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## Non-Technical Executive Summary for Environmental and Social Impacts Assessment for the Proposed Construction of Sewerage System in Bukoba Municipality in Kagera Region



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## **A: Title and Location of the Project**

Proposed Construction of a Sewerage system in Bukoba Municipality in Kagera Region

## **B: Name and Contact of the Proponent**

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## **1. Brief Description of the Proposed Project**

The proposed sewerage system will be constructed in Bukoba Central Business District (CBD) within the boundaries of Bukoba Municipality in Kagera Region, on the western side of Lake Victoria. Bukoba Municipality is not only the administrative and commercial capital of Bukoba district and Kagera region as a whole, but is also a “gateway” linking a town to Great Lakes countries of Uganda, Kenya, Rwanda and Burundi by virtue of its strategic location. It is bordered by Lake Victoria on the east and Bukoba District on the south, west and north.

The proposed sewerage system project in Bukoba municipality will be comprised of the house connections collecting wastewater from individual houses to the collector lines then to trunk mains draining to the pumping station. From the pumping station, the wastewater will be lifted through the pressure mains to the waste stabilization ponds to be located at Kifungu Peninsular.

This first stage will involve mobilization of the construction human resource, construction equipment and plant and construction materials. Also, as required, the Contractor will hire labour and erect necessary temporary facilities to cater for offices and storage yards within the construction site. Mobilization phase will also involve purchase and stockpiling of the materials such as aggregates, sand, cement, timber and reinforcing steel. Other construction equipment such as scaffolding, sheet pile driving equipment, crane, will be mobilised to the site of works as need arises.

The construction phase will involve;

- setting out to demarcate rights of way, work areas, clearing limits. Access roads, detours, bypasses and protective fences,
- sites preparation

- Excavation of trenches in case of sewer lines and excavation of foundations in case of pumping stations and operators house.
- Trench sheeting and bracing to protect trench side walls. Bukoba municipality in general has a high water table, therefore dewatering during sewer construction is indeed expected. The environmental concern of such waters with high content of sediments will need to be observed
- Concreting bases of foundations
- Laying of sanitary sewers
- Backfilling, disposal of overburden and surface restoration to at least match the condition that existed prior to the sanitary sewer construction

Once the substructures of pumping stations and operators houses are completed, works for the superstructures will start with walls up to roofing stage, installation of services including water, wastewater and electricity reticulation and finally finishing ready for handing over the pumping station.

Contractors' demobilization phase will involve clearing all the site activities in terms of tidying up of all sites facilities and demobilization of all construction equipment. Upon completion of contractor's obligations, the structures will be handed over to the Project Proponent BUWASA for the operation phase.

During operation, the sewerage system comprising of sanitary sewer, rising main and waste stabilization ponds will start its intended activity of collecting, conveying and treating the wastewater. The treated wastewater meeting the required discharge permits will drain in the lake through the outfall. At the waste stabilization pond there will be sludge drying beds to receive sludge from the ponds and the sedimentation or thickening ponds.

## **2. Project Stakeholders and their involvement in EIA process.**

Public Participation in the initial stages of the project is of great importance particularly from the initial stages of the project to the final stages of the project. The Consultant conducted the public participation for the proposed project to involve as many potential Interested and Affected Parties as possible. Accordingly, issues arising from this public participation process were incorporated in the report and used in determining mitigation measures for the project.

The consultants identified organization, groups and individuals considered to be regarded as "stakeholders". This identification was based on each ones roles and their relevance in the proposed sewerage system development project in Bukoba Central Business District. Some of the stakeholders such as government authorities, municipality/district level, wards and sub-ward level that might be impacted by or have interest in the project or exercise some influence on the project were predetermined. Comments/Concerns drawn from Public Meeting and corresponding response from the consultants have been presented in the main report.

## **3. Policies, administrative structures and legal framework**

National policies, legislations, administrative structures, international treaties and conventions relevant to the environment in relation to the project were collected and reviewed. Other Acts for professional conduct were also considered to make sure that such important aspects do not slip unnoticed. Administratively, the institutional and legal framework for environmental management is comprised of the National Environmental Advisory Committee, the Minister for Environment, Director of Environment, National Environment Management Council (NEMC), Sector Ministries, Regional Secretariat and Local Government Authorities.

It is important to note that the project also triggers the World Bank environmental safeguard policies, which has keen interest in protection of the environment; therefore the project has to be in line with these safeguards policies for sustainable development. An analysis of different policies, administrative and legal frameworks and relevant international treaties and conventions and safeguard policies of the World Bank as they apply to this project were discussed.

