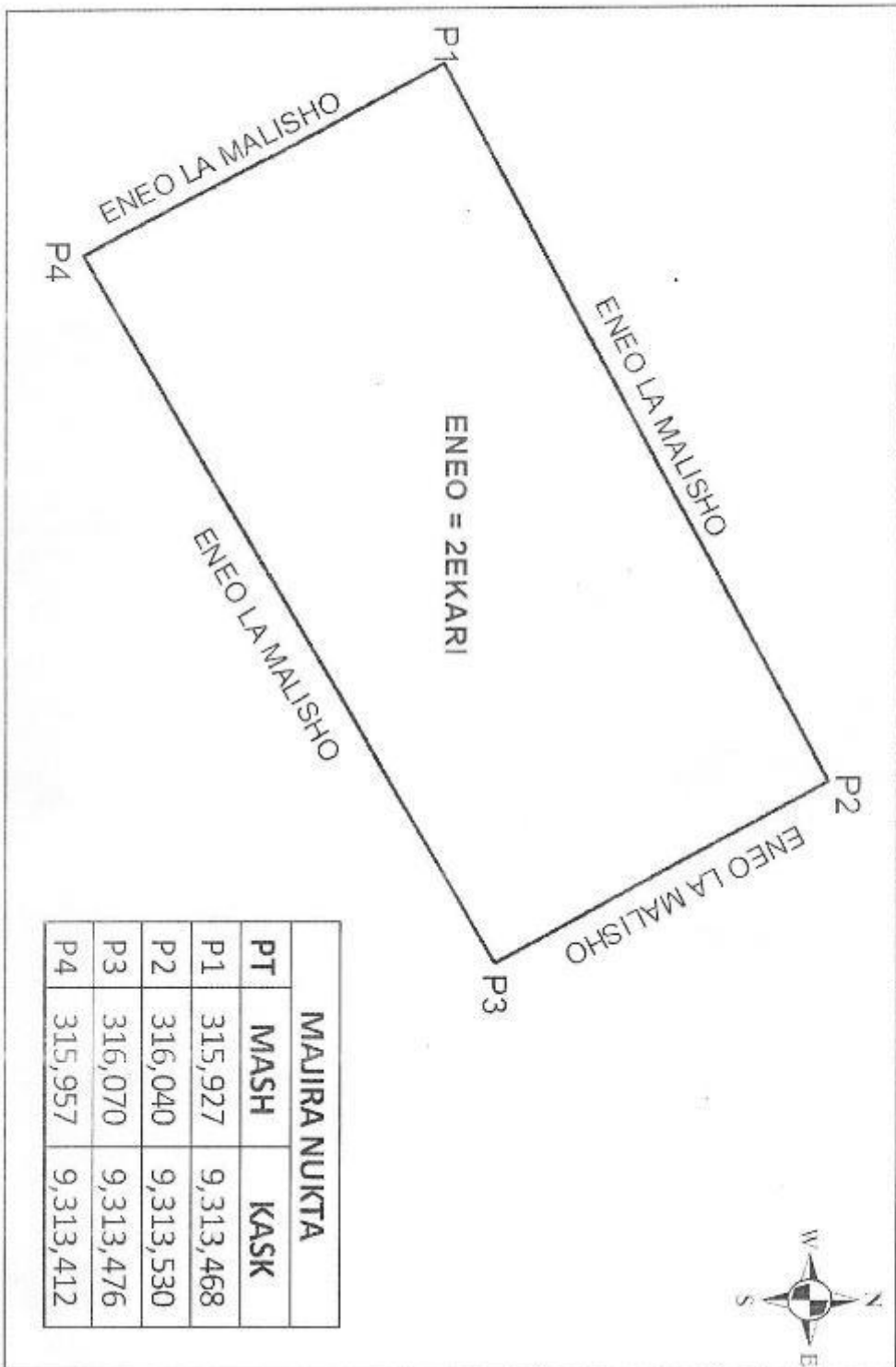
KATIBU

L.B. Nyagiro
GIRA NTENDU
CHA MATALE

KIKAO CHA NJEE.

JINA KAMILI	CHAO MUMBE	SAMAH
1 JEMSI JAKSONI JOSEPHU		Jemsi
2 RASMOI ALIFA ABOLI		De
3 NASORO SHABANI ABDALA		
4 EMANWELI FRENIL MARIKO		
5 OMARI ABDALA SUFANI		Esth
6 ESTIA JEMIMA MARIKO		mlorai
7 REHEMA BURUHITA MCHIZA		ASFLINA
8 ANJELINA ROBISON WILIAM		NASIBU
9 NASIBA ABOLI ALLY		
10 JUSTINA JAKSONI JELEMIN		Rehema
11 REHEMA RASHIDI ALLY		Laila
12 KILISTINA JULIASI KASIMANI		Jeetun
13 ZAITUNI AITUMA SUMA		
14 ZAILA OMARI RASHIDI		E. Jony
15 ANTHONY ALBERT GABRIEL		Helma
16 ELIZABETH JOHN ANTHON		Safina
17 HELINA ELIA MUMBE		
18 SALIMA RASHIDI KIGALO		Pusa la sa
19 MOHAMMED RAIMONAH MUKHA		R
20 MWADAHAWA HAMISI MUSELE		
21 TADAZO BIRISHAN MUMASA		A. Adhiani
22 ALOJCE CHARLES DAUDI		O. M. G. G. S.
23 MOHAMMED S. MARISHARI		Ally
24 AGATHA ADRIAN TIMOTHEO		
25 OLIPA MGAUS		R. Rashidi
26 JUMA NYANGAS		Mwanaisha
27 MOHAMMED SUMA OMARAS		SABANI
28 ASIA SELEMANI		E. Adrian
29 REHEMA RASHIDI KIGALO		F. Omary
30 MWANAISHA NASORO		Melany
31 ZAWARU RASHID SHABANI		M. Abubakar
32 ELIZABETH ADRIAN TIMOTHEO		S. Mohamed
33 FATUMA OMARY SIMON		
34 MARGARETH JULIUS CHAUNICA		S. Musa
35 MWATUMA ABDALLAH		
36 SHABANI MOHAMMED		
37 GILIBALI MOHAMMED		
38 ZABIBU JUMA		
39 SHABANI MUSA		

ENEEO LILILOTENGWA KWA AJILI YA UCHIMBAJI WA KISIMA NA BIRIKA KIJUJI CHA MATALE



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UNIT: 1:544



Appendix VIII: Land donation and letter of consent for Makuyu Cattle Trough Site

JAMHURI YA MUUNGANO WA TANZANIA



**HATI YA KURIDHIA KUTENGA ARDHI KWA AJILI YA KUCHIMBA
KISIMA NA UJENZI WA BIRIKA LA KUNYWESHEA MAJI MIFUGO
KATIKA KIJILI CHA MAKUYU, KATA YA MVOMERO
WILAYA YA MVOMERO, MKOA WA MOROGORO**

KATI YA

MFADHILI

**MKURUGENZI MKUU, BODI YA MAJI BONDE LA WAMI RUVU
S. L. P 824
MOROGORO**

NA

MTOA ARDHI

**MWENYEKITI WA KIJILI CHA MAKUYU
S. L. P 663,
MVOMERO – MOROGORO**

MAY, 2025

HATI YA UCHANGIAJI WA ARDHI KWA HIYARI¹

HATI YA KURIDHIA KUTENGA ARDHI KWA AJILI YA KUCHIMBA KISIMA NA UJENZI WA BIRIKA LA KUNYWESHEA MAJI MIFUGO KIJIKI CHA MAKUYU KATA YA MVOMERO, WILAYA YA MVOMERO

Hati ya kuridhia kutenga ardhi kwa ajili ya kuchimba kisima na ujenzi wa birika la kunyweshea maji mifugo katika kijiji cha Makuyu unafanyika leo tarehe 07/05/2025.

KATI YA

MKURUGENZI MKUU, Bodi ya Maji Bonde la Wami Ruvu ambaye katika hati hii na nyaraka zote atajulikana kama mfadhili kwa upande mmoja

NA

Mtoa ardhi **Mwenyekiti wa kijiji cha Makuyu**

Mimi, Bw./Bibi ICANDUTH ABJANI KIKOTI.....ambaye ni MWENYEKITI WA KIJIKI.....niliyeweka saini yangu hapa chini leo tarehe 07/05/2025 kwa idhini ya wanakijiji wa Makuyu, ninakiri kuwa nimechangia kwa kutoa ardhi yenye ukubwa wa mita za mraba 8000.....inayopatikana katika majira-nukta (31.7861... , 9.302468) ililopo katika Kijiji cha MAKUYU.....kata ya MVOMERO Wilaya ya MVOMERO katika Mkoa wa Morogoro itumike kwa ajili ya uchimbaji wa kisima na ujenzi wa birika la kunyweshea maji mifugo ikiwa ni sehemu ya kuchangia mradi wa Kuimarisha Ustahimilivu wa Rasilimali za Maji katika Kukabiliana na Mabadiliko ya Tabia Nchi katika Kidakio cha mto Mkondoa unaofadhiliwa na Benki ya Maendeleo ya Afrika (AfDB) katika Jamhuri ya Muungano wa Tanzania. Ardhi ninayoitoa ni mali ya Serikali ya Kijiji ambayo ilitengwa kwa ajili ya Malisho. Makubaliano haya yanatoa sehemu ya ardhi hiyo ili itumike kwa ajili ya uwekezaji tajwa hapo juu.

Ninatenga ardhi tajwa hapo juu kwa hiyari yangu kwa idhini ya wananchi wa kijiji cha Makuyu bila malipo yoyote, nikiwa na uelewa, na bila ya kulazimishwa au kutishwa, na baada ya kujulishwa kikamilifu juu ya haki ya kutopewa fidia kabla ya utwaji wa ardhi hiyo ambayo itatumika kwa ajili ya matumizi ya maendeleo ya umma (ujenzi wa kisima na birika la kunyweshea maji mifugo). Hakuna mwanajamii/familia yeyote itakayokuja kudai umiliki wa ardhi niliyoitoa kwa hiyari yangu kwa idhini ya wanakijiji cha Makuyu.

