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improvement of Drinking Water and Sanitation Systems in Mombasa – Mwache Project

Contract: CWWDA/AFD/MWCE/C/5/2020

Detailed Design Review and Adoption and Construction Supervision of Water Distribution Pipelines in Mombasa and Sanitation Facilities in Mombasa South Mainland (Likoni)

Environmental & Social Impact Assessment for the Proposed Faecal Sludge Management Facility

Study Report

July 2024

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Date:10/07/2024	Date: 12/07/2024	Date: 12/07/2024

Disclaimer

Declaration

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Abbreviations

amsl	above mean sea-level
AFD	Agence Française de Développement
AOI	Area of Interest
ARAP	Abbreviated Resettlement Plan
BOD	Biological Oxygen Demand
CEMMP	Construction Environmental Management and Monitoring Plan
CIDP	County Integrated Development Plan
COD	Chemical Oxygen Demand
CP-ESMP	Construction Phase Environmental & Social Management Plan
CWWDA	Coast Water Works Development Agency
dB(A)	decibels measured on 'A' weighting
EMCA	Environmental Management and Coordination Act
EMMP	Environmental Management & Monitoring Plan
EMS	Environmental Management System
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESS	Environmental and Social Standards
GRM	Grievance Redress Mechanism
GWP	Global Warming Potential
HGV	Heavy Goods Vehicles
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
IDA	International Development Association
ISM	Integrated Safety Management
KES	Kenya Shilling
KIHBS	Kenya Integrated Household Budget Survey
KNBS	Kenya National Bureau of Statistics
KWSCRP	Kenya Water Security and Climate Resilience Project
MCA	Member of County Assembly
MOWASSCO	Mombasa Water Supply & Sanitation Company
MSDS	Materials Safety Data Sheets
NAC	No Additional Cost
NDC	Nationally Determined Contribution
NEMA	National Environment Management Authority
NMK	National Museums of Kenya
O&M	Operations and Maintenance
OEMMP	Operational Environmental Management and Monitoring Plans
OP-ESMP	Operations Phase Environmental & Social Management Plan
OS	Operational Safeguard
OSHA	Occupational Safety and Health Act

PO	Project Operator
PPE	Personal Protective Equipment
PRC	Prestressed Concrete
RLCR	Reconnaissance Level Characterization Report
SEP	Stakeholder Engagement Plan
SEZ	Special Economic Zone
STDs	Sexually Transmitted Diseases
TBD	To be determined
TDS	Total Dissolved Solids
TOR	Terms of Reference
TSS	Total Suspended Solids
WHO	World Health Organisation
WRA	Water Resources Authority
WRUA	Water Resource Users Association
WSDP	Water and Sanitation Development Project
WaSSIP	Water and Sanitation Service Improvement Project
WWDA	Water Works Development Agencies

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0. Executive Summary

0.1. Project background

The Government of Kenya (GoK) with funding from Agence Française de Développement (AFD) and the International Development Association (IDA) intends to implement the Water and Sanitation Service Improvement Project – Additional Financing (WASSIP-AF) in Mombasa South Mainland. This includes the construction of a Faecal Sludge Management Facility (FSMF) in Ng'ombeni sub-location, Ng'ombeni Location, Ng'ombeni Waa Ward, Matuga Sub County, a neighbouring Sub-County to Likoni.

The FSMF is a short-term intervention required to address the acute sanitation needs of the South Mainland and is part of a longer-term plan that entails construction of a conventional wastewater treatment plant to serve the sub-county's population by the year 2040. In 2017, a wastewater masterplan study for South Mainland was carried out and identified that a conventional wastewater treatment plant (WWTP) in Ng'ombeni area in Matuga is necessary and viable to serve the projected population of the area by the year 2040.

The ESIA for the project's water supply component has been undertaken (NEMA/CPR/MSA/5/2/5764) and an EIA license issued by NEMA (License No. NEMA/EIA/PSL/24224; Application Ref. No. NEMA/EIA/PSR/33512). A copy of the license is presented in Appendix G for reference.

The proponent (CWWDA) undertook the Resettlement Action Plan (RAP) for the FSMF, concurrently with this ESIA study.

0.2. The ESIA Rational

The Environmental Management and Coordination Act (EMCA) 1999 and the Amendment Act of 2015 provides for the completion of an Environmental and Social Impact Assessment (ESIA) and the preparation and submission of a Project Full Study Report before undertaking a project of the proposed nature. The Second Schedule of the EMCA, 1999 through Legal Notice No 31 of April 2019 categorises major wastewater treatment plants including Faecal Sludge as high-risk projects for which a full study of environmental assessment will be carried out, culminating in the preparation of a Full Study Report.

Ingerop Consultant was commissioned by CWWDA to carry out an ESIA of the proposed Faecal Sludge Management Facility. The report will be submitted to CWWDA and the Bank for review and approval. It will also be submitted to NEMA for issuance of an EIA license.

The overall aim and purpose of the ESIA was to assess environmental and social impacts that are likely to arise from implementation of the proposed project. Specific objectives of the ESIA were to: collect and analyse baseline environmental and socioeconomic data in the study area; identify and assess potential environmental impacts in the design, construction and operation of the proposed project; liaise with interested and affected parties in the area in order to seek their views on pertinent issues related to the proposed project; Identify mitigation measures for the actual and potential adverse impacts; and

develop environmental and social management plans suitable for the proposed works, activities and anticipated environmental impacts.

0.3. Study approach

An environmental and social scoping exercise for the proposed project was undertaken to determine the range of issues to be addressed in the subsequent ESIA study. The scoping work produced a preliminary list of issues that needed to be further investigated. These included general environmental, health and safety issues common to infrastructure projects, and the more specific issues related to Faecal Sludge Management Facility projects.

The key methods that were used to gather information in the ESIA study included desktop studies, field surveys and stakeholders' consultations. The study area was delimited from the available project designs thereby establishing the extent of terrestrial and socioeconomic field surveys. General County and project area information was obtained from County Plans and other thematic studies/publications.

The relevant policy, legal and regulatory framework for the wastewater project was reviewed, identifying key provisions that affect the design, construction and/or operations of the project. Key legislation includes the EMCA, 1999 and its subsidiary legislation, the Water Act 2016 and the Water Resource Regulation , 2021, and the Occupational Safety and Health Act, 2007 and its subsidiary legislation.

0.4. Stakeholder consultation

Stakeholder consultations during the ESIA were carried out to: inform project stakeholders of the proposed project; to explain the likely impacts (positive/negative) of implementing the Project; and to obtain views, concerns, comments and suggestions from interested and affected parties regarding the proposed project.

Stakeholder identification and analysis was carried out to determine who are the project affected people and the interested parties and the most appropriate means of engagement. The methods of engagement ranged from questionnaires, interviews, workshop, focused group discussion, and public meetings with the stakeholders.

A key informant workshop was also organized targeting the institutional stakeholders. The workshop was attended by 17 people representing various institutions, and they shared their feedback on the proposed project with the consultant. Two public participation meetings were held at Shika Adabu and Ng'ombeni locations targeting the project beneficiaries and the affected communities respectively. The meetings were attended by the local administration (chiefs and assistant chiefs), village elders, MCA representative, youth representatives, and Persons living with Disability. A total of 105 people were consulted in the various meetings organized. The Consultant also engaged with the Kaya Similani elders as interested parties to the project as the proposed project is located near the Kaya Forest. The abbreviated resettlement action plan was undertaken simultaneously with this ESIA study, and a meeting with the project affected persons was held at Ng'ombeni Social Hall-Chief's office on 23rd October 2023.

0.5. Prediction and evaluation of impacts and mitigation measures

Potential impacts of construction, operation and decommissioning the project were identified and their significance evaluated. In determination of impact significance, event magnitude (extent/scale, frequency, duration, and intensity) and receptor sensitivity (presence and resilience) were considered. Significance was either categorized as Negligible, Minor, Moderate or Major.

The ESIA established that significant beneficial impacts were expected, such as the creation of employment and business opportunities especially during construction, and improvement of the socioeconomic status of the community from better access to sanitation services, and reduced disease burden from water-borne diseases.

Adverse impacts identified included the land acquisition with a potential uptake of about forty parcels of land privately owned by individuals and companies respectively. An abbreviated Resettlement action plan was undertaken concurrently with the ESIA study. Other potential risks and impacts are the potential increase in noise pollution, air pollution, soil and water resources pollution, and increased health and safety hazards during construction phase of the project. Occupational and community health and safety hazards from installed infrastructure are some of the significant concerns during operations, with potential to adversely affect surrounding communities and the project operator.

Below is a summary of the significant risks and impacts identified, and their proposed mitigation measures.

Table 0-1 Summary positive impact due to project implementation

Impacts Categories	Positive impacts due to project implementation
Environmental Stewardship	Adoption of sustainable construction practices Erosion control and protection of natural habitats Implementation of green technologies for energy efficiency
Community Development	Job creation and economic opportunities for locals Skill development through training programs Strengthening community ties through shared infrastructure
Economic Growth	Injection of funds into the local economy Increased property values and attractiveness for investment Stimulating growth in related industries and businesses
Public Health Improvement	Reduction of health risks associated with improper waste disposal. Improved sanitation infrastructure for community health Health and safety measures for workers and residents
Enhanced Infrastructure	Upgraded sewage and waste management infrastructure. Integration with existing urban planning and development Improved overall quality of life for the community

Table 0-2 Summary impacts and mitigation matrix

	Risk/Impact	Significance	Mitigation Measure(s)
Construction phase	Pollution and health & safety hazards from poor management of wastes	Major	Implement a waste management plan for all wastes generated including hazardous wastes, concrete washout,
	Occupational safety and health incidents and accidents	Major	Contractor to develop and implement Site Health and Safety rules and regulations
	Land uptake to allow (involuntary land acquisition) construction of the faecal sludge management facility. Loss of livelihood/ business to tenants.	Major	Preparation and Implementation of an Abbreviated Resettlement Action Plan Land owners will give adequate vacation notices to tenants.
	Labour influx into the project area	Moderate	Contractor to establish local employment targets to maximize local employment
	Exploitation of workers by the Contractor's management	Major	Contractor to develop an employment policy in line with International Labour Standards and the local labour administration requirements
	Nuisance and increased safety hazards to the public and other road users	Moderate	Implementation of a traffic management plan, public safety measures including restrictions on site access, erecting of barricades, installation of warning signage
	Nuisance and human health impacts from air pollution	Moderate	Implement dust control and other point-source emission controls; immediate reinstatement of disturbed grounds
	Nuisance and human health impacts from noise pollution	Moderate	Implement noise reduction measures for noisy equipment
	Water pollution from spillages, erosion and sedimentation, and direct discharges into water courses	Moderate	Establishment of comprehensive spill control and response plans; implementation of erosion control measures
	Degradation of soil resources from hydrocarbon contamination, compaction, erosion, and off-site disposal	Moderate	Immediate reinstatement of disturbed ground; implementation of spill control plans
Operation Phase	Air quality and water pollution	Moderate	Close monitoring of the facility to ensure it functions as planned, this involves monitoring of ground and surface waters in the surroundings of the FSMF and ensuring that the facility's effluent complies with the national effluent standards.

0.6. Conclusion

Although potential adverse impacts were identified in the construction and operation of the proposed project, various opportunities were also identified for the mitigation of these impacts. It is considered that with good environmental and social practices and procedures during construction, the project has potential to enhance benefits and sustainability, while avoiding environmental degradation.

The measures identified in this report when applied by the Contractor and the project proponent, will ensure environmental protection, health and safety of the workers and the public. Sound environmental management practices during operations will also enhance community benefits and social acceptance of the project.