#### **4. Stakeholders consulted and results of public consultation.**

##### **Stakeholder's identification and consultation**

Key stakeholders were directly informed of the proposed sewerage system through physical visits in their respective areas. These offices included; Regional Manager-TANROADS, Regional Manager-NHC KAGERA, Acting Municipal Managing Director, Municipal Planner, Environmental Consultant Bukoba Municipal Council, Natural Resource Officer, Sub-Basin Water Officer, Municipal Health Officer, Municipal Engineer, Laboratory Manager, Municipal Environmental Officer

Also surrounding communities were sensitized to participate in the process through consultation meetings which were communicated to the respective communities through their Sub-wards Executive Officers. Among other important issues, the stakeholders required the project to be implemented as early as possible in view of expected benefits and the problems they have been facing in disposal of wastewater. They also demanded the road to the project site at Kifungu wastewater treatment plant and employment opportunities for the local people in the area.

##### **Explanation on why some impacts are not addressed**

The major impact of the project will be resettlement of some of the people in the project areas. The identification of properties to be affected was waiting for the final design of the project and as of now identification has started followed by valuation of the properties. Therefore in this report, summary of compensation has not been included as the exercise has just started.

#### **5. Identification and Description of the major significant impacts**

##### **Pre-construction, Planning and Design Phase**

##### **Negative Impacts**

- Vegetation loss through clearance
- Temporary obstruction of access roads by topographic survey and geotechnical investigation teams.
- Soil Erosion – during geotechnical investigation soils will remain bare and in some areas the soils will become loose due to pits digging to facilitate geotechnical investigations.
- Increase in motor vehicles in the area to facilitate topographic survey and geotechnical investigation
- Noise from geotechnical investigation equipment- hydraulic augers
- Noise from transport of equipment to proposed project site.
- Likely motor accidents with pedestrians from higher speeds by drivers of the topographic and geotechnical investigation teams and transportation of construction equipment.

##### **Mobilization Phase**

- Vegetation clearance
- Disturbances to historical and archaeological finds during site clearance
- Deterioration of original land use, scenic and visual quality

- Resettlement and Disturbance to some of the Residents particularly at the area for waste stabilization ponds

### **Construction Phase**

- Disturbances, particularly land scarring at borrow sites or sources of construction materials
- Nuisance from noise and vibration during construction ,
- Soil Erosion
- Increase in traffic levels to the surrounding area
- Contamination of water from leakages of fuels and lubricants from construction equipment
- Poor air quality from dust and emissions around the construction site and material hauling routes
- Possible injuries to neighbours from falling into trenches and open pits for inspection chambers and pumping stations.
- Generation of construction solid and liquid wastes
- Socio-economic Impacts
- Spread of diseases (HIV/AIDs, STIs or STDs) among members involved in construction
- Injuries as the result of poor safety of employees and neighbours during construction
- Injuries to workmen due to poor safety at work place
- Generation of construction solid and liquid wastes

### **Demobilization Phase of Construction Activities**

- Generation of demobilization wastes

### **Operation Phase**

- Poor safety of employees and neighbours from overflowing sewage in the streets
- Pollution to the nearby water sources-Lake Victoria

### **Positive impacts of the proposed project**

- Improved quality of health from proper management of faecal matter that would otherwise be dumped haphazardly and drain into rivers where others may become in contact.
- Improved water quality in rivers and subsequent reservoir downstream- Lake Victoria
- Increased fish catch from depleted nutrients which support the growth of water hyacinth and algae. The growth of the two plants has the tendency of depleting light and oxygen, respectively in the water bodies detrimental to the life of fish and other aquatic life.
- Employment and trading opportunities will be direct benefits to the neighbouring communities during the construction and operation phase of the project. This is likely to boost the household incomes and improve the living standards of the local community and other populations from the neighbouring and other areas.
- The government coffers will equally benefit from statutory contributions made by the contractor for his employees. Sales from construction materials will have value added tax that goes to the government.
- It is also anticipated that properly treated sludge can be re-used as fertilizer to increase agricultural productivity through minimization of the chemical fertilizers,

which are potential pollutants of Lake Victoria. Similarly, the properly treated supernatant overflow from sludge digestion process can be used for land irrigation.

## **6. Environmental and Social Mitigation Measures**

Construction related activities generally cause some alteration to the biophysical and social environment. The proposed sewerage system project is not an exception and therefore effective management strategies and mitigation means have been presented under section 7 of the main report. The mitigation measures for the impacts likely to be caused by the proposed project focuses on key potential impacts identified in section 6 under different phases of the project development.