¹ Fomu hizi zitatumika kwa muktadha wa nchi husika na kushuhudiwa na mwanasheria kwa kuzingatia sheria husika.

Ninathibitisha kuwa uchangiaji huu hautaathiri maisha yangu au ya wanakijiji wenzangu kwa sasa, baadae na hata siku zijazo.

Nimeamua kwa uwazi kutenga ardhi tajwa kwa manufaa ya jamii ya MAKUYU..... ili litumike kwa ajili ya ujenzi wa miundombinu iliyotajwa hapo juu². Kwa hiyo, ardhi niliyotenga haiwezi kwa namna yoyote ile kutumika kwa madhumuni mengine, wala kuhamishwa, na wala kupangiwa matumizi mengine. Hivyo basi, uchangiaji huu utakuwa batili ikiwa dhumuni la utoaji wa ardhi hautatekelezwa ndani ya muda uliobainishwa kuwa muda wa mradi.

KWA KUSHUHUDIA, taarifa hii imeandaliwa na kusainiwa ili itumike na iwe halali kwa namna ilivyoelezwa hapo juu.

Imetolewa hapa

JINA: KANOUTH ABUJANI KIKOTI.....

SAINI: [Signature]

TAREHE: 7/5/2025.....

MWENYEKITI WA SERIKALI
YA KIJILI MAKUYU

CHEO: MWENYEKITI WA KIJILI CHA MAKUYU ikifuatiwa na maneno "Nimesoma na Nimeidhinisha") NIMESOMA NA NIMEIDHINISHA.....

Mashahidi³ /Mwakilishi wa Jamii/kijiji

i. JINA: OSKIN IVO NYONI.....

SAINI: [Signature]

TAREHE: 07/5/2025.....

CHEO: MWENYEKITI KIONGOSI..... ikifuatiwa na maneno
"Nimesoma na Nimeidhinisha") NIMESOMA NA NIMEIDHINISHA.....

ii. JINA: MANGAPI ABASI MAWENGE.....

SAINI: [Signature]

TAREHE: 07/05/2025

CHEO: MJUMBE WA HAMMASHAURI..... ikifuatiwa na
maneno "Nimesoma na Nimeidhinisha") NIMESOMA NA NIMEIDHINISHA.....

² Baada ya kukamilika kwa usimikaji wa miundombinu tarajiwa, ardhi itasajiliwa kwa jina la jamii nufaika.

³ Kila shahidi anatakiwa kuwa na umri ulioruhusiwa kisheru kushubudia au kuingia makubaliano na mwenye haki za kiranja, na awe mufaika kwa anayetoa ardhi.

iii. JINA: NYAMBITA -M. MAGEOMA
SAINI: ~~Nyambita~~
TAREHE: 07/05/2025
CHEO: AFISA MTENDAJI WA KIJILI CHA MAKUYU (ikifuatiwa na maneno "Nimesoma na Nimeidhinisha")
AFISA MTENDAJI
KIJILI CHA MAKUYU

KWA NIABA YA HALMASHAURI YA WILAYA YA MVOMERO

iv. JINA: LOONA PETER
SAINI: ~~Loona~~
TAREHE: 13/5/2025
CHEO: DGA
MKURUGENZI MTENDAJI HALMASHAURI YA WILAYA YA MVOMERO

MKURUGENZI MTENDAJI
HALMASHAURI YA (W) MVOMERO
S.L.P 663, MOROGORO

v. JINA: TUCUPH - A- MATUNGA
SAINI: ~~Tucuph~~
TAREHE: 15/05/2025
CHEO: M/KILI H/W MVOMERO
MWENYEKITI WA HALMASHAURI YA WILAYA YA MVOMERO

MBELE YA MWANASHERIA WA HALMASHAURI YA WILAYA YA MVOMERO

vi. JINA: SERAPHIM VEXYS
SAINI: ~~Seraphim~~
TAREHE: 15/05/2025
CHEO: MWANASHERIA WA HALMASHAURI YA WILAYA YA MVOMERO
MWANASHERIA WA HALMASHAURI YA WILAYA YA MVOMERO

MVOMERO DISTRICT COUNCIL
DISTRICT LEGAL OFFICER
P.O. Box 663
MOROGORO

KWA UPANDE WA BODI YA MAJI BONDE LA WAMI RUVU

vii. JINA: PASCHAL J. GUFAN
SAINI: [Signature]
TAREHE: 16-05-2025
CHEO: KAJIMU MKURUGENZI



MKURUGENZI MKUU, BODI YA MAJI BONDE LA WAMI RUVU

Umesainiwa mbele ya

viii. JINA: ALOYCE B. WIMO
SAINI: [Signature]
TAREHE: 16-05-2025
CHEO: WAKILI WA SERIKALI

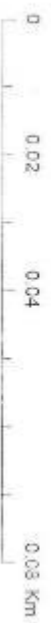
MWANASHERIA WA BODI YA MAJI BONDE LA WAMI RUVU

ENEO LILILOTENGWA KWA AJILI YA UCHIMBAJI WA KISIMA NA BIRIKA KIJILI CHA MAKUYU



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UNIT: 1:600



MUH TASARI WA MICHANO MIKUU WA KIJISI CHA
MAKUYU ULIO : FANYIKA TARIFE 04/04/2025

MAHUDHURIO

JINA KAMALI	CHEO	ANABOJOKA	SATINI
1. KANOUTH-A. KIKOTI	MW/KITI	MAKUYU	K. Kijai
2. NYAMBIA M. MABWA	V	MAKUYU	M. Mabwa
3. SALUMU J. MANGIMBAZI	Mitalimasho	MAKUYU	B. Mangimba
4. NGOME M. MSOLAN	MJUMBE	MAKUYU	NGOME
5. DANIEL THAEI EFLEM	MW/KIONGO	MAKUYU	D. Thaei
6. SADALA ALY SADALA	MJUMBE	NTONGORO	A. Sadala
7. OSWIN I. NYONI	MW/KITI	MAHANGE	O. Nyoni
8. MWAJUMA O. CHAMKONGO	MJUMBE	MAHANGE	M. Chamkongo
9. FATUMA H. MOHAMED	MJUMBE	CHANIKA	Hassani
10. ELIZABETH JERADI	NTONGORO		E. Jeradi
11. ELIMINA WILIAMU	MJUMBE	NTONGORO	A. W.
12. MARIAM SAIDI	MJUMBE	MAHANGE	M. Saidi
13. FATUMA YUSUPH	MJUMBE	NTONGORO	F. YUPH
14. MARIAM WILIAMU	MJUMBE	MAHANGE	M. Wiliamu
15. AGNESI PETRO	MJUMBE	MKOCHENI	A. P
16. AZIZA ALLY	MJUMBE	MAHANGE	
17. HADIJA RAMADHANI	MJUMBE	MAJUNGO	H. Ramadhani
18. MWANABDI RAMADHANI	MJUMBE	MKOCHENI	M. R
19. FATUMA N. MNYINGI	MJUMBE	MAHANGE	F. N. NGORO
20. TATU LASHIDI GODA	MJUMBE	MAHANGE	T. Lashidi
21. PILI RAMADHANI	MJUMBE	MKOCHENI	P. R
22. SIERA ELIA	MJUMBE	MAHANGE	S. ELIA
23. MWANABDI JUMA	MJUMBE	MAJUNGO	M. J
24. RAMINA SEPH.	MJUMBE	MAJUNGO	A. sefu
25. MWABU SAIDI	MJUMBE	NTONGORO	M. S

	JINA KAMILI	CHAO	ANAKOBUKA	SATINI
26	JONI DAUDI	MJUMBE	MAHANGE	J. H. NTORE
27	MSAFIRI SALUMU BAKARI	MJUMBE	MKOCHENI	Salum
28	KATARINA EZIDORI	MJUMBE	NTONGORO	Ezidori
29	ANA JOSEPH	MJUMBE	NTONGORO	A. J
30	VIKTORIA DAMIANI	MJUMBE	MAJUNGU	V. D
31	ZAINA MOHAMEDI	KIBURUNGE		Z. Mohamed
32	TELEZA SELEMANI	MJUMBE	MAJUNGU	T. Selemani
33	KATALINA JOSEPH			
34	HALIMA HAMADI	MJUMBE	NTONGORO	H. H
35	AMINA ABDALA	MJUMBE	KIBURUNGE	A. Abdala
36	HADIJA ABDALA	MJUMBE	KIBURUNGE	H. A
37	AMINA ATIBU	-II-	MAHANGE	
38	MWAJUMA KILUNDA	-II-	MAHANGE	
39	SALIMA SADI	MJUMBE	MAJUNGU	T. K
40	TELESIA KISONGELA	MJUMBE	MKOCHENI	
41	ELISI HOSEA	MJUMBE	CHANIKA	
42	MWAJUMA NJAGILA	MJUMBE	MKOCHENI	
43	AMINA OMALI	MJUMBE	CHANIKA	
44	ISUMALI HASSANI	MJUMBE	MAHANGE	
45	VISETI MARZUKA	MJUMBE	CHANIKA	
46	STIVINI MAIKO	MJUMBE	CHANIKA	
47	NASORO SELEMANI	MJUMBE	MANCHAPI	
48	SHARANI HAMIS SAIDI	MJUMBE	MKOCHENI	
49	PETER ABOGASTI KIPILUMBA	MJUMBE	CHANIKA	
50	MGUMI MNEFITU	MJUMBE	KIBURUNGE	
51	ELENESTI EDMUNDI	MJUMBE	MKOCHENI	
52	BARAKA SAIDI MAWENGE	MJUMBE	CHANIKA	