An environmental audit of the project is recommended upon completion of the construction works to corroborate the implementation of the proposed mitigation measures. Any unforeseen project impacts will be identified and addressed through annual environmental audits.

1. Introduction

1.1. The Study Report

This Report details the findings of an Environmental and Social Impact Assessment (ESIA) of the proposed Faecal Sludge Management Facility (FSMF) Sanitation component (hereafter referred to as 'The Project').

The Environmental Management and Coordination Act (EMCA) 1999 and the Amendment Act of 2015 provide for the conduct of an ESIA before undertaking a project of the proposed nature. The ESIA should be carried out at the planning stages of the proposed undertaking to ensure that significant impacts on the environment are taken into consideration during the design, construction, operation, and decommissioning stages of the project.

This Study Report has therefore been prepared to comply with Section 58 of the EMCA, 1999 and the Amendment Act 2015, Legal Notice No 31 of April 2019 on the Act, Part 2 Section 7 of the Environmental (Impact Assessment and Audit) Regulations, 2003, and Legal Notice No 32 of April 2019 on the Regulations.

The ESIA for the project's water supply component has been undertaken (NEMA/CPR/MSA/5/2/5764) and an EIA licensed issued by NEMA (License No. NEMA/EIA/PSL/24224; Application Ref. No. NEMA/EIA/PSR/33512). A copy of the license is presented in Appendix G for reference.

The proponent (CWWDA) will implement the Abbreviated Resettlement Action Plan (ARAP) for the FSMF, undertaken concurrently with this ESIA study.

1.2. Project background

1.2.1. The problem

Mombasa South Mainland is served by on-site sanitation systems comprised of septic tanks and pit latrines. These common systems of disposal are, however, not supported by proper sludge management and disposal facilities and pose environmental and health risks to local populations. Inadequate sewage management in the sub-county is thought to be responsible for groundwater contamination, and the prevalence of water-borne diseases such as typhoid, cholera, dysentery, and malaria.

1.2.2. The proposed solution

Broader solution is outlined in the Wastewater Masterplan for Mombasa and Selected Towns within the Coast Region, developed under the IDA-funded WaSSIP-AF. The Masterplan encompasses a twenty-five-year vision (up to 2040) and aims to enhance the quality of effluent discharged into rivers, the Indian Ocean, and groundwater, ultimately safeguarding the health of residents in the study areas. The long-term water-borne sanitation system proposed in the Masterplan for South Mainland involves a phased

investment program, including immediate/short-term (2015 – 2020), medium-term (2021 – 2025), and long-term (2026 – 2040) plans.

As part of the immediate/short term measures, the proposed solution for addressing wastewater management in Mombasa South Mainland is facilitated by the Coast Water Works Development Agency under the Ministry of Water and Irrigation. This initiative, supported by Agence Française de Développement (AFD), focuses on the construction of a Faecal Sludge Management Facility (FSMF) in Pungu, Matuga, a neighboring Sub-County to Likoni, as a short-term intervention to address the acute sanitation needs.

Building on this foundation, the proposed solution for Mombasa South Mainland includes the construction of a Faecal Sludge Management Facility in Pungu, Matuga, to address immediate sanitation needs. This short-term intervention aligns with a longer-term plan for constructing a conventional wastewater treatment plant (WWTP) in Ng'ombeni to serve the sub-county's population by 2040.

1.3. Objectives of the ESIA

The aim of the study was to assess environmental and social impacts that are likely to arise from implementation of the proposed Project. The objectives of the ESIA were to:

- Collect and analyse baseline environmental and socioeconomic data in the study area;
- Identify and assess potential environmental impacts in the design, construction and operation of the proposed project;
- Liaise with interested and affected parties in the area to seek their views on pertinent issues related to the proposed project;
- Identify mitigation measures for the actual and potential adverse impacts; and
- Develop environmental and social management plans suitable for the proposed works, activities and anticipated environmental impacts.

1.4. Approach to the ESIA

The ESIA was carried out in line with the provisions of the Environmental Management and Coordination Act, 1999, the Environmental (Impact Assessment and Audit) Regulations 2003, and other international guidelines on environmental and social sustainability.

1.4.1. Scoping

A scoping exercise was carried out in July 2023 to determine the range of issues to be addressed in the ESIA, the significant issues that would need detailed study and those that were not significant, and the stakeholders to be consulted in the ESIA. The exercise established the following issues to be investigated in the study:

- General environmental, health and safety considerations in relation to construction sites waste generation; soil erosion and sediment control; fugitive dust and other emissions; noise from heavy equipment and construction traffic; hazardous materials and hydrocarbons spillages.
- Sanitation-specific considerations such as climate risks on the Project and its vulnerability to climate change; and potential benefits of implementation of the Project; and
- Socioeconomic and cultural considerations including cultural heritage of communities in the project area; land acquisition and resettlement impact; needs and priorities of the local community.

The scoping study was also informed by previous work by Mangat, I.B. Patel (MIBP) Limited (MIBP, 2020); (MIBP, 2020) who carried out a preliminary ESIA on the short-term and medium-term works (Lot 2A and 2B).

1.4.2. Literature review

A comprehensive review of literature related to the Project and the project area was carried out. The literature included the feasibility study and design review reports for the Project, and other studies on physiography, geology, hydrology, water resources and socioeconomics of the project area. Both local and international legislation, policies and procedures in social and environmental management were also reviewed.

1.4.3. Baseline data collection

Field studies were carried out between 31st July to 1st August 2023 and 7th August to 11th August 2023 by the study team listed in Table 1-1, section 1.5. Baseline data was collected on aspects such as topography, local flora and fauna, soils and geology, existing and past activities including human settlements, local surface and ground water resources, ambient air quality and noise levels, waste management practices, natural resources, and cultural heritage aspects of the project area.

Primary data was collected through observation, interview, focus group discussion and key informant interviews.

Further, baseline data was collected in subsequent field surveys on the socioeconomic profile of Project Affected Persons (PAPs). Structured questionnaires were administered to households to assess the socio-economic status of the residents in the project area. Data collectors were identified in each locality who then received a short training on questionnaire administration before actual work. Additional information was also collected through key informant interviews with individuals/representatives knowledgeable in socioeconomic issues of the project area.

1.4.4. Identification, prediction, and determination of environmental impacts

A systematic approach was used to rank identified impacts according to their **significance** determined by consideration of project activity **event magnitude** and **receptor sensitivity**. The expected significance of environmental impacts was assessed considering:

Event Magnitude determined by the following parameters:

- **Extent** – the size of the area across which the effect of the activity extends.
- **Duration** – the length of time over which the effect of the activity occurs.
- **Frequency** – how often the activity occurs; and
- **Intensity of the impact** – concentration of an emission or discharge with respect to standards of acceptability that include applicable legislation and international guidance, its toxicity or potential for bioaccumulation, and its likely persistence in the environment, and degree and/or permanence of disturbance or physical impact.

Receptor Sensitivity determined by:

- **Presence** – whether biological species present are unique, threatened, protected or not vulnerable and are present during a period of high sensitivity (e.g. breeding, spawning or nesting). For human receptors, whether they are permanently present to uncommon in the area of impact and for physical features whether those present are highly valued or of limited or no value. For physical receptors/features, whether they are of national or international value (e.g. state protected monument), local or regional value and is sensitive to disturbance or none of the above; and
- **Resilience** – how vulnerable people and/or species and/or features are to the change or disturbance associated with the environmental interaction with reference to existing baseline conditions and trends (such as trends in ecological abundance/diversity/status, ambient air quality etc.) and their capacity to absorb or adapt to the change. For physical receptors/features, highly vulnerable, undergoes moderate but sustainable change which stabilizes under constant presence of impact source, or unaffected or marginally affected.

Socio-economic impacts were assessed considering event magnitude and receptor sensitivity. However, a more qualitative approach was applied, which considered how significant the change would be on social, economic, and cultural dynamics, the potential for governmental and stakeholder intervention, the value of the receptor (on a local, regional, national or international scale) and the resilience of the receptor to change or adapt to a given change.

Impact significance was assessed considering existing control measures that are incorporated into the project design.

Sets of criteria were defined for both impact magnitude and receptor sensitivity and these were then combined in an appraisal matrix to identify relative degrees of impact significance. The matrix is accompanied by ancillary definitions of the resulting final significance categories.

1.4.5. Stakeholder consultations

Stakeholder consultations during the ESIA were carried out to: inform project stakeholders of the proposed project; to explain the likely impacts (positive/negative) of implementing the Project; and to obtain views, concerns, comments and suggestions from interested and affected parties regarding the proposed project.

Stakeholder identification and analysis was carried out to determine who are the project affected people and the most appropriate means of engagement. The methods of engagement ranged from questionnaires, interviews, workshop, and public meetings with the stakeholders.

A key informant workshop was also organized targeting the institutional stakeholders. The workshop was attended by 17 people representing various institutions, and they shared their feedback on the proposed project with the consultant. Two public participation meetings were held at Shika Adabu and Ng'ombeni locations targeting the project beneficiaries and the affected communities respectively. The meetings were attended by the local administration (chiefs and assistant chiefs, village elders, MCA representative, youth representatives, and Persons living with Disability. A total of 105 people were consulted in the various meetings organized. The Consultant also engaged with the Kaya Similani elders as interested parties to the project as the proposed project is located near the Kaya forests. The abbreviated resettlement action plan was undertaken simultaneously with this ESIA study, and a meeting with the project affected persons was held at Ng'ombeni Social Hall-Chief's office on 23rd October 2023.

1.4.6. Reporting

The Draft ESIA Report, including an Environmental and Social Management Plan was prepared and submitted to CWWDA for review. This Final ESIA Study Report has incorporate comments from the draft review and will be submitted to NEMA for review and approval.

1.5. The ESIA study team

Table 1-1:The ESIA study team

Name	Expertise
Lawrence Njue (Lead Expert, Reg No. 781)	Environmental, Health & Safety Expert
Anne Rita Koki	Sociologist
Robert Ngunjiri (Associate Expert, Reg No. 11,682)	Environmentalist
Wilberforce Oundo	Land Valuer
Winstone Mulaku	Civil Engineer
Nelson Munyiri	Civil Engineer
Jacinta Mbilo (Associate Expert, Reg No. 9,609)	Physical Planner

As required under Regulation 14 of the Environmental (Impact Assessment and Audit) Regulations 2003, the above-named environmental expert is registered and licensed by NEMA as Environmental Impact Assessment and Audit Expert.

The practising license for the Lead Expert is attached in Appendix A of this Report.

2. Project description

2.1.1. Location

The site for the FSMF is within the Ng'ombeni – Maweni Settlement Scheme, Ng'ombeni-Waa ward, Matuga Sub- County in Kwale County and bordering Shika Adabu ward, Likoni Sub-County, in which approximately 40 acres has been identified to be suitable. The wastewater masterplan estimated about 50Ha of land would be required for the full wastewater treatment plant for the projected design horizon of 2040. Therefore, the identified land for the FSMF will need to be expanded in future to accommodate the planed conventional WTP, or the technology adopted for the wastewater treatment plant could have a smaller footprint to fit within the available space for co-treatment with the faecal sludge. The coordinates for the proposed site are **-4.144921, 39.646491** and has been shown in Figure 2-1 below. The site is easily accessed through a partly graded gravel road that can be improved to reduce dust pollution. This proposed site is bound by roads on all four sides and has a technically suitable topography. The site is also located further away from residences and the size of land available would allow for providing a buffer area around the site to deal with any visual or odour nuisances. Processed wastewater will be employed in the planned wetland situated within the project's facility before being used at the proposed buffer zone for irrigation needs on-site.