## **7. Alternatives considered**

### **Alternative Project Location**

The sewerage system construction project in Bukoba municipality is one of LVEMP II initiative to improve management of the transboundary natural resources mainly by reducing discharge of untreated effluent from municipal waste through implementing off-site sanitation system. In view of the above requirement, it should be noted that during initial phases of the assessment exercise, the investigation on project site/location alternatives was limited to the earmarked existing location specifically based on municipal land use plan and its environmental implications.

### **The Do-Nothing Option**

Under the No-Action Alternative, it means that the sewerage system would not be constructed and operated, environmental and socio-economic impacts described in the previous section would not occur. The do-nothing alternative assumes that future developments would comply with the existing conditions the project area, which includes increased and continuous environmental pollution especially pollution of the nearby streams, soil and water pollution including waters of Lake Victoria through open dumping of municipality wastewater. Pending the proposal of other significant development within the area, population growth and other developmental activities that influence environmental pollution would likely continue on the same trend that currently exists which may later worsen the situation.

## **8. Environmental and Social Management Plan**

Environmental and Social Management Plan (ESMP) is a tool that can be used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented. ESMPs are therefore important tools for ensuring that the management actions arising from EIA processes are clearly defined and implemented through all phases of the project life cycle.

The project financier is the Ministry of Water through its Lake Victoria Environmental Management Project (LVEMP II) who will be assisted by the design and supervision consultants. These two bodies will ensure that the contractor and sub-contractors adhere to the laid down procedures for construction and commissioning of the sewerage system. Table under chapter 8 of the main report outlines the actions of the ESMP. The organizational framework for the ESMP is designed to evolve as the project progresses through detailed engineering design, construction, commissioning and operation phases.

On reporting arrangements, the Ministry of Water Environmental Section (Sector Environmental Coordinator) and Consultant's Appointee to deal with Environmental Management will cooperate with other experts in Bukoba Municipality such as Municipal Land Officer and Municipal Environmental Management Officer to provide the Regional

Environmental Management Expert (REME) under the Regional Secretariat with environmental reports of the project implementation as part of the progress reports and annual environmental monitoring reports. The Regional Environmental Management Expert is the link person between the region and the Sector Ministry Environmental Section (Sector Environmental Coordinator) and the Director of Environment as well as the Director General of NEMC.

## **9. Environmental and Social Monitoring Plan**

Monitoring of the sewerage system is the long term process that should begin at the start of the project construction and continue throughout the life of the project. Its purpose is to establish environmental benchmarks so that the nature and magnitude of anticipated environmental impacts are continually assessed. Monitoring involves the continuous or periodic review of mitigation activities to determine their effectiveness. Consequently, trends in environmental degradation or recovery can be established and previously unforeseen impacts can be identified and dealt with during the sewerage system life.

Based on the monitoring plan presented in the report, the sewerage system contractor will prepare his Environmental and Social Monitoring Plan covering the mobilization, construction, commissioning and demobilization phases of the project.

During operation of the project, MOW/ LVEMPII/BUWASA will be responsible for monitoring the environmental and social impacts. The Environmental Specialist at the Bukoba Municipal Office will be in-charge of the environmental and social monitoring of issues related with the sewerage system if it is meeting all the statutory requirements.

Among other things, the appointed Municipal Environmental Management Officer should deal with

- monitoring water quality from various pollutants from the sewerage system; monitoring if collector lines are functioning as required
- monitoring air pollution from the obnoxious smell at various locations including sewer manholes, pumping station and at the waste stabilization ponds
- Monitoring any nuisance from the sewage pumping stations
- environmental degradation control measures such as soil erosion;
- risk to sewage overflow from gravity sewer lines from blockages and pressure main in case there pipe rupture ;
- changes in socio-economic status;

## **10 Cost Benefit Analysis**

Cost Benefit Analysis is a tool used either to rank projects or to choose the most appropriate project option. The ranking or decision making associated with the projects is based on the expected economic costs and benefits. The general rule is that the project should be undertaken if lifetime expected benefits exceed all expected costs.

The aim of Cost Benefit Analysis (ECBA) is to present the lifetime costs and benefits of a project as a single number that can be compared to either the interest rate prevailing or the costs and benefits to the environment. The process of conducting the environmental cost benefit analysis involves

- Description of the project and corresponding capital costs.
- Identification of the project consequences in time frame order and obtain their monetary values.
- Determination of the type of Environmental Cost Benefit Analysis

The project preliminary investment costs to meet the requirements up to the year 2020 are estimated to USD 7,357,060 which is the cost of civil works, pipe works, electrical and mechanical works, tools plants and equipment, vehicles and connections

Based on the combination of methods, the cost of the project and mitigation of impacts (including investment, management and monitoring costs estimated are all worth about less than ten million dollars.