	JINA KAMULI	AFED	ANAKOTOKA	SATI NT
53	GODFREY G. GREGORY	MJUMBE	KIBURUNGE	GREGORY
54	FARAH IDO	MJUMBE	MAJUNGU	Farah
55	MWAZO MLEMA	MAJUNGU	MAJUNGU	MA
56	VERONICA BAHAT	MJUMBE	MAJUNGU	KID
57	MAZAHABA	MJUMBE	WUBURUNGE	MAB
58	DIK DAUDI	MJUMBE	CHANIKA	DIK
59	ARORO	MJUMBE	MAJUNGU	ALO
60	Said SAID RIDDI HAMISI	MJUMBE	MAJUNGU	SAID
61	MWAZO HAMISI - D. RAMADHAN	MJUMBE	CHANIKA	M. D.
62	HURUKA CHAMKORO	MJUMBE	KIBURUNGE	H
63	HAMZA AMANI	MJUMBE	MKOTENI	H
64	NURU KOMBO	MJUMBE	CHANIKA	N. Kombo
65	MWAZO KOMBO	"	"	M. Kombo
66	AMINA ABDALLAH	"	"	A. Abdallah
67	ZAINA HOSSEN	"	"	Z. H
68	MWAZO RAMADHAN	"	"	M. Ramadhan
69	ZUHURA A. RODA	"	MAJUNGU	Z. Roda
70	KATARINA ANTON	"	CHANIKA	K. A.
71	REHMAN AHMADANI	"	MKOTENI	R
72	MWANAHAMISI - HOSSEN	"	NDUGORO	M
73	SIWENAMCHAMEDI RAJABU	BAROZI	CHANIKA	S
74	ASHA SAIDI MAWENGU	MJUMBE	CHANIKA	A. Mawenge
75	HAMIDA RAMADHAN	MJUMBE	MAJUNGU	H. Ramadhan
76	ASHA LIJJE	MJUMBE	CHANIKA	A. Lijje
77	FATUMA LUKA JAMES	MJUMBE	NDUGORO	F. Luka
78	HALIMA LUHENGU	MJUMBE	MAHANGE	H. L
79	HAMADI LUHENGU	MJUMBE	MAJUNGU	H. Luheng

	JINA KAMILI	CHIFO	ANAKOTOKA	
80	MWANAHAMISI R M WENGE	MJUMBE	CHAMICA	A. Mawenge
81	Daniel Mwanamwe	-11-	Mchenge	d. m
82	MHINA MWANAMWE	-11-	MIXANGE	M. N
83	EIKIRI HAMIS	MASUNGU	MASUNGU	HH
84	ZUHURA HAMISI	MJUMBE	CHAMICA	
85	LEGOM KIPARA	-11-	MATANGE	L. K
86	RASHID KIMULADI	-11-	KIBURUNGE	R. K
87	IATU HAMIS	-11-	CHAMICA	T. H
88	HAMIS Mawenge	-11-	CHAMICA	Mwenge
89	XUY HAMIS WALE	-11-	MATANGE	Achalo
90	Dwajabu Ramadhani	-11-	Mahenge	M. ana
91	Manam Kibwano	-11-	-11-	M. Kibwano
92	Aminu Omar	-11-	Mahenge	A. D
93	ASHA NABRO	-11-	-11-	A. H2H
94	ASHA DUGA	-11-	CHAMICA	U. F
95	CHRISTINA FRANKS	-11-	Kiburunge	HK
96	HADJA KOMBIO	CHAMICA	CHAMICA	HS
97	Hamadi Suppa	-11-	Mahenge	HIC
98	Hadija Kadulu	-11-	Mkochen	HA
99	HALIMA AZIZI	-11-	-11-	AS
100	HALIMA SIMONE	-11-	Mahenge	HAN
101	HASSAN NYONGE	-11-	Mahenge	HA. Y
102	Mariam Kip-S-B	-11-	Mahenge	MR
103	Machaka Kiyabu	-11-	-11-	I. Mel.
104	MOPIKAI DAMIAN	-11-	-11-	
105	ZAINA MOTTOMED	-11-	CHAMICA	2. M

	JINA KAMALI	CHEO	ANAKOTOKA	SAINI
103	HALIMA HAMISI	MJUMBE	CHANIKA	H.H.
104	ALIA ALLY HASSAN	MJUMBE	CHANIKA	A. ALLY
105	HALIMA AZIZI	MJUMBE	MAJUNGU	H.A
106	AMINA RAMADHAN ARABE	MJUMBE	CHANIKA	A.R
107	MWAZUMA MAGOTA	MJUMBE	MAJUNGU	AM.
108	HADIJA HAMIS	MJUMBE	MAJUNGU	
109	TATU KIMANI	MJUMBE	MKOCHEN	T.A
110	ZAITUNI ABDALLAH	MJUMBE	CHANIKA	Z.A
111	KRISTINA ELIAS MRIMBO	MJUMBE	KIBURUNGE	KE
112	MWAZABU ALLY MAMAMBO	MJUMBE	MAMANGE	AM
113	ELIMINA SXIDI	MJUMBE	KIBURUNGE	E.S
114	FATUMA HAMIS WACHALO	MJUMBE	KIBURUNGE	F.H
115	AMINA JUMA	MJUMBE	CHANIKA	KE
116	SINAZO KOMBO	MJUMBE	CHANIKA	Stambo
117	MOHAMED KIKAVU	MJUMBE	CHANIKA	M. Kikavu
118	SHABANI HAMIS KIKAVU	MJUMBE	CHANIKA	Shabani
119	MWAZAHAMIS R. MAWENGE	MJUMBE	CHANIKA	MA
120	ZAINA ATHUMANI RAMADHAN	MJUMBE	CHANIKA	ATHUMANI
121	ZAINA ISSA FUNGE	MJUMBE	MAJUNGU	ZAINA
122	HADIJA SHABANI SAID	MJUMBE	MKOCHEN	H.S HABANI
123	AMINA MBARAKA RAS	MJUMBE	MJUMBE	AMINA
124	FATUMA IBA FUNGE	MJUMBE	MKOCHEN	FUNGE
125	RASHID SAMI MAWENGE	MJUMBE	MKOCHEN	
126	JOVITI L KAMLETE	MJUMBE	CHANIKA	JL Kamlete
127	FRANCS - A. MAKUNGIRA	MJUMBE	MKOCHEN	F. MAKUNGIRA
128	ALLY - H. CHALO	MJUMBE	MAMANGE	A. CHALO
129	PENIYODI ADILIANI	MJUMBE	MAJUNGU	P. ADILIAN
130	FREDRICK D. MUKUTU	VADO	MAKUTU	
131	NYAGUMBA TUP	DOKTOR	MAKUTU	

MUHTASARI WA MKUTANO WA WANANCHI
KIPATI CHA MAKUYU ULIOFANYIKA TAREHE 04/04/2025

AGENDA

01. KUFUNGUWA MKUTANO
02. UTAMBULISHO
03. KURIDHIA UTOASI WA ARDHI KWA AET
YA UTEKEZATI WA MRADI
04. KUFUNGA MKUTANO

AGENDA 01: KUFUNGUWA MKUTANO

Mwonyelali alifungua mkutano mnamo mudo wa saa 8:30 mchana akianza kwa kuwasalimiza wananchi na kisha kuwakaribisha katika mkutano. Kisha alitamka mkutano umefunguliwa.

AGENDA 02: UTAMBULISHO

Katika agenda hii utambulisho ulifanyika kwa wataalam wa maji kutoka ofisi ya Mkuunguzi Bonde ya Maji Bonde la Wami Ruvu (WRBWR) na wataalam kutoka ofisi ya Mkuunguzi Wilaya.

X GENDA 03: KURIDHIA UTOASI WA ARDHI KWA
AJILI YA UTEKELEZASI WA MRADI WA KISIMA.

Katika agende hii, Mtaalam kutoka WRBWB alieleza wananchi juu ya ujio wa katika kiji cha Makuyu. Ambapo alieleza wamefika kiji kwa ajili ya kuhifadhi vyanzo vya maji ambapo uhifadhi huo utalega zaidi mto Mkundi.

Alieleza ili kufanikisha uhifadhi wa mto Mkundi na vyanzo vingine vya maji kunatakiwa kupatikana eneo litakalo chimbwa kisiwa na kuyenga mabirika ya kunywesha mifugo ili isiende mtoni.

Wananchi wakiongozwa na mw/kiti wa mkutano walijadili swala hili kwa kina na kicho walilidhi kutoa eneo la okari mbili katika kitongoji cha MATHANGI kwa ajili ya madi huo.

AGENDA 04: KUFUNGA MKUTANO

Mwenyekiti alifunga mkutano mnamo mudi wa saa 11:40 jioni kwa kuwashukuru wananchi juu ya mchango wao mzuri kuhusu agende zilizo kuwa mezani. Kicho alitamka mkutano umeharishwa.


KANOUH A. KIKOTI
MWENYEKITI WA SERIKALI
YA KIJILI MAKUYU


NJOMBIA M. MATOMA
AFISA MTENDAJI
KIJILI CHA MAKUYU

Appendix IX: Land donation and letter of consent for Mvumi Cattle Trough Site

A-3. Muhtasari wa Idhini kwa Ajili ya Jamii/ Familia/ Wenye Umiliki wa Pamoja Wallotoa Ardhi Yao kwa Hiyari?

Mimi, Bw./Bibi Abdul Ally Tumbo, nilleweka saina yangu hapa chini, mwakilishi wa jamii/familia/umiliki wa pamoja [taja jina la jamii/familia/mwenye umiliki wa pamoja] Kidani cha Mvumi, ninakiri kuwa nimechangia ardhi/jengo lenye ukubwa wa mita za mraba 5000 linalopakana katika majira nukta (.....) (.....) lililopo katika Kijiji cha Mvumi, Manispaa ya Wilaya ya Kilosa katika Mkoa wa Morogoro litumike kwa ajili ya ujenzi wa Birika ikiwa ni sehemu ya Mradi wa Kuimarisha Ustahimilivu wa Rasilimali za Maji katika Kukabiliana na Mabadiliko ya Tabia Nchi katika Kidakio cha Mkondoa unaofadhiliwa na Benki ya Maendeleo ya Afrika (AfDB) katika Jamhuri ya Muungano wa Tanzania.

Jamii/familia/wenye umiliki wa pamoja wanachangia ardhi/jengo hili kwa hiyari bila malipo yoyote, wakiwa na uelewa, na bila ya kulazimishwa, kushurutishwa au kutishwa, hata baada ya kujulishwa kikamilifu juu ya haki yao ya kulipwa fidia kabla ya utwaaji wa ardhi/jengo hili kwa ajili ya matumizi ya umma.