Figure 2-1 Proposed Site for Faecal Sludge Management Facility

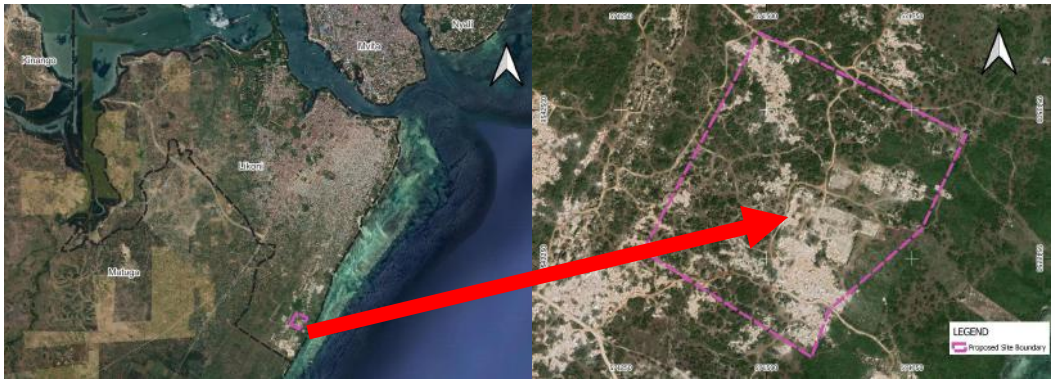
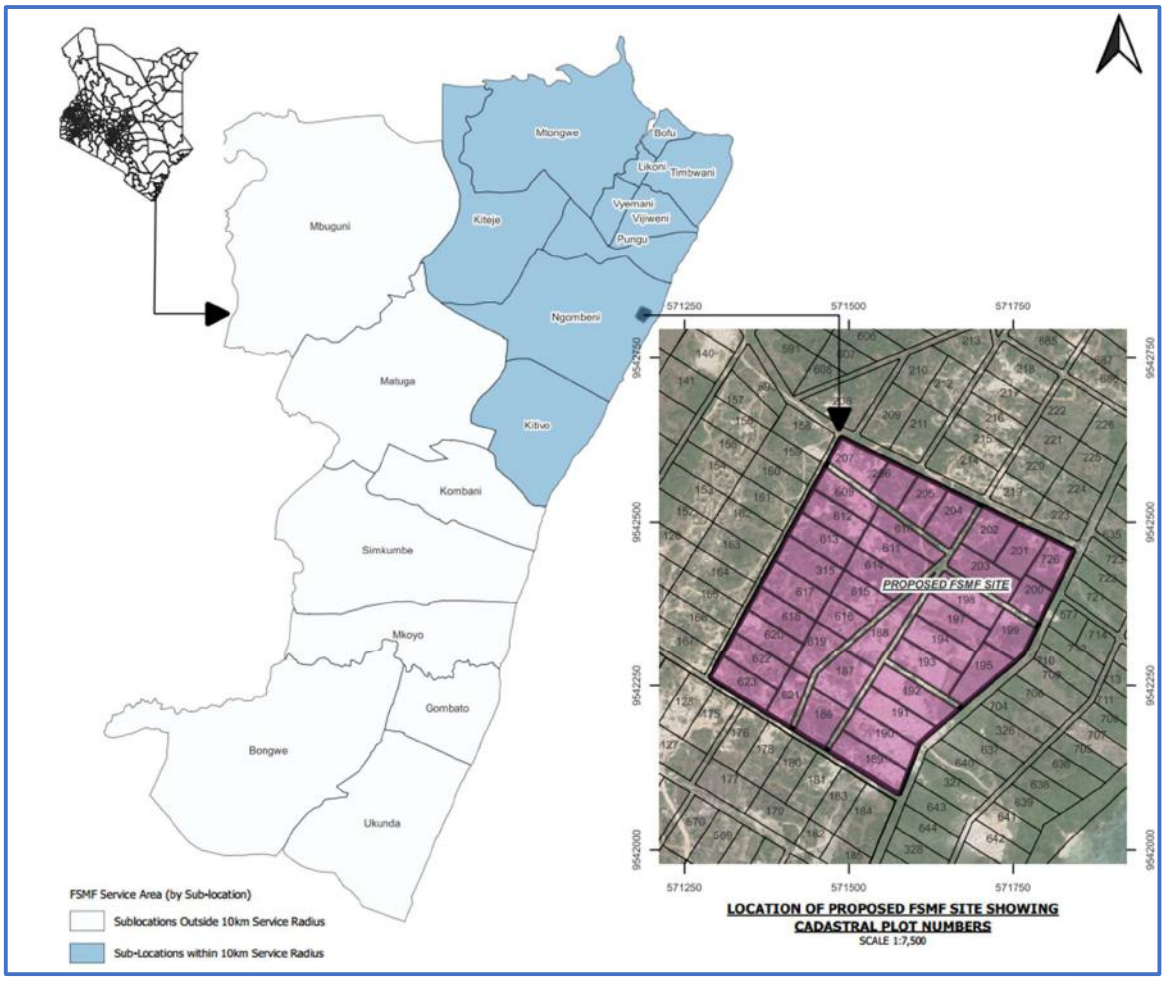


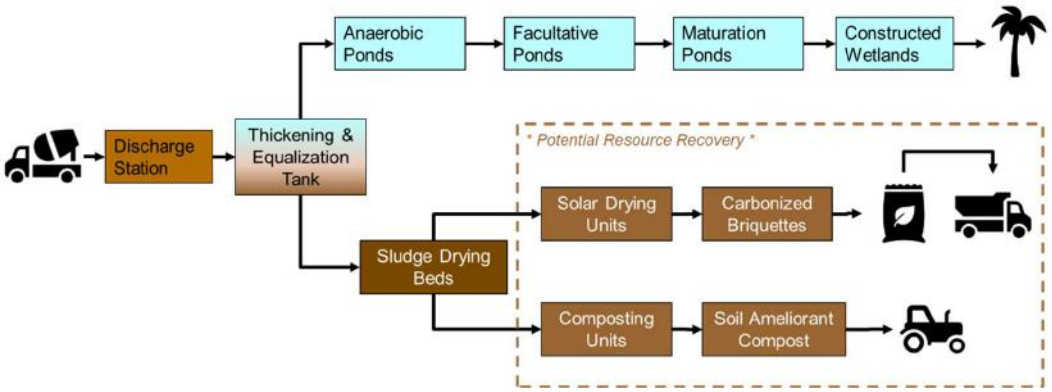
Figure 2-2 Proposed Site for Faecal Sludge Management Facility-Affected Plots



2.2. Facilities and Operation

The proposed faecal sludge treatment process scheme is as presented in the Figure 2-3 below.

Figure 2-3: Proposed Faecal Sludge Treatment Process Scheme



From the figure, it is shown that the treatment process consists of two main parallel processes for treatment of the liquid and solid fractions after they have been separated in the thickening and equalization tank. The treatment process is achieved through the following treatment units:

- Pre-treatment units – This includes the exhauster truck discharge / receiving station which will allow at least two 10,000L exhauster trucks to discharge at the same time. The discharge bay is designed to mitigate against any splashing outside of the bay so that the discharged waste is contained well. The pre-treatment unit also includes manually raked inlet screens that provide the operators opportunity to remove large sized non-biodegradable solid waste such as plastics, bottles, rags, clothes, polythene bags, shoes etc. that may have been transported to the site. These would then be disposed off appropriately by engaging a NEMA licensed waste handler.
- Solid / liquid separation unit - sludge thickening / equalisation tank – The main function of this treatment unit is to separate the liquid and solid fractions so that these fractions can be handled, treated and disposed off separately. The proposed settling tank is gravity thickener that utilises physical settlement and it has been sized to accommodate peak flows. The inflow to the settling tank is expected to have 1-2% solids. However, where the screened partially stabilized sludge has more than 5% solids this can be diverted directly to the sludge drying beds. The settled sludge from the thickening tank will be discharged to the sludge drying beds while the liquid fraction will be discharged to the anaerobic ponds.
- Liquid fraction treatment units – To achieve the required effluent quality the liquid fraction from the settling tank is to be treated using stabilisation ponds that consist of 3 no. anaerobic ponds in parallel, 3 no. facultative ponds in parallel and 3 no. maturation ponds in series. The effluent from the maturation ponds would then be applied to 2 no.

construction wetlands for a final polish before being used to irrigate the trees that are proposed to be grown within the buffer zone area.

- Solids fraction dewatering units – the sludge from the thickening tank will be discharged to the 10no. sludge drying beds that will dewater the sludge in preparation for the resource recovery stage. Each sludge drying bed will be loaded for a period of 7 days before the drying period begins. The dewatered sludge will then be removed using mini loaders while the percolate effluent will be recirculated back to the anaerobic units for treatment.
- Resource recovery units – Two parallel processes for briquettes and composting have been proposed for resource recovery. For the briquettes, the dewatered sludge will undergo further drying in the solar drying beds before mixing with binders, crushing, moulding and carbonizing. For the compost the dewatered sludge will be mixed with organic market waste and composted in open windrows for about 12 weeks before being sold to farmers.
- Ancillary units – The proposed facility will also include an office block for the utility company to manage all facility operations from, staff houses for the site staff that would be required to operate the facility, a guard house and improvement of the access road.

2.3. Description of expected project activities

The construction of the proposed faecal sludge management facility is anticipated to be carried out by a contractor with substantial experience in this field. The contractor will be contractually obligated to execute the project in strict compliance with approved construction methods, project specifications, relevant government regulations, permits, and authorizations.

The contractor will be expected to formulate construction methods tailored to considerations such as environmental protection, site-specific ground conditions, topographical features, hydrological factors, the presence of pre-existing infrastructure, and health and safety requirements. It's important to note that, given the regulatory framework and the diverse nature of construction activities, the detailed construction methodologies and equipment selection will be the responsibility of the contractor. Consequently, a precise construction methodology cannot be established at this preliminary stage. The sequencing of construction activities and the direction of construction will also be determined by the contractor based on their expertise.

Before initiating the construction program, the contractor will be required to develop method statements outlining the procedures to be employed during the works. These method statements will encompass all legal prerequisites and the due diligence requirements of entities such as the National Environment Management Authority (NEMA), Water Resources Authority (WRA), Directorate of Occupational Safety and Health Services (DOSHS), and other relevant regulatory bodies in Kenya. Furthermore, these statements will incorporate the mitigation measures outlined in the Environmental and Social Impact Assessment (ESIA) to ensure

compliance and minimize any adverse environmental or social impacts associated with the construction process.

2.3.1. Pre-construction works

Construction activities for the planned faecal sludge management facility will be strictly confined to specified zones in accordance with the facility's design and the construction contractor's method statements. Specifically, the construction of the FSMF will occur within a designated area that the client will acquire from privately-owned land parcels. An abbreviated resettlement action plan has been undertaken alongside the ESIA. The proponent will implement the ARAP before construction works.

2.3.2. Access roads

Access to the proposed site is anticipated to be unproblematic since they are all situated adjacent to existing roads. Only minor improvements may be necessary to ensure that these roads are suitable for the expected project machinery to traverse.

2.3.3. Materials and equipment transport

An important aspect of the construction process is the transport of construction materials, plant and other equipment to the construction area, dedicated storage areas and construction camp. Transportation would be accomplished using the existing road infrastructure in the project area. Material delivery would represent most movements associated with the construction phase.

2.3.4. Temporary construction facilities

Temporary facilities comprise storage yards, project offices and construction camp(s). The location and number of sites would be determined by the construction contractor and agreed with the Project Management Team. The construction contractor would be required to assess the environmental/social sensitivity of the site(s) prior to their approval for adoption.