Proper sanitation is a necessity for any known and developing town; otherwise the town will not worth a name! A sewerage system is meant to convey the waste water away from the human dwellings and treat it for final disposal where there are minimum impacts to the human beings and the surrounding environment. A town like Bukoba which was built so many years ago, still misses this important infrastructure. The existing on-site sanitation facilities in Bukoba Municipality are the ones that have resulted into some of diseases recorded in the municipality. If the costs implication of these diseases were calculated over the lifetime of the project, then the reason for implementing the sewerage system project would be straight forward.

In Bukoba Municipality there are plans of improving the water supply. The improvement in supply of clean running water signifies the increase of wastewater and therefore without the efficient central sewerage system, the on-site sanitation facilities will not be able to cope! This will be a major factor in further spread of poverty-related waterborne diseases in the municipality and increasing air pollution from the stench of overflowing on-site sanitation facilities.

## **11. Decommissioning**

Decommissioning is the final phase in the life cycle of the project. It is a process involving dismantling and demolition of the used structures and management of resulting materials. All these activities take into account of the environmental health and safety requirements for the operating personnel, the general public and any implications to the environment.

The sewerage system is not like manufacturing facilities whereby the methods used to manufacture some products are increasingly replaced by modern technology! The demolition of the sewerage system after its useful life can be thought of in terms of replacement of the defective sections of sewer line, replacement of the manholes and inspection chambers, replacement of pumps and parts of the rising main to the waste stabilization ponds or repairs and maintenance of the ponds. The life span of plastic pipes and concrete structures for manholes, waste stabilization ponds and pumping can live up to 25 years or so. Therefore in this project as long as human beings are there and they continue to use water, sewerage systems will always be required.

Alternatively if at any time, parts of the sewerage system become obsolete, life threatening or unsafe to a state where demolition is necessary, may be to pave a way for improvement or construction of a new sewerage system project, then a new environmental impact assessment study will be required as provided for in the Environmental Management Act Cap 191.

## **12 Summary and Conclusions**

This ESIA report is intended to offer an objective assessment on the concerns that were raised during the scoping and assessment phases of the study as well as those noticed by the assessment team in the project area based on the technical expertise that lies within Environmental BENCHMARK's consultants. The purpose of this report is to identify and assess the potentially

significant environmental and social issues and environmental impacts. Ultimately, the report should give NEMC and other interested stakeholders the opportunity to make an informed decision regarding the proposed sewerage system project and its various options.

The construction and operation of the proposed sewerage system can result in a variety of impacts on the natural environment as well as on the neighbours. The issues related to the proposed sewerage system were identified with various stakeholders, discussed with the technical personnel and assessed by the ESIA consultants. Mitigation measures were listed and the possible remedial options reviewed. The issue of alternatives to the proposed project were discussed. Equally important, the consideration of “no-project” can be justifiably dismissed as an alternative due to the need and desirability of the sewerage system. It is evident that the experience gained so far from diseases outbreak and the pathetic conditions of Lake Victoria and need to safeguard it are the reasons that lead to the present proposal.

The findings of environmental impact assessment of the proposed sewerage system are positive overall on the health of the environment and improvement of the social-economic of the communities surrounding the project and the country. The impacts identified are not of sufficient importance to stop the proposed sewerage system project. With adequate management of the identified impacts, as required by the ESMP, the environmental risks and impacts of the proposed project can be minimized to acceptable levels.

Furthermore, in order to ensure that the construction of the sewerage system does not result into potential negative impacts, a detailed engineering design will be carried out taking into consideration of the concerns raised by the neighbours particularly on safety of the people and amicable resolve of the outstanding issues such as resettlement and compensation of those at Kifungu peninsular and the access road to project site. The Community Liaison Office (CLO) will be established comprising of the following key stakeholders:

- Three members of from each of the wards of the Bilele, Bakoba, Kashai, and Kahororo Wards Development Committees.
- Contractors HSE officer
- Municipal Environmental Management Officer
- BUWASA Project Administrative Officer

During construction of the project, this committee will continue to function as the key role player to ensure that the contents of the ESMP are complied with. The composition of the committee must be changed during operation to suit the conditions of the site in ensuring good co-existence of the sewerage system with the surrounding resident communities. We request the project to be allowed to advance to the next stage of development for environmental health and safety benefits.

The End