Ni kwa hiyari na kwa idhini ya wachangiaji na wanufaika wao na wategemezi wao (mke/mume/watoto/kaka/dada n.k) kwamba jamii/familia/wenye umiliki wa pamoja wameamua kufanya uchangiaji huu kwa hiari yao na kuthibitisha kuwa hakuna mmoja kati yao atakayekuja kudai umiliki wa eneo/jengo lililotolewa. Hivyo basi, jamii/familia/wenye umiliki wa pamoja wanafuta kabisa haki yao na ya wategemezi wao ya umiliki wa eneo/jengo hili.

Mimi, niliyetia saina hapa chini, ninathibitisha kuwa uchangiaji huu hautaathiri maisha ya Mchangiaji yeyote kutoka Jamii/Familia/Wenye Umiliki wa Pamoja au ya wanufaika au wategemezi wao, kwa muda wa sasa na hata baadae. Nimeamua kwa uwazi kuchangia ardhi/jengo hili kwa manufaa ya wanajamii wa Mvumi ili litumike kwa ajili ya ujenzi wa miundombinu iliyotajwa hapo juu⁹. Kwa hiyo, ardhi/jengo nililotoa haliwezi kwa namna nyingine yoyote ile kutumika kwa dhumuni jingine, wala kuhamishwa, wala kupangiwa matumizi mengine. Hivyo basi, uchangiaji huu utakuwa batili ikiwa dhumuni la utoaji wa ardhi/jengo hautatekelezwa ndani ya muda uliobainishwa kuwa muda wa mradi.

KWA KUSHUHUDIA, taarifa hii imeandaliwa na kusainiwa ili itumike na iwe halali kwa namna ilivyoelezwa hapo juu.

Imetolewa hapa Mvumi tarehe 05/05/2025

⁹ Kila mwakilishi atatakiwa kuwa na nyaraka inayocupa mamlaka kisheria nan akala yake itasambotishwa kwenye nyaraka hizi.

⁸ Baada ya kukamilika kwa usimilaji wa miundombinu tarajiwa, ardhi itasajiliwa kwa jina la jamii nufaika.

Jina na Saini ya Mwakilishi wa Jamii/Familia/Wenye Umiliki wa Pamoja:

ABDUL ALI TURIBE

Mashahidi⁹

MU KITI WA SERIKALI
KIJILI CHA MVUMI

SEP 11

1. Jina na saini: (ikifuatiwa na maneno "Nimesoma na Nimeidhinisha") ELIAS J. MATIAS
NIMESOMA NA NIMEIDHINISHA
2. Jina na saini: (ikifuatiwa na maneno "Nimesoma na Nimeidhinisha") MAPESU W. CHICINWA
NIMESOMA NA NIMEIDHINISHA
3. Jina na saini: (ikifuatiwa na maneno "Nimesoma na Nimeidhinisha") ZEWA SALEHE
NIMESOMA NA NIMEIDHINISHA

Wakala wa mnufaika (Mwakilishi wa Kisheria)

Jina na saini: (ikifuatiwa na maneno "Nimesoma na Nimeidhinisha").....

IMETHIBITISHWA NA:

MTENDAJI WA KIJILI CHA MVUMI

JINA NA SAINI: GODRICK E. ERNEY
TAREHE: 5/05/2025

AFISA MTENDAJI KIJILI CHA MVUMI

MKURUGENZI WA HALMASHAURI YA KILOSA

JINA NA SAINI: ELIA SHERIVU
TAREHE: 13/07/2025

DISTRICT EXECUTIVE DIRECTOR
KILOSA DISTRICT COUNCIL

⁹ Kila shaidi atakuwa mwenye umri unaoruhusiwa kisheria na mwenye haki zote kisheria kama raia na awe ni mmoja wa wanajamii au familia au wenye umiliki wa pamoja.

MKUTANO WA WANANCHI WOTE MVUMI GONGWE 20/3/2025

AGENDA ZA MKUTANO:

1. KUFUNGA MKUTANO
2. UTAMBULISHO
3. MAELEKEZO KUHUSU MRADI WA BONDE WAMI RUVU
KUHUSU MRADI WA UTEGENEZASI WA MTO KIRANGATA
4. KUFUNGA MKUTANO

AGENDA NO 1 KUFUNGA MKUTANO

Katibu wa mkutano huo alimkabidisha Mh. Biwani Aweze kufunga mkutano huo ili mkutano uendelee Mh. Biwani alisimama na kufunga mkutano muda wa saa 5.45 Alubuki kura kashisha wanananchi na kuwambia wawe huu kati ka mkutano

AGENDA NO 2 UTAMBULISHO

Katika mkutano huo viongozi walio hudhura wali tambulishwa katika mkutano huo ili kundi hasa wananchi wa vijiji mote vili mvumi-bongu kisha wajumbe wa Helima shauri zote mbili.

AGENDA NO 3 MAELEKEZO KUHUSU MRADI WA KUTENGENEZA MTO KIRANGATA

Kutoa mado alizungumza na wananchi kuhusu mradi wetu wa kuteleleka na mabodhiko ya Taba haki yaani kushisha mto katika mja yake ya kawai da kama chinyo katika matukio ya maji Hiryo mradi huu unatakiwa utambuliwe katika andiko la mikataba la wanananchi wameshika kisha katika zoezi hili wanananchi kwa ujumla wali pokea maelekezo hayo na kisha - kumbali andiko hili na mradi uendelee ndani ya kijiji cha mvumi. Hiryo wetu wassha hae zoezi hili katika maeneo yetu.

Dia yapo maeneo ya watu binafsi yataikayo
piti wa ire mradi tumezima ushirikiano wa
kuto maeneo haya pasipo viashirika na vungu
Wananchi walitambuli ana ne maeleke hayo
mradi uendele.

AGENDA NO 4 KUFUNGA MATAHO:

Mwenyekiti alifunga mataho huo muda
wa Saa 6.40 mchereka kwa kuwashukuru wanao
ndi kwa mchango wao kundi wa mawazi na
hesa kutambuli mradi uweo kati ke eneo keli.

~~SAHNI~~
SAHNI YA MWENYEKI

~~SAHNI~~
GABRIEL E. ERNEST
SAHNI YA KATI BU
JEISA MTENDAJI KISI
SAHNI

NT GONGWE

MKUTANO WA WANANCHI WOTE MVUMI 20/3/2025

NO	JINA KAMILI	JINSI	WASIHARA/CHEO	KITONGOSI	SAHIHI YAKE
1	ABDUL AKY TUMBA	ME	M/KIT KISIJI	MVUMI	
2	GODRICK E ERWEST	ME	VED	MVUMI	
3	MAPEO W. CHANDELA	ME	MW/KITONGOSI	BOMBA KUMI	
4	COBA CPILIANI	ME	H/KISIJI	MANDALA	
5	STRAH SELEMANI	ME	MW/KIT KITONGOSI	MVUMI	
6	STRAH SELEMANI	KE	V/MANALUM	MVUMI	
7	STRAH SHARI	ME	H/KISIJI	MVUMI	
8	BENARD MUMU	ME	H/KISIJI	MVUMI	
9	ELIAS JOSEPHU	ME	MW/KIT KITONGOSI	MVUMI	
10	KISIA ACH	ME	H/KISIJI	MVUMI	
11	TATU WILIBATI	KE	H/KISIJI	MVUMI	
12	ZENA SALEHE	KE	H/KISIJI	MVUMI	
13	AGNES M. MALIKI	KE	H/KISIJI	MVUMI	
14	JUMANNE NKWABI	ME	H/KISIJI	MVUMI	
15	SASA MACHIBA	ME	H/KISIJI	MVUMI	
16	IDD M. BINDILA	ME	H/KISIJI	MVUMI	
17	HATI ISSA RABABU	ME	H/KISIJI	MVUMI	
18	REHEMA A. MLANZI	KE	V/KISIJI	MVUMI	
19	REHEMA S. DEROG	KE	H/KISIJI	MVUMI	
20	REHEMA C. MDANEY	KE	V/MANALUM KISIJI	MVUMI	
21	PERPETUA E. MUMU	KE	CESO - MUMU	MVUMI	
22	PROF. M. TANGU	ME	H/KISIJI - MUMU	MVUMI	
23	SELEMANI SHARI	ME	H/KISIJI	MVUMI	
24	SAMORA J. MALOGU	ME	MW/KITONGOSI	MVUMI	
25	ASMA R. SIMBA	KE	H/KISIJI	MVUMI	
26	REHEMA BAZI	KE	H/KISIJI	MVUMI	
27	MARI MUMU	KE	H/KISIJI	MVUMI	
28	ASIA M. MIRAJI	KE	H/KISIJI	MVUMI	
29	SOHA M. MBIGO	KE	H. gongwe	MVUMI	
30	DORIS PATRICK MADEHA	KE	H. gongwe	MVUMI	
31	AMINA SAIDI FUND	KE	H. gongwe	MVUMI	
32	MAUWEI SAIDI	KE	H. gongwe	MVUMI	
33	HALIMA NJIMISO	KE	CIONGWE	MVUMI	
34	TATU WILIBATI	KE	H/KISIJI	MVUMI	
35	NASSORO NGITAD	ME	MVUMI	MVUMI	