2.3.5. General construction activities

The construction phase will be undertaken by the contractor and will include the following activities:

- Improvement (grading) of 3.3km access road from the main tarmac road.
- Site hoarding including gates to control/ manage access/ egress.
- Delivery of construction materials and/or equipment's to site.
- Carting away of spoil and other construction wastes.

- Site clearance and earth works.
- Concrete works for the various FSMF components and auxiliary works (buildings and access roads/ paths).
- Related construction management tasks such as EHS/ OSH training of project workers, dust suppression; waste generation and management among others.

2.3.6. Operational activities

The operation of a faecal sludge management facility will involve a series of critical activities to ensure the efficient and effective treatment of faecal sludge while maintaining safety and environmental compliance. The main activities that would be undertaken during project operations include:

Sludge Intake and Reception: Faecal sludge is received from collection trucks or other conveyance systems at the plant's intake area. The sludge is inspected, logged, and assessed for quality, volume, and any hazardous materials.

Preliminary Treatment: Larger debris, solids, and non-faecal materials are removed through screening or grit removal processes. The goal is to protect downstream equipment and processes from damage or clogging.

Primary Treatment: Faecal sludge is directed into primary treatment units, such as settling tanks or primary clarifiers. Solid particles settle to the bottom, forming sludge, while clarified effluent rises to the top. Sludge removal systems periodically or continuously collect settled solids.

Secondary Treatment: Anaerobic digestion or aerobic treatment to further break down organic matter. These processes will reduce the volume of sludge and improve effluent quality.

Dewatering: Mechanical dewatering or sludge drying beds will be used to reduce the moisture content of the sludge. Dewatered sludge is easier and more cost-effective to transport and dispose off and/or reuse.

Biological Treatment: Biological treatment units, microbial processes will be employed to degrade organic matter. This will enhance sludge stabilization and reduce odours.

Effluent Discharge or Reuse: Treated effluent will be discharged into receiving onsite buffer zone for onsite irrigation.

Sludge Management: Treated sludge will be further treated to meet disposal or reuse standards.

Maintenance and Monitoring: Regular maintenance of equipment and systems will be crucial to ensure proper functioning of the facility. Continuous monitoring of key parameters like flow rates, solids content, and treatment effectiveness is essential for process control.

2.4. Project decommissioning

The environmental (Impact Assessment and Audit) Regulations 2003 provide for outlining of activities that shall be undertaken during the project construction, operation, and decommissioning phases. Further, the environmental management plan shall detail project activities, impacts, mitigation measures, time schedule, costs, responsibilities, and commitments proposed to minimize environmental impacts of activities, including monitoring and environmental audits during implementation and decommissioning phases of a project.

The FSMF design life is twenty years, after which it may require decommissioning or major rehabilitation and upgrade. The FSMF design has considered the possibility of faecal sludge con-treatment with wastewater at a conventional wastewater treatment plant to be developed within the same site. This would minimise decommissioning activities and associated impacts.

Whatever the option, the proponent will prepare a decommissioning plan. The decommissioning process will also include comprehensive documentation of the facility's closure, including reports on environmental impact assessments and compliance records. This conscientious approach will guarantee that the decommissioning phase, if and when required, is conducted responsibly, minimizing any potential environmental impact, and facilitating the seamless integration of the FSMF into the broader wastewater management system. The decommissioning plan should be submitted to NEMA for approval.

2.5. Expected inputs and outputs

Table 2-1 Expected Inputs and Outputs

Phase	Inputs	Outputs
Construction	Fossil fuels for running machinery/ equipment; Water; Raw materials such as rock, ballast, sand, cement, gravel, iron/steel bars, Steel and human labour	Biomass from cleared vegetation, exhaust emissions; Material spoils (wastes); dust, noise, and vibrations.
Operation	Routine maintenance/ repairs; Various consumables	Maintenance wastes
Decommissioning	Fossil fuels for running machinery/ equipment	Solid waste/ rubble; Exhaust emissions; Dust; noise and vibrations

2.6. Project cost estimates

The project cost is **KES 606,768,368** to construct and commission.

2.7. Project implementation timeframe

The project construction period is estimated to be 12 months.

3. Analysis of Alternatives

3.1. The No development option

The No Project Alternative is a scenario in which the proposed FSMF is not implemented. While this option may seem like the simplest and least disruptive, it has several drawbacks. Key is the persistent of lack of good and effective facility to manage the faecal waste in the area. this implies improper disposal leading to, resulting to poor health of communities in the project area and associated costs to manage health issues.

Therefore, the No Project Alternative is not a preferred option for the sanitation/ improved waste management in the area. The facility is necessary to tackle the existing challenges, and improve sanitation/ health status and stir economic growth.

3.2. Site Selection

The selection of the proposed FSMF site has been a collaborative and iterative process, involving various stakeholders such as the local community, Coast Water Works Development Agency (CWWDA), local administration, county representatives, consultants, and representatives from Agence Française de Développement (AFD). Multiple sites were screened and rigorously evaluated for suitability to put up the FSMF. The following parameters were considered in the general screening of the site alternatives for the FSMF for South Mainland;

I. Current Land Use - Areas used for residential, agriculture, forests and social amenities are considered less suitable for the location of the FSMF. On the other hand, public utility or undeveloped land located away from the sensitive residential areas are preferred.

II. Alignment with Masterplan drainage areas and sewer design – Areas that align with the overall masterplan drainage areas and sewer line design were preferred compared to sites that would require a complete/major redesign of the design drainage areas and sewer line alignments.

III. Topography of site - The slope at an ideal site should permit the gravity flow within the WWTP without requiring excessive excavations for the structures. Slopes less than 1:20 are preferred.

IV. Accessibility – For the economical transport and disposal of the collected septage and faecal waste the preferred site would be within 10km radius of the urban areas and would be motorable by trucks.

V. Availability of Buffer Zone – The preferred site would have adequate buffer from sensitive receptacles such as residences, and other social amenities.

VI. Project Affected Persons – A site with fewer PAPs would be preferred over one that has more affected persons. Preference would be given to sites owned by government agencies and are not occupied/ settled on. This ensures that the project affected persons are kept to minimum and reduces the cost of resettlement and compensation

VII. Geological Conditions - A site with low water table and whose soils are impermeable is considered ideal with respect to geological considerations.

VIII. Environmental Impact (Biodiversity) – A site with a low/no impact on biodiversity would be preferred over one with a higher impact.

Following the screening and detailed site assessments based on these parameters, the optimal location for the proposed FSMF was determined to be within the Ng'ombeni – Maweni Settlement Scheme. The parcel of land, coordinates (571487 E 9542277 S Arc 1960 UTM Zone 37S) was the selected as the most suitable site having met the specified criteria. This comprehensive site selection process ensured that the chosen location aligned with environmental, social, and logistical considerations for the successful implementation of the FSMF within the broader context of the water and sanitation improvement project.

3.3. Final treated effluent discharge point

The faecal sludge management facility design considered discharge points as follows:

3.3.1. Onsite irrigation

Onsite irrigation as a final discharge point for treated faecal sludge offers an environmentally sustainable and resource-efficient solution for managing human waste. In this approach, treated faecal sludge from FSMF is safely and responsibly applied to agricultural fields or green spaces/buffer zone. This not only reduces the environmental impact of disposal but also provides a valuable source of nutrients for crops. However, it is crucial to emphasize that this practice must be carried out with strict adherence to guidelines and regulations on effluent discharge parameters.

Onsite irrigation aligns with the principles of circular economy and sustainable agriculture by closing the nutrient loop. When properly implemented, it reduces the reliance on chemical fertilizers, conserves water resources, and contributes to soil health.

3.3.2. Discharge of treated effluent into the ocean

Discharging treated faecal sludge into the ocean as a final disposal option is a contentious approach that has both advantages and significant environmental concerns. On the positive side, the vastness and dilution capacity of the ocean can theoretically accommodate the discharge of treated effluents, reducing immediate local environmental impact. Moreover, when treated to high standards, faecal sludge can be rendered safe for aquatic ecosystems.

However, this practice is not without its drawbacks. The release of treated sludge into the ocean can have detrimental effects on marine life and coastal ecosystems, particularly if the treatment process isn't stringent enough or if there's insufficient monitoring and regulatory oversight. Contaminants, such as heavy metals or persistent organic pollutants, may still be present in the treated sludge and can accumulate in marine organisms, potentially affecting both local seafood and the broader marine food chain. Additionally, there's growing awareness of the cumulative impact of various pollutants on ocean health, making it imperative to minimize any additional stressors on these fragile ecosystems. The discharge of treated faecal sludge into the ocean must be conducted with rigorous compliance with international and regional regulations, as well as stringent monitoring and assessment of the receiving waters' ecological health. The choice of this disposal method should ideally be a last resort when there are no safer alternatives available.

While the option of discharging treated effluent into the ocean was considered and evaluated, the adopted design entails a 100% on-site effluent management through use of the treated effluent for irrigation of flora around the FSMF site.

3.4. Construction Materials

Gravel, hard core stones, aggregates, and sand required for construction purposes will be sourced from the presently utilized borrow sites. The initiation of any additional borrow areas is contingent upon the exhaustion of the existing ones and is subject to approval from both the county authorities and the National Environment Management Authority (NEMA). In such cases, an independent environmental impact assessment study will be conducted. Regarding the procurement of water for construction operations, primarily for concrete preparation, groundwater which is the primary source of water in the area will be used. This is generally less saline and less corrosive, unless it is determined that this source is unsuitable for the construction tasks.

3.5. Technology

The concept design was guided by the requirement to select a low-cost option for faecal sludge Management Facility. This ruled out the construction of a conventional but costly sewerage system. The technology is efficient for the purpose.

3.6. Best Alternative

Based on the above analysis including the associated risks and impacts, this study identifies the most suitable option to achieve project objectives, being implementation of project at the selected location (accessibility, topography, size and human settlement); construction materials (type and sourcing); and technology (treatment process; and resource recovery/re-use) of by-products).

4. Environmental and Social Baseline Conditions

4.1. County overview

4.1.1. Location

The project is situated in the South Mainland area, spanning between Mombasa and Kwale Counties in the Southeastern part of Kenya. The coordinates of the project site fall within the Ng'ombeni – Maweni settlement scheme at 571487 E and 9542277 S in Arc 1960 UTM Zone 37S.