JINA KAMILI	JINSI	WAZIWA/CHAO	KITONGOSI	SAHNI YAKE
ABIBA RAMAZANI	KE	H/gongwe	Kebodiani	Gen
37 Shomari O. Shomari	ME	MJUMBE	Magodaoni	S.O
38 MWAMUN BANDA	KE	MJUMBE	MVUMU A	Banda
39 TANU CCM	ME	MJUMBE	BOMBAKUWI	TANU
40 ALLY TUMBO	ME	MJUMBE	MVUMU A	
41 DULLA HAWAZI	ME	MJUMBE	MVUMU A	
42 SAMWERY TUMBO	ME	MJUMBE	MVUMU A	
43 JUMA KISONGERA	ME	MJUMBE	MAGODAONI	
44 HUSSENI-N. KANDABO	ME	MJUMBE	MAGODANI	
45 PAULO RASHID	ME	MJUMBE	MAGODAONI	
46 ELIA CHIPINDUA	ME	MJUMBE	B. KUMU	
47 DAUD-J. KOMBA	ME	MJUMBE	B. KUMU	
48 SEFU A. ZOO	ME	MJUMBE	GONGWE	
49 SEFU SAID	ME	MJUMBE	MVUMU A	
50 AHAMADI J. BAGULE	ME	MJUMBE	MVUMU A	
51 FADILI SAIDI MABARUKU	ME	MJUMBE	GONGWE	
52 RAMADHANI SAID	ME	MJUMBE	GONGWE	
53 GERALD C. MWANJAR	ME	MJUMBE	GONGWE	
54 TABU CHIBABA	ME	MJUMBE	B. KUMU	
55 SEFU MILANGO	ME	MJUMBE	MVUMU B	
56 SHABANI NDAU	ME	MJUMBE	GONGWE	
57 PAULO EVARIST	ME	MJUMBE	MVUMU A	
58 TAUU TWABU	KE	MJUMBE	MVUMU A	
59 KAPIPI MARISHO	KE	MJUMBE	B. KUMU	
60 MABWUKU SALUM	ME	MJUMBE	MVUMU A	
61 TABIA MAGEMBE	ME	MJUMBE	MVUMU A	
62 USNA RAMADHANI	KE	MJUMBE	MVUMU A	
63 RA-IA SALUM	KE	MJUMBE	MVUMU A	
64 ALLY LIMBA	KE	MJUMBE	MVUMU A	
65 OMARY AMANI	ME	MJUMBE	MVUMU A	
66 ABDALAH MGUNDA	ME	MJUMBE	MVUMU A	
67 ELIUDI MTENJI	ME	MJUMBE	MVUMU A	

	JINA KAMILI		GREO	SIMU	SAINI
68	SALUMU KAMUSOKO	ME	-	06	
69	ATMANA MALOTHA	ME	-	-	
70	SALUMU ABDALLAH	ME	-	-	
71	EZELI PHILIPPO	ME	-	-	
72	KIYULU DACHIDI	ME	-	-	
73	SUPHAN BOKOR	ME	-	-	
74	GODFREY LAROYA	ME	-	-	
75	NICHOLAUS SIMBEYE	ME	-	-	
76	HAMISI JOBY	ME	-	-	
77	RASHID SEFU	ME	-	-	
78	KASIM - GELMANI	ME	-	-	
79	ABELI JOHANNES	ME	-	-	
80	ADELINE	ME	-	-	
81	ASHA BEM NABUZO	KE	-	-	
82	NURU	KE	-	-	
83	TIBALTA ABTHUMANI	KE	-	-	
84	AMANI ABTHUMANI	ME	-	-	
85	GEORGE M-MWIMBE	ME	-	-	
86	EMMANUEL JACOB	ME	-	-	
87	JOSEPH ROBERT	ME	-	-	
88	SALUMU MBITHA	ME	-	-	
89	MSUNDO SALUMU	ME	-	-	
90	ANTONY LONI	ME	-	-	
91	ROYA JWOBI	ME	-	-	
92	KWIMAGG MASASI	ME	-	-	
93	SELINA - J. YOSA	KE	-	-	
94	DEBORA-F. DICKSON	KE	-	-	
95	HAMILDO JAPHAT	ME	-	-	
96	EMMANUEL MBIGWA	ME	-	-	
97	HUSSEN BUNDATA	ME	-	-	
98	MEHEW KABUSHI	ME	-	-	
99	TANSI TUSUPIT	KE	-	-	

JINA ICAMILI	Shamba	MADHARA/CHAO	KITONGOSI	SAINI-MAKE
MUTAJUMA SHABANI	KE	NGUMBE	B. Kumu	M. SHABANI
AMINA ABDALA	KE	NGUMBE	B. Kumu	A. ABDALA
102 HADJA JAFARI	KE	NGUMBE	B. Kumu	A. JAFARI
103 SELC OMARI	ME	-1-	MYUNU A	S. OMARI
104 ASHA NASSORO	KE	-1-	B. Kumu	A. NASSORO
105 JOSEPHINE SEIKWAO	K	.	B. Kumu	Dwao
106 SHABANI ABDALA	ME	-1-	B. Kumu	S. ABDAL
107 MOHAMED T. MOHAMED	ME	-1-	B. Kumu	Shing.
108 ASHA JUMA	KE	-1-	MYUNU A	A. J
109 ABDALA AMANI	ME	-1-	MANDALA	A. AMANI
110 MWASHITI SAID	KE	-1-	MYUNU A	M. S.
111 BERTHA MAGEEN	KE	-1-	MYUNU A	M. S.
112 MARIAM HAMISI	KE	-1-	MYUNU A	S. A
113 SAFIA AMIRI	KE	-1-	MYUNU A	S. A
114 LEAH LUISO	KE	-1-	MYUNU A	S. A
115 THUMANI KILO	ME	-1-	MYUNU A	S. A
116 NGATMWANGAI YONA	ME	-1-	MYUNU A	S. A
117 TATU JUMA	KE	-1-	MYUNU A	S. A
118 KILITINGES JOHN	KE	-1-	MYUNU A	S. A
119 MALIAM ZAKARIY	KE	-1-	MYUNU A	S. A
120 RABIA ADAM	KE	-1-	MYUNU A	S. A
121 RAMADHAN NDAW	KE	-1-	MYUNU A	S. A
122 SUNWA NGUMBALU	KE	-1-	MYUNU A	S. A
123 GREGIS YUSUFU	KE	-1-	MYUNU A	S. A
124 OMARI KAMANDA	KE	-1-	MYUNU A	S. A
125 MWASHITI SAID	KE	-1-	MYUNU A	S. A
126 STEFANO MGONDE	KE	-1-	MYUNU A	S. A
127 SOPHA KATOLI	KE	-1-	MYUNU A	S. A

128	MSAFILI WILIDATI	MKUMMA	0782285202	AMU
129	FARIKA ABLOUAH	—	0718-287513	AMU
130	SEFU MKUNDA	—	0788338731	AMU
131	MWANAALAMA ABDU TUMBO	—	0781534760	AMU
132	HAFIMA SIMBA	—	0782291217	AMU
133	SAID LIMBILE	—	0785913334	AMU
134	MWANJA TUMBO	—	0787947481	AMU
135	RASHID-A. RASHID	—	0782-880559	AMU
136	ASHA ALLY	—	0783-394986	AMU
137	KISRAWI SAMWELI	—	0686252312	AMU
138	JUMA SAIDI	—	076449091	H.I.
139	HATIRA JUMA	—	0782044611	S.K.
140	SALUM KISONGELA	—	—	AMU
141	MWASHITI SAIDY	—	0685-595296	M.S. M.K.
142	MWY.S. MLOPI	—	—	A.S.
143	ANDRI DEVIDY	—	—	A.S.
144	ALUFOSWA SAIDY	—	0682366998	A.D.I.
145	DAUDI KIDUM	—	068440210	AMU
146	JOHN MAMERO	—	0772080818	AMU
147	SEFU M. MUKUNDA	—	0689099909	AMU
148	JUMA SAKUMI	—	0787354652	AMU
149	AMINA HANANI	—	0693683108	AMU
150	MWIMBE M. GEORGE	—	—	AMU



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

Na.	JINA KAMILI	CHEO	TAASIS/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
152	SHABANI IDA	Mtunzi	Mtunzi		me		S. IDA
153	MICHAEL SIMONE	-1-1	Mtunzi		me		Mtunzi
154	FRANKI TANKA	-1-1	Mtunzi		me		Mtunzi
156	ABDULHAMANI	-1-1	Mtunzi		me		Mtunzi
156	AZIZ KISIA	-1-1	Mtunzi		me		A. KISIA
157	RAMADHANI ISAM	Mtunzi	Mtunzi		me		R. ISAM
158	SAID ABDEL	Mtunzi	Mtunzi		me		S. ABDEL
159	MUSAY D. MUKA	"	Mtunzi		me		Mtunzi
160	Mtunzi Chaka	"	Mtunzi		me		Mtunzi
161	Mtunzi (G. H. H. H.)	"	Mtunzi		me		Mtunzi



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



FOMU YA MAHUDHURIO

NO.	JINA KAMILI	CHEO	TAASISI/KIKUNDI	NAMBA YA SIMU	ME	KE	SAHIHI
162	Jesura Hossain Mbaraka		Mkuru	0715440921	✓		J. Hossain
163	Faidha Salimu Kikoloma		Mkurui	0693922491		✓	F. Salimu
164	Musamun Kell Mkuulima		Kavumu	0117-711916		✓	M. Kell
165	Lazaro Semphema Mkuulima		Mwama	0697934528	✓		L. Semphema
166	Mohamed D.K. Mbaraka	Mkulima	Mwama	0653324081	✓		M. D.K.
167	Jothu Mbaraka		Mwama	0788392055	✓		J. Mbaraka
168	Mahiki Simwani			078956340	✓		M. Simwani
169	Mukeshi			06827951607	✓		M. K.
170	Salim Laimu			0698495882	✓		S. Laimu
171	Salim Mbaraka			0688642842	✓		S. Mbaraka

HALMASHAURI YA WLAYA YA KILOSA

OFISI YA MTENDAJI WA KISIJI

KISIJI CHA MVUMI

SLP 173

MVUMI - KILOSA

5/05/2025

MICHUNGENI

BODI YA MAST

BONDE LA WATU RVU

SLP 826

MOROGORO

WAH-KUSIA ARDHI KWA HAYARI KWA AGILI YA KIJENZI
BIRIKA LA KUNYWESHEA MIFUHO KATIKA KISIJI CHA
MVUMI:

Rejea na somo hili la kopo juu.
Nathubiti cho lawa arathi hipo imetolewa kwa
hiyad kwadji ya matumizi yaliyo bwa kopo juu
pamoja na barua hii naembata wote na jamaa
wote jazwa na viongozi husika kopo kajihi

were ~~THE~~ nest

GODRICK E. ERWET

JEISA MTENDAJI KISIJI
MVUMI



JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA MAJI
BODI YA MAJI BONDE LA WAMI/RUVU



Kumb. Na. CD.51/317/01/02

05/05/2025

Mkurugenzi Mtendaji,
Halmashauri ya Wilaya
S. L. P 65,
KILOSA.