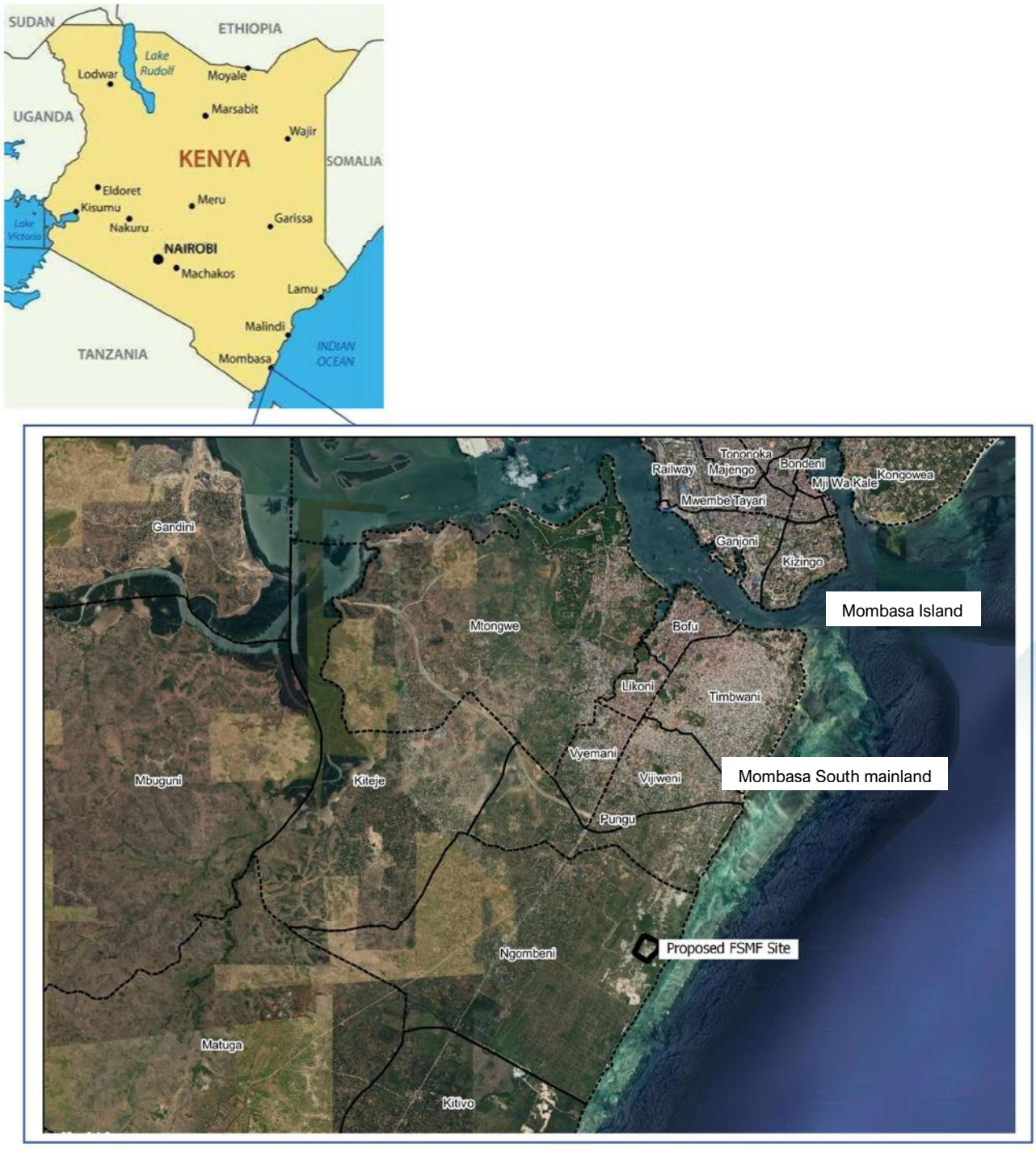
Mombasa County consists of six sub-counties/constituencies—Changamwe, Jomvu, Kisauni, Nyali, Likoni, and Mvita—each with distinct characteristics. Changamwe and Jomvu are part of the West Mainland, an industrial Hub, Kisauni and Nyali are in North Mainland, the most populous area, Mvita is situated in the Island with concentrated developments, and Likoni is located in Mainland South.

Kwale County, with its capital Kwale Town in Matuga Sub-County, comprises Matuga, Msambweni, Kinango, and Lunga Lunga sub-counties/constituencies. Kwale County shares borders with Tanzania to the South, Taita Taveta County to the West, Kilifi County to the North, Mombasa County to the North East, and the Indian Ocean to the East. Administratively, the project site falls under the jurisdiction of the Chief and Assistant Chiefs for Ng'ombeni location and Sub-Locations, respectively. Ng'ombeni Sub-Location is bordered by Pungu Sub-Location in Mombasa County to the North, the Indian Ocean to the East, Kiteje Sub-Location to the West, and Matuga and Kitivo Sub-Locations in Kwale County to the South.

The water supply and sanitation systems in Mombasa County is managed by Mombasa Water Supply and Sanitation Company Ltd. (MOWASSCO), while in Kwale County it is managed by Kwale Water and Sewerage Company Ltd (KWAWASCO)

The **Figure 4-1** overleaf shows the location map of the project area with the above-named sub-locations also indicated.

Figure 4-1 Project location map



4.1.2. Administration

The proposed project intends to benefit people of Likoni sub-county in Mombasa County and Matuga Sub- County in Kwale County. The project site is at Ng'ombeni Sub-Location, Ng'ombeni location in Matuga sub-county.

Matuga sub-county is divided into five wards comprising of Tsimba Golini, Ng'ombeni Waa, Tiwi, Kubo South and Mkongani wards. According to the 2019 Kenya Population and Housing Census, the sub-County has a population of 151,978 people in 24,973 households, with a land area of 338.6 km^2 and an average population density of 6,187 people per square kilometre. Mkongani, Ng'ombeni Waa and Tsimba were the most densely populated (KNBS, 2019). Kubo south and Tiwi had the lowest density.

4.1.3. Physiography

Kwale County has four major topographic features namely the Coastal Plain, the Foot Plateau, the Coastal Uplands and the Nyika Plateau.

The coastal plain- The Coastal plain is sometimes referred as the "coral rag". It is a narrow strip of land, three to 10 kilometers wide, with a distance of approximately 255 kilometers from Likoni to Vanga. It lies 30 meters above sea level and extends 10 kilometers inland. This strip of land consists of corals, sand and alluvial deposits. The (FSMF project zone) falls within this topographic feature.

The foot plateau- Behind the coastal plain is the foot plateau. It lies at an altitude of between 60 and 135 meters above sea level on a flat plain surface with high potential permeable sand hills and loamy soils. This is the sugar cane zone of the region.

The coastal range/uplands- Commonly known as Shimba Hills, the area rises steeply from the foot plateau to an altitude between 150 meters and 462 meters above sea level. This topographical zone is made up of many sandstone hills. The hills include Shimba Hills (420m), Tsimba (350 m), Mrima (323m) and Dzombo (462m). This is an area of medium to high agricultural potential.

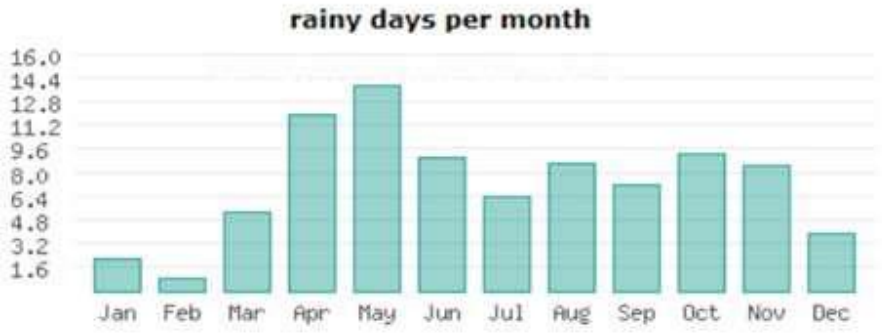
The Nyika plateau (hinterland)- This zone stands at an altitude of about 180 to 300 meters above sea level on the western boundary of the region. The zone is underlain by a basement rock system with exception of reddish sand soils. Occupying over a half of the region, it is semi-arid with the exception of occasional patches of reddish sand soils and is, therefore, generally poor. The main activity in the area is livestock rearing.

4.1.4. Climate

4.1.4.1. Rainfall

The area has a bimodal rainfall pattern with short rains coming from October to December, while the long rains are expected from April to July. The heaviest rainfall amount of about 1000 mm per annum is experienced along the coastline, which decreases towards the hinterland up to an average of about 500mm.

Figure 4-2 Rainfall pattern

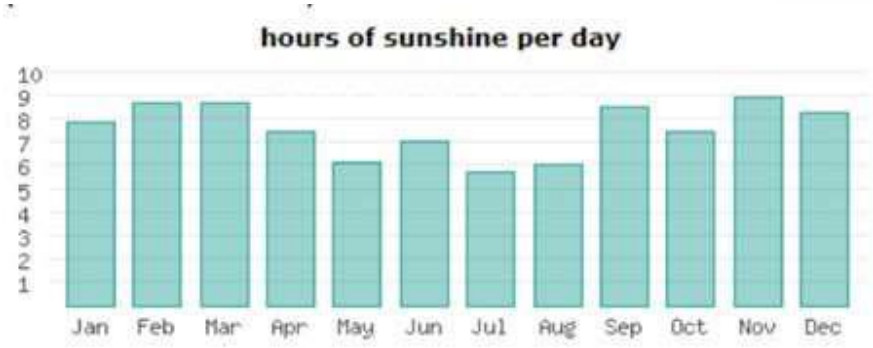


Weather Pattern (https://weather-and-climate.com)

4.1.4.2. Temperature

The FSMF project site, located along the Kenyan coast, experiences a tropical climate that is influenced by the monsoon seasons. The typical temperature hovers around 23°C, with the highest recorded temperature of 25°C occurring in March, which falls within the inter-monsoon period. Conversely, the lowest temperature, around 21°C, is observed in July, a month following the commencement of the southwest monsoon, known as the Kusi season.

Figure 4-3 Temperature records

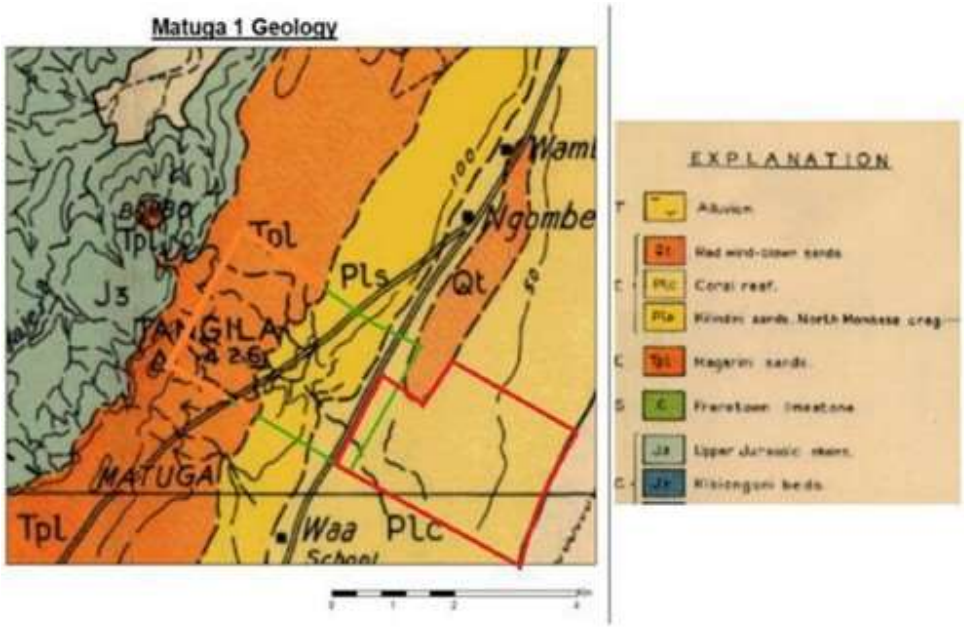


Weather Pattern (https://weather-and-climate.com)

4.1.5. Geology and soils

Locally on land, the FSMF project site is underlain by fossilized coral limestone that forms a thick unit excellent for quarrying and which is essentially fossilized coral reef. Occasional solution cavities are found in the rocks that do not appear to be large or too deep; such cavities are infilled with silica sand and clays. This does not bar the probability of larger cavities at depth.

Figure 4-4 Geological map of the area (extract from Caswell, 1953)



4.1.6. Water and sanitation resources

The main resources of water in Kwale County comprise of rivers (7), shallow wells (693), springs (54, protected and unprotected), water Pans, Dams (6), rock catchments and boreholes (110). However, most of the rivers are seasonal thus cannot be relied upon to supply the much-needed water in the county for both agriculture and household uses.

Kwale Water and Sewerage Company is mandated by the Coast Water Works Development Agency to supply, control, and manage all the water supply schemes within the county. Private water service providers in liaison with the Kwale Water and Sewerage Company may have been supplying water to the community to ensure water is available for all. Other water supply schemes include community owned and managed boreholes, dams and even water pans. Local community participation in the projects has been poor, thus creating problems of operation and maintenance.

Kwale County was ranked number 23 out of 47 in the county sanitation benchmarking by the MOH with open defecation (OD) at 51.2 % (WSP 2014). Latrine coverage is a key component

as far as household sanitation in disease prevention and human dignity. The main type of toilet facility in the county is the pit latrine. The latrine coverage in the County is at 55%, which is below the national target of 90%, with improved toilets accounting for 19.5%, unimproved toilets at 14.3% with open defecation reduced to 31.6 % (Agris 2017).

4.1.7. Population of Kwale County

The County population based on the 2018-2022 County Integrated Development Plan (CIDP) population projection for 2020 was 1,279,682. The population density based on the 2020 projection was 111. The population is projected to rise to total 1,914,796 by 2022-2023.

The labour force (15-64 years) was 352,353 persons (165,636 males and 186,718 females respectively) in 2009 representing 49% of the total population and is projected to increase to 451,391 people in 2022-2023.

At the study area, the most populated centers are Ng'ombeni, Waa and Kombani centres with high concentrations at the centres, and the rest of population spread almost evenly west of the Likoni-Ukunda road at sparse intervals. The west of the road has fewer population, and this is where land is majorly used for commercial development such as tourism and hotels, mining, and institutional establishments. There are a few modern private homes and some community housed closer to centres.

4.1.8 Settlement Patterns

Settlement patterns in the county are both linear and nucleated due to availability of social amenities, infrastructure network (Roads, Water, Electricity) and high agricultural zones dictated by nature of soils and the coastline. In the arid and semi-arid areas, the population is dispersed/scattered due to harsh climatic condition and poor infertile soils.

4.1.9 Land Ownership

According to the household baseline survey report of 2015 about 45.7% of the households owned land without formal document such as a title or letter of allotment while 27.1% had land under communal ownership. Only 11.4% head of household had formal land ownership documents (title deeds or allotment letters). Disaggregated by gender, 52.6% male-headed households, 20.0% female-headed households and 41.7% youth-headed households owned land without title deeds/allotment letters. Slightly more than half of the adult female headed households used land without formal or non-formal land use rights (squatters) while 7.5% and 6.3% adult male and youth headed households were squatters.

4.2. Project area baselines

4.2.1. Land use patterns

There is no human settlement on the proposed project site which is about 40 acres of land. The surrounding area is mainly sparse residential establishments. There is also no clear demarcation of land, and the settlements including access roads are unplanned.

Figure 4-5 Land use pattern

4.2.2. Topography

The project area is located on coastal lowland with extensive low-lying areas rising from an altitude of 11m in the southeast near the ocean shore, to about 60m in the northwest near the proposed Dongo Kundu reservoirs.

4.2.3. Flora and fauna

The proposed site and the immediate surroundings are characterized by open grassy plains with scattered trees and shrubs. Apart from coastal birds that forage on the little vegetation in the project area, no other wild fauna is found here.

Plate 4-1: Baseline Flora and Fauna

4.2.4. Hydrology and drainage

The Indian Ocean is the largest water mass in the area and influences the general surface drainage pattern with all land sloping towards the ocean. Hence, all the surface run-off is expected to drain to the sea through the natural drainage systems.

4.2.5. Ambient air quality

This location is characterized with relatively fast winds of natural ambient air throughout, but interrupted by the Kaya Forest which keeps the micro-location cool most of the day. There are no incidences of bush fires but dryer weathers trigger activation of fine dust from roads and trapped particulates on leaves.

4.2.6. Noise and vibrations levels

The proposed location is descriptively at a largely rural setting and is underdeveloped with few earth roads traversing the area and connecting to that moderately busy Kwale Mombasa road. There are relatively few motorbikes serving the area. Noise near the main roads is commonly from the few vehicles and motor bikes plying the area and is considered insignificant.

5. Policy, Legal and Regulatory Framework

5.1. Introduction

This section provides an initial review of the policy, legal and regulatory framework relevant to The Project. It identifies the most pertinent policies, legislation, regulations, and standards governing the anticipated activities in implementation of The Project.

Development interventions, whether past, present, or proposed pose various environmental and social challenges. The challenges include environmental degradation such as pollution (of air, soil, and water resources) loss of biodiversity, habitat and ecosystem services, climate change, involuntary resettlement and/or livelihoods disruption.

In recognition of these challenges, the Government of Kenya has put in place a wide range of policy and legal frameworks to ensure environmental protection and conservation in development or any other activity. These are all anchored in the Constitution of Kenya which obligates the government to ensure sustainable exploitation, utilisation, management and conservation of the environment and natural resources, protect genetic resources and biological diversity, and establish systems of environmental impact assessment. The constitution also gives effect to the general rules of international law, and any treaty or convention ratified by Kenya.

The main framework legislation governing environmental protection is the Environmental Management and Coordination Act (EMCA), 1999, and the Amendment Act of 2015. The Act provides for the establishment of an appropriate legal and institutional framework for the management of the environment and related matters. This includes establishment of the Authority (NEMA) responsible for supervision and co-ordination of all matters relating to the environment; requirements for the preparation of National and County Action Plans; measures for the protection and conservation of various aspects of the environment; environmental quality standards, among other issues.

The Act also provides for Environmental Impact Assessment (EIA) of all types of development projects listed in the Second Schedule to ensure that the associated potential environmental and social impacts are identified, and that appropriate mitigation measures are developed for adverse impacts.

The Second Schedule of the EMCA, 1999 through Legal Notice No 31 of April 2019 categorises waste disposal works including wastewater treatment as high-risk projects for which a full study of environmental and social assessment was carried out, culminating in the preparation of a Study Report.

5.2. Policies, strategies, and action plans

5.2.1. The Constitution of Kenya, 2010

It guarantees fundamental rights and freedoms to all Kenyan citizens, including rights related to the environment, health, and access to information. Article 42 of the Constitution recognizes the right to a clean and healthy environment. The implementation of the faecal sludge management facility should ensure that environmental and public health standards are maintained to uphold this constitutional right.

The implementation requires the use of land. Article 40 of the Constitution protects the right to own property and sets out principles for land use and administration. The Agency must ensure that land acquisition processes are conducted transparently, justly, and in accordance with the Constitution and relevant laws.

The facility falls within the jurisdiction of the county government as per the devolution provisions of the Constitution. The Agency must collaborate and coordinate with the Kwale County Government in matters related to planning, regulation, and service delivery.

The proponent shall:

- *Respect the land rights of local communities and ensure proper compensation for land acquisition.*
- *Adhere to health and safety standards to protect workers and the community during construction and operation.*
- *Implement best practices for waste management, pollution control, and hygiene to safeguard the environment and public health.*
- *Regularly monitor and evaluate the facility's impact on the community and the environment and make necessary adjustments as needed.*

5.2.2. Vision 2030 (GoK, 2007)

Kenya Vision 2030 aims to transform Kenya into a globally competitive and prosperous nation with a high quality of life for its citizens. The development of infrastructure, including sanitation facilities, is crucial for achieving the vision's goals. The proposed faecal sludge management facility contributes to the "Infrastructure" pillar of Vision 2030, which emphasizes the development of robust infrastructure for economic growth and social well-being.

The facility also aligns with the "Social Pillar" of Vision 2030, focusing on human resource development, healthcare, and social equity. Proper sanitation and waste management contribute to improved public health and well-being. Vision 2030 emphasizes environmental sustainability and natural resource management. The faecal sludge management facility should adhere to environmentally sound practices to minimize negative environmental impacts. Vision

2030 recognizes urbanization and industrialization as key drivers of economic growth. The facility can support urban development by providing essential sanitation infrastructure.

The proponent shall:

- *Incorporate technology and best practices to enhance the efficiency and effectiveness of faecal sludge management, in line with Vision 2030's focus on innovation.*
- *Engage in partnerships and collaborations with relevant stakeholders, including local communities, to promote public participation and ownership of the facility.*
- *Regularly monitor and evaluate the facility's performance to ensure it continues to contribute to the broader objectives of Vision 2030.*

5.2.3. National Climate Change Response Strategy (NCCRS) 2010

The NCCRS provides guidance for integrating climate change considerations into development planning and implementation. The faecal sludge management facility should align with the NCCRS to ensure climate-resilient infrastructure and operations. The NCCRS emphasizes adaptation measures to address the impacts of climate change on various sectors, including water resources and infrastructure. The facility should consider potential climate change impacts (e.g., increased rainfall, flooding, sea-level rise) and incorporate adaptation strategies into its design and operation.

The proponent shall

- *Conduct a climate risk assessment to identify potential climate-related hazards and vulnerabilities that could affect the facility.*
- *Incorporate climate-resilient design features, such as flood-resistant infrastructure, erosion control measures, and water management systems that consider changing precipitation patterns.*
- *Implement energy-efficient and low-emission technologies to reduce the facility's carbon footprint and contribute to national climate mitigation goals.*

5.2.4. National Environment Action Plan (NEAP) 2009-2013

The NEAP sets out strategies and actions to achieve sustainable environmental management and conservation. The faecal sludge management facility should adhere to the NEAP to minimize environmental degradation and promote sustainable practices. The NEAP also, focuses on pollution prevention and sustainable waste management. The agency should adopt best practices in waste management, ensuring proper treatment and disposal of faecal sludge to prevent pollution and protect water resources.

The proponent shall:

- *Develop and implement a robust waste management plan that ensures proper treatment, disposal, and recycling of faecal sludge in accordance with NEAP waste management principles.*
- *Integrate environmental considerations into the facility's design, such as incorporating green infrastructure and minimizing energy consumption.*

5.2.5. National Biodiversity Strategy and Action Plan (NBSAP) 2000

The NBSAP aims to promote the conservation of biodiversity and the sustainable use of biological resources. The faecal sludge management facility should align with the NBSAP to minimize impacts on biodiversity and ecosystems. The NBSAP emphasizes the importance of conserving biodiversity, protecting ecosystems, and minimizing habitat degradation. The agency should assess potential impacts of the facility on local biodiversity and implement measures to minimize disruptions and protect species and habitats.

The proponent shall:

- *Implement measures to minimize habitat destruction and disturbance during construction and operation of the facility.*
- *Establish buffer zones and green infrastructure around the facility to support local biodiversity and ecosystem functions.*

5.2.6. National Spatial Plan 2015-2045

The National Spatial Plan provides a long-term vision for land use, infrastructure, and urban development across the country. The proposed faecal sludge management facility's location, design, and implementation should adhere to the principles of the National Spatial Plan. The National Spatial Plan guides the development of essential infrastructure, including waste management facilities. The agency should ensure that the facility's design and construction align with spatially planned infrastructure networks and minimize negative impacts on the landscape. The National Spatial Plan recognizes the importance of conserving natural and cultural heritage sites. The agency shall conduct assessments to identify and protect any environmentally or culturally sensitive areas within or near the proposed facility site.

The proponent shall:

- *Collaborate with local authorities to ensure that the facility's design adheres to spatial development plans, including infrastructure networks and growth areas.*
- *Ensure that the facility's construction and operation comply with regulations outlined in the National Spatial Plan to promote sustainable land use and development.*
- *Conduct heritage assessments to identify and protect any cultural or natural heritage sites in the vicinity of the facility.*

5.2.7. Sessional Paper No. 10 of 2014 on the National Environment Policy

National environmental policies provide a framework for promoting sustainable development, conservation, and protection of the environment. The proposed faecal sludge management facility shall align with the principles and objectives outlined in relevant national environmental policies. National environmental policies often emphasize pollution prevention and proper waste management practices. The agency shall ensure that the facility's design, construction, and operation adhere to regulations for waste disposal, treatment, and pollution control.