**YAH: FOMU YA UCHANGIAJI ARDHI KWA HIARI KWA AJILI YA UCHIMBAJI
WA KISIMA NA UJENZI WA BIRIKA LA KUNYWESHEA NG'OMBE MAJI**

Tafadhali husika na mada ya hapo juu.

2. Bodi ya Maji Bonde la Wami/Ruvu iko katika hatua za kufanya tathmini ya athari kwa mazingira kwa Mradi wa Ustahimilivu wa Mabadiliko ya Tabianchi katika Kidakio cha Mkondoa utakaofadhiliwa na Benki ya Maendeleo ya Afrika (AfDB). Mradi huo unatarajiwa kutekelezwa katika Halmashauri ya Mvomero, Gairo na Kilosa ambapo kwa Kilosa kazi zitakazofanyika ni Ujenzi wa sehemu ya kingo za mito ya Myombo, Mkondoa, Mkundi na Kisangata sambamba na uchimbaji wa Kisima na ujenzi wa Birika la kunyweshea maji mifugo katika Kijiji cha Mvumi.

Kwa kazi ya uchimbaji kisima na Ujenzi wa Birika, hitaji muhimu ni ardhi itakayotolewa kwa hiari pasipo fidia katika Kijiji cha Mvumi palipokusudiwa ujenzi huo kufanyika. Hata hivyo kwa kushirikiana na Ofisi yako ulitupa idhini ya kwenda Mvumi kuanza taratibu za kutafuta ardhi hiyo. Kwa Barua hii nakutaarifu Kijiji kimeria kutoa sehemu ya ardhi iliyotengwa kwa matumizi ya malisho kwa ajili ya ujenzi wa mradi, ambapo kuliitishwa kikao cha wananchi ambao kwa pamoja waliridhia kutoa ardhi hiyo.

3. Aidha Kijiji kupitia wawakilishi wake walijaza fomu iliyoandaliwa na Mfadhili (AfDB) ambayo itakua ni uthibitisho wa utoaji huo wa ardhi ya Kijiji kwa hiari. Bodi inaleta kwako fomu hiyo kwa hatua zaidi ikizingatia ni sehemu ya nyaraka muhimu kukamilisha Tathmini ya Athari ya Mazingira na hatimaye kupata cheti

30 Machingi Road S.L.P. 828, Morogoro
Simu (BURE): 0800114031 / 0800114032
Tovuti: www.wrbwb.go.tz | BaruaPepe: barua@wrbwb.go.tz

Ofisi Ndogo – Dar es Salaam
S.L.P. 8153 DSM | Ubungo-Maji: 426 Morogoro Road
BaruaPepe: ccast@wrbwb.go.tz

Ofisi Ndogo – Dodoma
Maji Yard P.O. BOX 458 Dodoma
BaruaPepe: wami@wrbwb.go.tz

kitakawasilishwa kwa Mfadhili aweze kutoa fedha kwa ajili ya utekelezaji wa Mradi huo.

Natanguliza shukrani za dhati,



Mha. Abdallah Mshana

K.n.y MKURUGENZI

Nakala:

Katibu Tawala (W),
S.L.P 9,
KILOSA.

30 Mazimbu Road S.L.P. 826, Morogoro
Simu (BURE): 0800114031 / 0800114032
Tovuti: www.wtrwb.go.tz | BaruaPepe: barua@wtrwb.go.tz

Ofisi Ndogo – Dar es Salaam
S.L.P. 9153 DSM | Ubungo-Maji, 426 Morogoro Road
BaruaPepe: coast@wtrwb.go.tz

Ofisi Ndogo – Dodoma
Maji Yard, P.O. BOX. 456 Dodoma
BaruaPepe: wami@wtrwb.go.tz

Appendix X: Land donation and letter of consent for Makuyu (Gairo) Cattle Trough Site

A-3. Muhtasari wa Idhini kwa Ajili ya Jamii/ Familia/ Wenye Umiliki wa Pamoja Waliotoa Ardhi Yao kwa Hiyari⁷

Mimi, Bw./Bibi ALEX LAMECK CHUBUNGA anileweka saina yangu hapa chini, mwakilishi wa jamii/familia/umiliki wa pamoja [taja jina la jamii/familia/mwenye umiliki wa pamoja] KIJISI CHA MAKUYU ninakiri kuwa nimechangia ardhi/jengo lenye ukubwa wa mita za mraba linalopatikana katika majira nukta (.....) lililopo katika Kijiji cha MAKUYU, Manispaa ya MOROGORO Wilaya ya GAIRO katika Mkoa wa Morogoro litumike kwa ajili ya ujenzi wa ikiwa ni sehemu ya Mradi wa Kuimarisha Ustahimilivu wa Rasilimali za Maji katika Kukabiliana na Mabadiliko ya Tabia Nchi katika Kidakio cha Mkondoa unaofadhiliwa na Benki ya Maendeleo ya Afrika (AfDB) katika Jamhuri ya Muungano wa Tanzania.

Jamii/familia/wenye umiliki wa pamoja wanachangia ardhi/jengo hili kwa hiyari bila malipo yoyote, wakiwa na uelewa, na bila ya kulazimishwa, kushurutishwa au kutishwa, hata baada ya kujulishwa kikamilifu juu ya haki yao ya kulipwa fidia kabla ya utwaji wa ardhi/jengo hili kwa ajili ya matumizi ya umma.

Ni kwa hiyari na kwa idhini ya wachangiaji na wanufaika wao na wategemezi wao (mke/mume/watoto/kaka/dada n.k) kwamba jamii/familia/wenye umiliki wa pamoja wameamua kufanya uchangiaji huu kwa hiari yao na kuthibitisha kuwa hakuna mmoja kati yao atakayekuja kudai umiliki wa eneo/jengo lililotolewa. Hivyo basi, jamii/familia/wenye umiliki wa pamoja wanafuta kabisa haki yao na ya wategemezi wao ya umiliki wa eneo/jengo hili.

Mimi, niliyetia saina hapa chini, ninathibitisha kuwa uchangiaji huu hautaathiri maisha ya Mchangiaji yeyote kutoka Jamii/Familia/Wenye Umiliki wa Pamoja au ya wanufaika au wategemezi wao, kwa muda wa sasa na hata baadae. Nimeamua kwa uwazi kuchangia ardhi/jengo hili kwa manufaa ya wanajamii wa MAKUYU ili litumike kwa ajili ya ujenzi wa miundombinu iliyotajwa hapo juu⁸. Kwa hiyo, ardhi/jengo nililotoa haliwezi kwa namna nyingine yoyote ile kutumika kwa dhumuni jingine, wala kuhamishwa, wala kupangiwa matumizi mengine. Hivyo basi, uchangiaji huu utakuwa batili ikiwa dhumuni la utoaji wa ardhi/jengo hautatekelezwa ndani ya muda uliobainishwa kuwa muda wa mradi.

KWA KUSHUHUDIA, taarifa hii imeandaliwa na kusainiwa ili itumike na iwe halali kwa namna ilivyoelezwa hapo juu.

Imetolewa hapa MAKUYU tarehe 26/04/2025

⁷ Kila mwakilishi atatakiwa kuwa na nyaraka inayompa mamlaka kisheria nan akala yake itaambatiwa kwenye nyaraka hizi.

⁸ Baada ya kukamilika kwa usindikaji wa miundombinu tarajiwa, ardhi itasajiliwa kwa jina la jamii nufaika.

AFISA MTENDAJI KUTANI,
KISINI CHA MACHUZA
KATA YA ITALABE

SLP 40

GATRE

26-04-2025

MURUGENZI,
BODI YA MASHI,
BONDE LA NAMI RUVA
SLP 826
MOROGORO.

YAH: KUTOA ARABH KWA HARI KWA AJILI YA MIZI NA BIRIKA
LA KUNYWAISHA MAFUGO-KATIKA KISINI CHA MACHUZA.

Husika na kila mteja kila mteja
Napenda kukutumbia kutititisha na kuton ardhini liyo ya
kijiji cha machuza kuu ya mteja ya mteja ya mteja
jam. Na ardhini liyo itakunika kuu kubwa liyo tu.
pamoja na kama hii wamekutisha na form gilegile
na kufaninika

Handwritten signature
AFISA MTENDAJI KUTANI
MACHUZA

Jina na Saini ya Mwakilishi wa Jamii/Familia Wenye Umiliki wa Pamoja:

ALEX LAMEUK CHIDUNGA

[Signature]

WENYEKITI WA SERIKALI YA KIJU
MAKUYU

Mashahidi*

1. Jina na saini: (ikifuatiwa na maneno "Nimesoma na Nimeidhinisha") BENNY L. LUKWANA *[Signature]*
NIMESOMA NA NIMEIDHINISHA
2. Jina na saini: (ikifuatiwa na maneno "Nimesoma na Nimeidhinisha") ISAAC LILUWA *[Signature]*
NIMESOMA NA NIMEIDHINISHA
3. Jina na saini: (ikifuatiwa na maneno "Nimesoma na Nimeidhinisha") BENNY L. LUKWANA *[Signature]*
NIMESOMA NA NIMEIDHINISHA

Wakala wa mnufaika (Mwakilishi wa Kisheria)

Jina na saini: (ikifuatiwa na maneno "Nimesoma na Nimeidhinisha")

[Signature]
SALAMA MANGARA

IMETHIBITISHWA NA:

MTENDAJI WA KIJU CHA MAKUYU

JINA NA SAINI: JOHN DANIEL MAMBO *[Signature]*

TAREHE: 26-04-2026 AFISA MTENDAJI KIJU
MAKUYU

MKURUGENZI WA HALMASHAURI YA

[Signature] GAIRU

JINA NA SAINI: THERESA I. NSUMBA *[Signature]*

TAREHE: 28/4/2025

MKURUGENZI MTENDAJI
HALMASHAURI YA WILAYA YA GAIRU
S. L. P. 40,
GAIRU

* Kila shahidi atakuwa mwenye umri unaorubusiwa kisheria na mwenye haki zote kisheria kama ruia na awe ni mmoja wa wanajamii au familia au wenye umiliki wa pamoja.

Appendix XI: Technical Reconnaissance Hydrogeological and Geophysical Investigation Report

**THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF WATER
WAMI/RUVU BASIN WATER BOARD**



04th April, 2025

**TECHNICAL RECONNAISSANCE HYDROGEOLOGICAL
AND GEOPHYSICAL INVESTIGATION REPORT FOR -
MKONDOA SUB-CATCHMENT**

AREAS LOCATED IN KILOSA, GAIRO AND MVOMERO DISTRICTS
- MOROGORO REGION.



Prepared and reported by:

Groundwater Schedule

Wami/Ruvu Basin Water Board

P.O Box 826

Morogoro.

EXECUTIVE SUMMARY

The Wami/Ruvu Basin Water Board (WRBWB), with funding from the African Development Bank, is implementing a climate change adaptation project aimed at safeguarding water sources within the Mkondoa Sub-catchment. Among the various components of this project is the construction of four cattle troughs in the villages of Mvumi-Kilosa, Makuyu-Gairo, Makuyu-Mvomero, and Matale-Mvomero. This initiative aims to prevent cattle from directly accessing rivers and streams, thereby mitigating environmental degradation such as stream bank erosion, increased sedimentation, nutrient loading, and microbial contamination, all of which adversely affect water quality and aquatic ecosystems.

To ensure a sustainable water supply for these cattle troughs, reconnaissance groundwater surveys were conducted to assess the feasibility of accessing underground water resources in the designated areas. The preliminary investigations involved geological assessments, hydrogeological surveys, and geophysical surveys utilizing the PQWT-S300 Water Detector. This instrument operates based on the natural electromagnetic field frequency selection method, detecting variations in underground electromagnetic properties to delineate geological structures and potential aquifers. The PQWT-S300 provides real-time 2D profiles of subsurface layers, facilitating the identification of water-bearing formations.

Initial findings from these surveys indicate a promising potential for groundwater extraction across all four villages. However, to validate these results and determine the actual yield and quality of the water, exploratory drilling is recommended at each site. This phase will provide essential data to determine the best locations and construction methods for the cattle troughs, ensuring their durability and supporting the project's goal of improving water resource resilience against climate change.

It is recommended to use the Air Rotary Drilling method for drilling, as it is well-suited for the site conditions and ensures efficient borehole development. Before commencing the work, all provided recommendations and guidelines should be thoroughly reviewed and incorporated to ensure successful and safe execution.

Summary results of the sites

Village	Profile No.	Point No.	Site No.	Coordinates (Datum WGS 84)		Elevation (m)	Depth (m)	Remarks
				Latitude	Longitude			
Mvumi-Kilosa	1	1	6	-6.572694	37.156274	429	130	2 nd Choice
		2	15	-6.573031	37.156068	433	130	1st Choice
Makuyu-Gairo	2	1	2	-6.032352	37.186487	961	150	1st choice
		2	6	-6.032628	37.186467	961	150	2 nd choice
Matale-Mvomero	3	1	2	-6.208723	37.337472	665	150	2 nd Choice
		2	18	-6.208962	37.336941	665	150	1st Choice
Makuyu-mvomero	4	1	3	-6.309898	37.354286	486	150	2nd Choice
		2	4	-6.309941	37.354109	484	150	1 st Choice

Appendix XII: Soil Test Report for the Proposed River Dykes at Kilosa and Mvomero District

WATER INSTITUTE



**SOIL TEST REPORT FOR THE PROPOSED RIVER DYKES AT
KILOSA AND MVOMERO DISTRICT**

**Client: WITEK COMPANY LTD
DAR ES SALAAM**

**PREPARED BY:
WATER INSTITUTE (WI)
P.O.BOX 35059
DAR ES SALAAM**

June 2023

8.0 Kisangata Dyke

8.1 Atterberg Limits test

The Liquid Limit (L.L) is ranging from 0 to 31.64% and Plasticity Index (P.I) is ranging from 0 to 29.05%.

These results indicate that the soil is of non-to low plasticity (refer fig. 1 below).

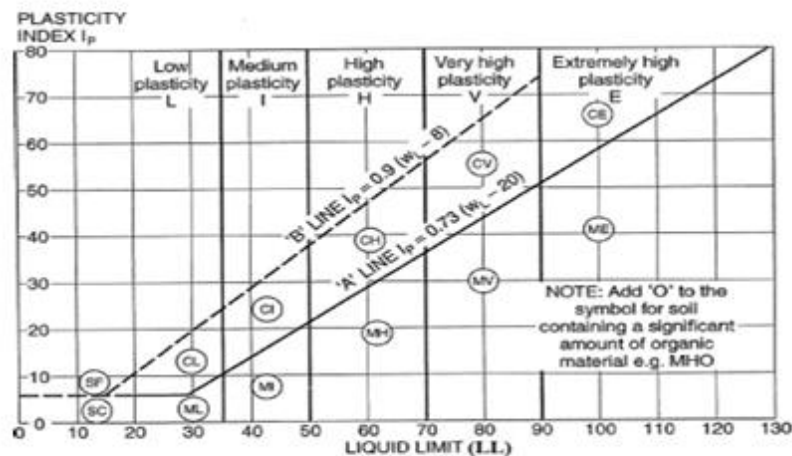


Fig. 1 Plasticity Chart

8.2 Free swell test

The free swell values for the soil samples are between 5.50 to 40.05%. All the free swell values are less than 50 %, this indicates that the soil from Mkundi dyke site have low swelling property which is non-critical (refer table 3) below.

Table 3 Free swell Index values (Mohan, Goel (1959) and Phanikumar (2006))

>200	Very high	Severe
100 - 200	High	Critical
50 - 100	Medium	Marginal
<50	Low	Non - critical

8.3 Linear shrinkage test

The Linear shrinkage values for the soil ranges between 0.68 to 7.11%. All the values are between 0 - 12 %, this indicates that the soil from Mkundi dyke have low shrinking property which is non- critical (refer table 4) below.

Table 4 Ranges of linear shrinkage and their expansive characteristics (Public works department (1977) Mills at el (1960) Hicks (2007)

Category	Linear shrinkage	Expensive
Low	0 – 12	Non-critical
Medium	12 – 17	Marginal
High	17 – 22	Critical
Very high	>22	Very critical

9.0 Mkondoa new dyke

9.1 Atterberg Limits test

The Liquid Limit (L.L) is 0 and Plasticity Index (P.I) is 0. These results indicates that the soil from Diwale Mkondoa is of non-plasticity (refer Fig. 1 above).

9.2 Free swell test

The free swell values for the soil samples are between 2.05 to 10.10%. All the free swell values are less than 50 %, this indicates that the soil from Mkondoa new dyke have low swelling property which is non-critical (refer table 3 above).

9.3 Linear shrinkage test

The Linear shrinkage values for the soil ranges between 0.68 to 0.82%. All the values are between 0 - 12 %, this indicates that the soil from Test pits Mkondoa new dyke have low shrinking property which is non-critical (refer table 4) above.

12.0 Conclusion

- i. Soil samples from Mkundi dyke, Diwale Magole-Mvomero, Kilosa DC-Kisangata-Mvumi at Godown and Mkondoa Rehabilitation Dyke site, and Mkondoa New Dyke are dominated with gravel silt SAND of non-to medium plasticity except soils from.
- ii. The soil swelling and shrinking property is low to medium, which is marginal.
- iii. The soil samples from Mkundi and Mkondoa borrow areas have coefficient of permeability ranging of 1.16×10^{-4} and 9.3×10^{-7} cm/sec respectively which is classified as poorly drained soils.

12.1 Recommendations.

- iv. The soil materials should be compacted with provided Maximum Dry Density (MDD) and Optimum Moisture Content (OMC) for the soil to achieve 96% to 100% Compaction
- v. The soil samples from Kisangata, Mkundi and Mkondoa borrow areas are suitable for construction of inner core trench as well as embankments.
- vi. The foundations for dykes is recommended to be excavated to the bed rock/impermeable layer to avoid future scour around dyke footings
- vii. The formation level before embankment filling should be compacted well to create good and strong foundation for the embankment.
- viii. The upstream slope is recommended to be protected from wave/water erosion by masonry structures
- ix. The filling and compaction works should be supervised by experienced Technician/Engineer in earth fill dams construction and soils so that he/she can identify the best materials (regarding the attached test results) as recommended by the laboratory experts.

Appendix XIII: Memorandum of Understanding (MoU) between WRBWB and TMA

THE UNITED REPUBLIC OF TANZANIA



**MEMORANDUM OF UNDERSTANDING
BETWEEN
MINISTRY OF WATER
AND
TANZANIA METEOROLOGICAL AUTHORITY
FOR**

**ENHANCING COLLABORATION IN THE MANAGEMENT AND OPERATIONS OF
METEOROLOGICAL STATIONS AND DATA SHARING**

OCTOBER 2022

List of abbreviations

MoU	Memorandum of Understanding
MoW	Ministry of Water
WMO	World Meteorological Organization
BWBs	Basin Water Boards
TMA	Tanzania Meteorological Authority
ODSS	Operational Decision Support System

THIS MEMORANDUM OF UNDERSTANDING is made this 20th day of October, 2022

BETWEEN

THE MINISTRY OF WATER (hereinafter referred to as "MoW"), with the Address Government City, Maji Street, P. O. Box 456 Dodoma, Tanzania of one part;

AND

TANZANIA METEOROLOGICAL AUTHORITY a government institution established by TMA ACT No 2 of 2019, P.O Box 27 Dodoma (hereinafter referred to as ("TMA")) on the other part;

WHEREAS;

1. In recognition of the importance of having real time data and weather forecast for improved hydrological and meteorological services, early warning and an Operational Decision Support System, the need for exchange of scientific resources (including data), personnel and technical knowledge is imperative. It is on this ground the Ministry of Water and Tanzania Meteorological Authority have developed a Memorandum of Understanding on the basis of mutual benefit to support the improvement and development of Meteorological and Hydrological Services for the country.
2. The Ministry of Water is responsible for National Water Resources Management including management of National Water Resources Database, Development of Guidelines and Standards for Acquisition and Management of Hydrological, Hydro-Geological and Hydro-Meteorological Data. Provide technical support and supervise the operations of the Basin Water Boards in their water resources monitoring, assessment, development and management functions, dissemination of hydrology and hydro-meteorological data and information including hydrological forecasts to other

government institutions and the public at large, conduct research in different areas of water resources including climate change and variability and its effect in water resources. Provide hydrological drought, floods forecasting, and early warning and to undertake related assessments responsible for National Hydrological Services and is represented in WMO as a National Focal Point for that purpose.