The proponent shall:

- *Implement waste management practices that prevent pollution and minimize adverse impacts on the environment and public health.*
- *Incorporate sustainable design and operational practices to minimize the facility's ecological footprint.*

5.2.8. Sessional Paper No. 1 of 1999 on National Policy on Water Resources Management & Development

The Sessional Paper provides guidelines for the sustainable management and development of water resources, including water quality and sanitation. The proposed faecal sludge management facility's activities must adhere to the principles outlined in this policy. The Sessional Paper highlights the need for protecting water quality and preventing pollution. The agency must implement proper waste management practices to prevent contamination of water bodies during faecal sludge treatment and disposal.

The proponent shall:

- *Ensure that the facility's design, construction, and operation adhere to water quality protection standards and guidelines outlined in the Sessional Paper.*
- *Implement best practices for waste management and treatment to prevent water pollution and protect water resources.*

5.2.9. Sessional Paper No. 3 of 2016 on National Climate Change Framework Policy

National climate change policies provide a framework for addressing climate change adaptation and mitigation. The proposed faecal sludge management facility's activities will align with the principles and objectives outlined in relevant national climate change policies. National climate change policies emphasize both adaptation to the impacts of climate change and mitigation of greenhouse gas emissions. The agency should consider potential climate change impacts and incorporate adaptation strategies into the facility's design and operation. Additionally, explore opportunities to minimize the facility's carbon footprint through efficient operations and technologies.

Proponent shall:

- *Ensure that the facility's design, construction, and operation align with climate change adaptation and mitigation strategies outlined in the policy.*
- *Implement best practices for waste management and treatment to minimize environmental impacts and promote climate resilience.*

5.2.10. Sessional Paper No. 1 of 2017 on National Land Use Policy

National land use policy provides a framework for managing land resources, spatial planning, and development. The proposed faecal sludge management facility's location, design, and implementation should align with the principles and objectives outlined in national land use policy. National land use policy guide spatial planning, zoning regulations, and land allocation. The agency should ensure that the facility's location conforms to designated land use zones and complies with land use regulations. National land use policies promote sustainable development practices and the responsible use of land resources.

Proponent shall:

- *ensure that the facility's design, construction, and operation align with sustainable land use practices and minimize negative impacts on the environment.*

5.2.11. National Policy on Occupational Safety and Health, 2012

The National Policy on Occupational Safety and Health aims to promote safe and healthy working conditions for employees across different industries. The proposed faecal sludge management facility's activities must adhere to the principles and provisions outlined in this policy to ensure the safety of workers. It emphasizes the importance of preventing workplace injuries, illnesses, and accidents and safeguard the health and safety of workers involved in the construction, operation, and maintenance of the facility. The National Policy highlights the need for training and capacity building to enhance workers' awareness of occupational hazards and safety procedures. The National Policy promotes the establishment of occupational health services to address workers' health needs and ensure access to medical services, regular health check-ups, and necessary support for workers' well-being.

The proponent shall:

- *Affirmative action for addressing workplace gender biases in occupational safety and health.*
- *Develop and implement workplace code of practice on HIV and AIDS at work.*
- *Develop guidelines for provision of facilities for persons with disabilities and other special needs in workplaces.*
- *Prevention of environmental pollution*

5.2.12. National HIV Policy (GoK, 1997)

The National HIV Policy (Government of Kenya, 1997) outlines strategies for addressing HIV/AIDS in Kenya, including prevention, treatment, care, and support. While the focus of this policy is primarily on public health and HIV/AIDS-related issue. The National HIV Policy emphasizes disease prevention, which extends to preventing the transmission of infectious diseases through proper hygiene and infection control practices. The National HIV Policy addresses the importance of preventing discrimination and stigmatization against individuals living with HIV/AIDS. The National HIV Policy encourages community engagement and sensitization to address HIV/AIDS-related issues. The National HIV Policy promotes the well-being of individuals living with HIV/AIDS, including access to medical care, counselling, and support services.

The proponent shall:

- *Provide appropriate training to workers and staff about HIV/AIDS awareness, prevention, and non-discrimination.*
- *Engage in community sensitization and awareness initiatives to promote understanding and cooperation regarding matters related to HIV/AIDS.*
- *Collaborate with health authorities to ensure access to medical care, counselling, and support services for workers, especially in matters related to HIV/AIDS.*

5.2.13. National Gender and Development Policy, 2000

The National Gender and Development Policy emphasizes gender mainstreaming, which means integrating a gender perspective into all policies, programs, and projects. The policy aims to ensure that both women and men have equal opportunities to participate in and benefit from development initiatives. The National Gender and Development Policy advocates for non-discrimination, equity, and the elimination of gender-based violence. The policy focuses on empowering women and enhancing their capacities to participate in development processes.

The proponent shall:

- *Integrate a gender perspective into all aspects of the facility's design, implementation, and operation, addressing the specific needs and concerns of women, men, and other gender identities.*
- *Promote the active participation of women and men from the local community in decision-making processes related to the facility's development and operation.*

5.2.14. National Solid Waste Management Strategy, NEMA, 2014

The National Solid Waste Management Strategy emphasizes responsible waste management practices, including proper disposal, treatment, and recycling. The strategy emphasizes the need to protect human health and the environment from the negative impacts of improper waste disposal. The strategy encourages involving local communities and stakeholders in

waste management planning and decision-making. The strategy emphasizes compliance with waste management regulations and guidelines set by NEMA and other relevant authorities.
The proponent shall:

- *Develop and implement a comprehensive waste management plan for the facility, addressing the proper treatment, disposal, and handling of faecal sludge and other waste generated.*
- *Ensure that waste management practices adhere to health and safety standards to prevent risks to workers, the community, and the environment.*
- *Promote waste reduction, recycling, and sustainable waste management practices within the facility's operations.*

5.2.15. The National Climate Change Action Plan (NCCAP) 2018 - 2022

The plan aims to further Kenya's development goals by providing mechanisms and measures to achieve low carbon climate resilient development in a manner that prioritizes adaptation. The plan seeks to provide a framework for mainstreaming climate change into sector functions at the national and county level; align climate change actions with the Government's development agenda, including the Big Four; Encourage participation of the private sector, civil society, and vulnerable groups within society, including women, older members of society, persons with disabilities, children, youth, and members of minority or marginalized communities; and provide the framework to deliver Kenya's Nationally Determined Contribution (NDC) for the five-year period 2018-2022. The plan proposes Climate proofing of infrastructure through use of climate information in infrastructure planning.
The proponent shall:

- *Incorporate climate change adaptation considerations into the design, construction, and operation of the facility to enhance its resilience to climate-related risks.*
- *Explore opportunities to minimize greenhouse gas emissions associated with the facility's operations and adopt energy-efficient and sustainable technologies.*

5.3. Kenyan laws and regulations

5.3.1. The Environment Management and Co-ordination Act, 1999

EMCA requires that projects with potential environmental impacts, including those related to waste management and water resources, undergo an Environmental Impact Assessment (EIA). EMCA mandates the development and implementation of an Environmental Management Plan (EMP) for projects with significant environmental impacts. EMCA addresses waste management and pollution control, which are directly relevant to the operation of a faecal sludge management facility. EMCA sets forth a range of environmental regulations and guidelines that projects must comply with and requires projects to monitor and report on their environmental performance.

The proponent shall:

- *Ensure compliance with all environmental regulations and guidelines specified in EMCA throughout all phases of the facility's implementation.*
- *Establish a monitoring and reporting system to track and report on the facility's environmental performance, including any corrective actions taken.*

5.3.2. Environmental Management and Coordination (Amendment) Act 2015

Legal Notice No 31 of April 2019 on the EMCA

Provides for an EIA of a proposed development project before implementation. Categorises waste disposal projects including sludge treatment facility as **High-Risk** projects for which a full study assessment shall be undertaken.

The proponent shall:

- *Conduct a thorough full study Environmental and Social Impact Assessment (ESIA) for the (FSMF) to evaluate potential environmental impacts and propose mitigation measures.*
- *Develop and implement an Environmental and social Management Plan (ESMP) outlining measures to minimize environmental harm and ensure compliance with EMCA.*

5.3.3. Environmental Impact Assessment Guidelines and administrative procedures, 2002

The EIA Guidelines outline the step-by-step process for conducting an environmental impact assessment, including screening, scoping, baseline data collection, impact assessment, mitigation measures, and public participation. The guidelines provide the steps in implementation of an EIA, Monitoring and Environmental Audit. Provides for scoping studies and preparation of ToRs where an EIA study is to be carried out. Provides for the contents/format of an EIA Study Report.

The proponent shall: f*ollow the EIA Guidelines and Administrative Procedures, 2002, throughout all phases of the facility's implementation.*

5.3.4. Environmental (Impact Assessment and Audit) Regulations 2003 (Legal Notice No. 101 of 2003)

Provides that a project for which an EIA is required shall not be implemented unless the EIA has been concluded and approved. Also, provides that the EIA shall be conducted in accordance with the general EIA guidelines developed.

Provides that an EIA study shall:

- identify anticipated impacts of the project and scale of impacts.
- Identify and analyse alternatives to the project.

- Propose mitigation measures to be taken during and after implementation of the project.
- Develop an environmental management plan with mechanisms for monitoring and evaluating the compliance and environmental performance. It shall include the cost of mitigation measures and timeframe of implementation.

The proponent shall:

- *Conduct the EIA in accordance with the general EIA guidelines developed.*

5.3.5. The Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019

These Environmental (Impact Assessment and Audit) Regulations, 2003 were amended in by deleting regulation 7. The EIA/EA Regulations are meant to ensure the implementation of Sec. 58 of EMCA. It makes it illegal for anyone to undertake developments without an EIA license and stipulates the ways in which environmental experts should conduct the Environment Impact Assessment and Audits reports in conformity to the requirement stated. It is concise in its report content requirements, processes of public participation, licensing procedures, inspections and any possible offences and penalties under the Act.

The proponent shall:

- *Prepare ESIA study report for submission to the Authority for licensing/approval prior commencement of the project.*
- *Provides for the integration of climate change vulnerability assessment, relevant adaptation, and mitigation actions.*

5.3.6. Environmental Management and Coordination (Water Quality) Regulations, 2006 (Legal Notice No. 120 of 2006)

These Regulations address the challenges of pollution of water resources and conservation. It consists of VI parts and eleven schedules dealing with protection of sources of water for domestic use to miscellaneous provisions.

The proponent shall:

- *Implement measures to prevent water pollution from construction activities, effluent discharge, and oil spills at operational phase.*
- *The proponent should apply for and obtain an Effluent Discharge License from NEMA during the operation phase of the proposed project.*

5.3.7. Environmental Management and Coordination (Waste Management) Regulations, 2006 (Legal Notice No. 121 of 2006)

Provides for the proper handling, transportation, and disposal of various types of wastes including hazardous wastes. The regulation also provides that waste generators shall collect, segregate, and dispose waste in an appropriate manner and implement measures to minimise

waste generated. Also, provides for application of a license to operate a waste disposal facility/site and application requires inclusion of County Planning Authority for the disposal site. The proponent shall:

- *Seek license to operate/own waste disposal site and ensure that vehicles delivering the waste are licensed.*
- *Ensure all wastes are disposed off in the manner prescribed.*
- *Ensure that tracking documents for the waste are used.*

5.3.8. Environmental Management and Coordination (Noise and Excessive Vibrations Pollution) (Control) Regulations, 2009

Prohibits the generation of unreasonable, unnecessary, or unusual noise which annoys, disturbs, injures, or endangers the comfort, repose, health or safety of others and the environment. Provides for noise and excessive vibrations control for machinery, motor vehicle, construction equipment or other commercial/industrial activity. Provides for noise and vibrations control during construction at night, and from demolition, mining, or quarrying sites. Provides for application of a permit where a sound source is planned/installed in a manner to emit noise or vibrations at levels contravening the regulations.