Tanzania Meteorological Authority is established through Act No. 2 of 2019 (CAP.157) to make better provisions for management, control, provision, coordination and regulation of meteorological services in the United Republic of Tanzania. The functions of Authority are stipulated in Section 5 of the Act. Collaboration of TMA with other hydrological services providers including MoW are reflected in Regulation 13 of the TMA (Meteorological Services for Agriculture, Climatology, Research, Environment and Hydrology) Regulations, 2021 (GN No 597); TMA (Meteorological Stations) Regulations, 2021 (GN No. 595); TMA (Meteorological Equipment and Instruments) Regulations, 2021 (GN No. 598).

NOW THEREFORE: It is hereby agreed by Parties to execute this MoU the terms of which are outlined as follows;

PARAGRAPH I OBJECTIVES

The objective of this Memorandum of Understanding (hereinafter referred to as the "MoU") shall be to strengthen the existing collaboration between the Parties in the improvement and development of Meteorological and Hydrological services in the country.

PARAGRAPH II RESPONSIBILITIES OF THE PARTIES

Responsibilities of the Parties shall be as follows;

1. Participate in management and coordination of the activities under this MoU
2. Appointment of focal persons for each Party to coordinate the activities under this MoU

PARAGRAPH III

INSTALLATION OF METEOROLOGICAL EQUIPMENT AND INSTRUMENTS

1. TMA will provide technical support upon request, in terms of training and other meteorological services for the MoW experts in installation and management of hydrometeorological instruments and equipment in water basins.
2. Costs for provision of technical support shall be covered by MoW.

PARAGRAPH IV

OPERATION AND MAINTENANCE OF HYDRO-METEOROLOGICAL STATIONS

1. Upon request TMA will provide specialized training to MoW experts including meteorological observers; for operation and maintenance of meteorological equipment and instruments in her possession.
2. The Parties will collaborate to ensure that rehabilitation and expansion of the network of Hydro-meteorological observations in all Basins is properly conducted for hydrological and meteorological forecasting purposes.

PARAGRAPH V

OPERATION AND MAINTENANCE OF DECISION SUPPORT SYSTEM

1. In recognition of the importance of having catchment based meteorological data and weather forecast for improved hydrological flood forecasting and early warning, TMA will provide system to system integrated data access for the ODSS and other related hydrological systems.
2. Upon request, TMA will issue user specific and catchment based weather and climatic data and forecast products for hydrological forecasts to facilitate hydrological early warning.
3. Upon request TMA, may second staff to be based at the MoW to facilitate MoW and TMA linked activities including the ODSS.

PARAGRAPH VI
DATA EXCHANGE AND SHARING

Data exchange and sharing will be consistent with TMA Act No. 2 of 2019 in accordance with the standard to be agreed.

PARAGRAPH VII
**SCIENTIFIC RESEARCH IN FLOOD AND DROUGHT FORECASTING, MODEL
DEVELOPMENT AND OTHER AREAS OF INTEREST**

1. The Parties will collaborate in scientific research including flood and drought forecasting, modeling and other areas of common interest like climate change and variability.
2. In the implementation of the responsibilities in (1) above the Parties will whenever deemed necessary:
 - i. Develop and implement joint proposals for research
 - ii. Collaborate in fund raising or seek for funders of research and development activities.
3. Other areas of interest such as Early Warning System, Urban Floods, and Integrated Flood Management issue may be identified and pursued jointly.

PARAGRAPH VIII
**INVOLVEMENT IN LOCAL AND INTERNATIONAL ORGANIZATIONS'
EVENTS**

1. TMA through the Permanent Representative (PR) with WMO will avail to the MoW information about hydrological issues and events organized by WMO Governing Commissions. MoW is responsible for National Hydrological Services in the country.
2. Parties will inform each other on local and international events and share reports on the outcome of the events as a way of knowledge sharing and technology advancement.

SIGNED FOR THE TANZANIA METEOROLOGICAL AUTHORITY		In the presence of	
Name: DR LAURENCE W. W. W.		Name: DR. LAURENCE W. W. W.	
Signature: [Signature]		Signature: [Signature]	
Date: 19/10/2012		Date: 19/10/2012	
Designation: Director General		Designation: [Signature]	

PARAGRAPH XIV

NOTICE

Any notice given by one Party to the other pursuant to this MoU shall be in writing, addressed and sent to the other Party.

PARAGRAPH XV

COMPLIANCE

The Parties will execute this MoU with the compliance of Laws of Tanzania..

PARAGRAPH XVI

COMMUNICATION

Communication details for the Parties to easy notification during execution of this MoU will be:
MINISTRY OF WATER of Government City, Maji Street, P.O Box 456, 40473 Dodoma and
email address ps@maji.go.tz

TANZANIA METEOROLOGICAL AUTHORITY

P.O Box 27 Dodoma and email address met@meteo.go.tz

IN WITNESS WHEREOF the Parties have caused this Memorandum of Understanding to be signed into two original copies by their authorized representatives this day of 19th October, 2022.

SIGNED FOR THE MINISTRY OF WATER	In the presence of
Name: <u>NADHIFA S. KEMIKIMBA</u>	Name: <u>Dr. George V. Lugomela</u>
Signature: <u>[Signature]</u>	Signature: <u>[Signature]</u>
Date: <u>20th OCTOBER 2022</u>	Date: <u>20th October, 2022</u>
Designation: <u>PERMANENT SECRETARY</u>	Designation: <u>Director of Water Resources</u>

PERMANENT SECRETARY
MINISTRY OF WATER

7

[Signature]

[Signature]

Appendix XIV: Emergency Preparedness and Response Plan (EPRP)

1. Introduction

This Emergency Preparedness and Response Plan (EPRP) outlines the actions to be taken in the event of potential emergencies during the implementation of the Mkondoa Catchment Restoration Project. It aims to minimize risks to human life, property, and the environment across the various project sites in Kilosa, Gairo, and Mvomero Districts.

A. EMERGENCY SCENARIOS, EQUIPMENT, RESPONSIBLE PERSONNEL, AND PROCEDURES

No.	Emergency Scenario	Equipment/Resources Needed	Responsible Personnel	Procedures to Follow
1.	Flash floods	Warning sirens, portable radios, life jackets, ropes, first aid kits, standby vehicles	Site Supervisor, Environmental Officer	<ul style="list-style-type: none">▪ All operations should be ceased immediately.▪ Flood warning sirens should be activated.▪ Personnel should move to the designated Emergency Assembly Point.▪ All personnel should be accounted for.▪ The District Disaster Management Office should be notified.
2.	Equipment failure	Repair tools, fire extinguishers, spare parts, emergency shutoff switches	Plant Operator, Mechanical Technician	<ul style="list-style-type: none">▪ Shut down faulty equipment safely.▪ Evacuate the immediate area if necessary.▪ Isolate equipment and inform the Plant Operator and Technician.▪ Arrange on-site repairs or safe removal.
3.	Worker injury/accident	First aid kits, stretcher, emergency vehicle, PPE	Safety Officer, Site First Aider	<ul style="list-style-type: none">▪ Provide immediate first aid.▪ Contact nearest health facility.▪ Transport injured worker using designated vehicle.▪ Report incident to Project Manager and document it.
4.	Fire outbreak	Fire extinguishers, water tanks, sand buckets	Safety Officer, Equipment Yard Supervisor	<ul style="list-style-type: none">▪ Raise alarm and alert all site personnel.▪ Use appropriate fire extinguisher/sand to control minor fires.▪ Evacuate personnel to the Emergency Assembly Point if uncontrolled.▪ Call local fire services if needed.
5.	Snake/wildlife	First aid kits, anti-venom (if available),	Safety Officer, Site First	<ul style="list-style-type: none">▪ Move the victim away from danger.▪ Provide first aid (pressure

No.	Emergency Scenario	Equipment/Resources Needed	Responsible Personnel	Procedures to Follow
	bites	transport vehicle	Aider	immobilization for snake bites). ▪ Transport victim to the nearest health facility immediately. ▪ Report incident to the Safety Officer.

B. TRAINING REQUIREMENTS

Emergency Scenario	Training Required
Flash floods	Flood evacuation drills, use of sirens and emergency communication
Equipment failure	Equipment handling, emergency shutdown drills
Worker injury/accident	First aid, PPE use, incident reporting
Fire outbreak	Firefighting equipment use, fire drills
Snake/wildlife bites	Bite management, use of first aid kits

C. EMERGENCY ASSEMBLY POINT USE

Each site shall establish a clearly marked Emergency Assembly Point, whose purposes include:

- Safe gathering area during emergencies.
- Headcount and personnel accountability location.
- First aid administration site.
- Briefing point for emergency services.
- Holding area before evacuation.

Features at Assembly Points:

- Visible signage and flags.
- Accessible route markers.
- Contact directory posted.
- Emergency supplies (water, first aid kit).

D. EMERGENCY CONTACT DIRECTORY

Each site shall provide contacts for the Project Manager, site supervisors, environmental officer, district fire brigade, and district health officer, along with their names.

E. SITE LAYOUT DESCRIPTION (Assembly Points)

At each project site:

- The Emergency Assembly Point shall be located at least 50 meters from high-risk zones (riverbanks, dykes, heavy equipment operation areas).
- Marked with reflective signage and a flag.
- Accessible via a clear, maintained route.
- Display Emergency Contact Directory and evacuation route map.
- Equipped with basic emergency items: water, first aid kit, whistle/siren.