The proponent shall: e*nsure compliance with the set noise level limits for the site especially during construction and occupational phases. The proponent should ensure that employees are not exposed to noise levels above stipulated levels and appropriate measures are in place to protect workers.*

5.3.9. Environmental Management and Co-ordination (Controlled Substances) Regulations, 2007

The EMCA (Controlled Substances) Regulation is aimed at controlling the production, consumption and exports and imports of controlled substances. Controlled substances are grouped into three lists as indicated below:

- Group 1 list consists of halogenated flouro-chemicals with ozone depleting substances.
- Group 2 list consist of hydrobromoflourocarbons with ozone depleting substances.
- Group 3 list consist of bromochloromethane with ozone depleting substances.

Products containing controlled substances include air conditioners, air coolers, refrigerants, portable fire extinguishers, heat pump equipment, dehumidifiers, insulation boards, panels and pipe covers, prepolymers, etc.

The proponent shall: e*nsure that the requirements of this regulation are observed to ensure that equipment, machinery, vehicles, and chemicals containing such components are not imported into the country for use in the proposed project.*

5.3.10. Environmental Management and Coordination (Fossil Fuel Emission Control) Regulations, 2006

The EMCA (Fossil Fuel Emission Control) Regulations, 2006 aims at eliminating or reducing emissions emitted from internal combustion engines to acceptable levels. The regulation provides guidelines on use of clean fuels, use of catalysts and inspection procedures for engines and generators. This regulation is applicable to the proposed project since there would be use of vehicles, machinery and equipment that depend on fossil fuel as their source of energy.

The proponent shall: i*mplement the requirements to eliminate or reduce air quality degradation. Sections of the regulation citing the standards of recommended emission levels will be given to the contractor and or pinned at strategic points in the contractor's field offices.*

5.3.11. Environmental Management and Coordination (Air Quality) Regulations, 2014

The objective of these Regulations is to provide for prevention, control, and abatement of air pollution to ensure clean and healthy ambient air. The general prohibitions state that no person shall cause the emission of air pollutants listed under First Schedule (Priority air pollutants) to exceed the ambient air quality levels as required/ stipulated under the provisions of the Seventh Schedule (Emission limits for controlled and non-controlled facilities) and Second Schedule (Ambient air quality tolerance limits). The regulations provide for the establishment of emission standards for various sources, including as mobile sources (e.g. motor vehicles) and stationary sources (e.g. industries) as outlined in the Environmental Management and Coordination Act, 1999. It also covers any other air pollution source as may be determined by the Minister in consultation with the Authority. The Regulations prohibits the Proponent from:

- Acting in a way that directly or indirectly cause or may cause air pollution to exceed levels set out in the second Schedule to the Regulations
- Allowing particulates emissions into the atmosphere from any source not listed in the Six Schedule of the Regulations
- Causing ambient air quality in controlled areas (listed in Schedule Thirteen) to exceed those stipulated under second Schedule. - Allowing (during construction and demolition) emission of particulate matter above the limits stipulated in Second Schedule
- Causing or allowing stockpiling or storage of material in a manner likely to cause air pollution.
- Causing or allowing emissions of oxides of nitrogen in excess of those stipulated in the eleventh Schedule of the Regulation

The proponent shall:

- *Implement measures to control and minimize emissions generated during construction and operational phase of faecal sludge, including the use of appropriate technologies and practices.*

- *Regularly monitor emissions from the facility to ensure compliance with air quality standards and promptly address any deviations.*

5.3.12. Public Health Act, 2012

This is an act of parliament to make provision for securing and maintaining health. Section 13 states that it shall be the duty of every health authority to take all lawful, necessary and under its circumstances reasonably practicable measures for preventing the occurrence or dealing with any outbreak, or prevalence of any infections, communicable or preventable diseases or conditions to safeguard and promote the public health and to exercise the powers and perform the duties in respect of the public health conferred or imposed on it by this act or by any other law. The Public Health Act Cap 247, Section 3 gives provisions for use of poisonous substances. It refers to regulations for protection of persons against risk of poisoning, imposing restrictions or conditions on the importation, sale, disposal, storage, transportation, or use of poisonous substances. This Act also requires persons concerned with importation, sale, disposal storage, transportation, or use of poisonous substances to be registered and licensed and provides measures for detecting and investigating cases in which poisoning has occurred.

The proponent shall: *ensure compliance with the Act by providing clean, healthy and safe environment during construction and subsequent operation of the Faecal sludge management facility.*

5.3.13. Physical and Land Use Planning Act, 2019

The Act provides for the planning, use, regulation, and development of land and for connected purposes. It was enacted to ensure that every person engaged in physical and land use planning shall promote sustainable use of land and liveable communities which integrates human needs in any locality. The Act allows the County Government to prepare a local physical and land use development plan in respect of a city, municipality, town, or unclassified urban area. Provides that a development application will be submitted along with an EIA Report.
The proponent shall:

- *Ensure that the proposed location for the faecal sludge management facility aligns with land zoning and land use plans, obtaining any necessary approvals.*
- *Ensure strict compliance with land use regulations and guidelines, including those related to waste management and facility design.*
- *Clarify and secure land tenure and ownership rights for the facility's site to avoid legal disputes or challenges related to land use.*

5.3.14. The Land Act, 2012

Provides for methods of acquisition of title to land including compulsory acquisition where land is required for public purposes or in the public interest as related to and necessary for fulfilment

of the stated public purpose. The act provides, for just compensation of persons whose interests in the land have been determined during compulsory acquisition and for conservation of ecologically sensitive public land that has endangered or endemic species of flora and fauna, critical habitats, or protected areas.

Provides for the establishment of settlement programmes to provide access to land for persons displaced by development projects or other causes that may lead to movement and displacement and provides for the creation of a public right of way. Also, provides for eviction of unlawful occupation of private, communal, or public land giving at least three months' notice.

The proponent shall:

- *Determine and confirm the land tenure and ownership status of the about 40 acres of land earmarked for the faecal sludge management facility.*
- *Follow the legal procedures and requirements specified in the Land Act, including obtaining the necessary approvals and documentation.*

5.3.15. Water Act, 2016

Provides that a person shall not, without authority conferred under this Act throw, convey, cause, or permit to be thrown or conveyed, any rubbish, dirt, refuse, effluent, trade waste or other offensive matter or thing into or near to any water resource in such manner as to cause, or be likely to cause, pollution of the water resource.

The proponent shall:

- *Ensure that water usage in all phases of the project cycle is in line with the provisions of this Act.*
- *Ensure that the activities of the site do not cause any leachate that may cause ground water pollution.*

5.3.16. Occupational Safety and Health Act, 2007

The purpose of the Occupational Safety and Health Act (OSHA) is to provide for the safety, health and welfare of workers and all persons lawfully present at workplaces and to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes. Of particular importance to the proposed project is the requirement that all workplaces must be registered with the Department of Occupational Safety and Health Services. Further, there is a requirement that a Safety and Health Committee must be put in place and those employees and members of this committee must be inducted and trained on the provisions of the Act accordingly. The OSHA, 2007 stipulates that an employer shall not require or permit his employee to engage in the manual handling or transportation of a load which by reason of its nature is likely to cause the employee to suffer bodily injury.

The proponent shall:

- *Under OSHA, register the site as a workplace with the DOSHS and ensure timely renewal of the same.*
- *Ensure prevention of accidents at the workplace and provision of personal protective equipment (PPE) to all workers and enforces their use.*
- *Strict provisions will be made for the requirement of supervision and training of inexperienced workers during commissioning period and carry out occupational safety and health audit annually.*

5.3.17. The Factories and Other Places of Work (Noise Prevention and Control) Rules, 2005

Rules provide for the maximum noise exposure levels for workers in places of work and for the provision of protective equipment for those exposed to high noise levels. The rule requires an occupier shall also institute noise reduction measures at the source of noise in the workplace and development of a noise prevention program where noise in a workplace exceeds the continuous equivalent of eighty-five dB(A)

The proponent shall:

- *Implement noise control measures during the construction phase to minimize disturbance to nearby residents and workplaces, following any guidelines provided by the Rules.*
- *Ensure that equipment and machinery used in the facility's operations comply with noise emission standards set forth in the Rules.*

5.3.18. The HIV and AIDS Prevention and Control Act, 2006

Provides for basic information and instruction on HIV and AIDS prevention and control to employees of all Government Ministries, Departments, authorities and other agencies, and employees of private and informal sectors. Prohibits compulsory testing for HIV as a precondition to, or for the continued enjoyment of employment. Provides that a person who is and is aware of being infected with HIV shall take all reasonable measures and precautions to prevent the transmission of HIV to others.

The proponent shall:

- *Prevent the spread HIV and AIDS, during the construction and operation of the faecal sludge management facility by creating awareness on HIV/AIDS to the facility workers and the community.*

5.3.19. Sexual Offenses Act, 2006 and its amendment 2012

Observing a standard work ethic is recommended to ensure persons from both genders are not subjected to sexual offences. Ample working environment should prevail in all workplaces in the project, to be enhanced through implementation of a Sexual Misconduct Policy. The act, Identifies and prohibits sexual offences including rape, assault, indecent acts, defilement,

harassment etc. Prohibits the deliberate transmission of HIV or any other life threatening sexually transmitted disease.

The proponent shall: o*bserve the requirements of the Act and measures proposed in this document to enhance good and acceptable behaviour by all project personnel.*

5.3.20. The Climate Change Act 2016 and Amendment 2023

This is an Act of Parliament to provide for a regulatory framework for enhanced response to climate change; to provide for mechanism and measures to achieve low carbon climate development, and for connected purposes. The Act provides a regulatory framework for the development, management, implementation, and regulation of mechanisms to enhance climate change resilience and low carbon development for the sustainable development of Kenya.
It provides for mainstreaming of climate change responses into development planning, decision making and implementation as well as resilience and adaptation in all governance sectors. The Act also stipulates the climate change response measures and actions; this includes the formation of National Climate Change Action Plan. The National Climate Change Action Plan shall be presented for approval by the Council. The National Climate Change Action Plan shall prescribe measures and mechanisms that will include guiding the county toward the achievement of low carbon climate resilient sustainable development among other measures and mechanisms aimed at reducing carbon levels in the country.
The proponent shall:

- *Develop a Climate Change Action Plan and implement measures to ensure low carbon footprint at the facility through incorporating low carbon technologies to reduce emission intensity.*
- *Install renewable energy sources such as lighting, energy efficient machines and ensure low carbon emissions to the environment.*

5.3.21. Water Resource Management Rules 2007

The rules provides that no person shall discharge or apply any poisonous, toxic, noxious or obstructing matter, radioactive waste or other pollutants or permit any person to dump or discharge such matter into any water resource unless the discharge of such poisonous, toxic, noxious or obstructing matter, radioactive waste or pollutant is treated to permissible standards as authorized by the Authority.
Provides that No person shall:

- Discharge effluent into a water resource without a valid discharge permit issued by the Authority.
- Discharge wastewater or effluent, which does not meet the water quality requirements stipulated in the effluent discharge permit.

- Generate and discharge effluent onto land or into any water resource without compliance with an approved Effluent Discharge Control Plan.

Provides for an application for water resource use with respect to an effluent discharge point and for maintenance of records of all water discharged giving the date, time quality, quantity, and methods of discharge.

The proponent shall:

- *Implement measures to protect the water quality of nearby water bodies, ensuring that pollutants from the facility do not contaminate water sources.*
- *Implement robust pollution control measures to prevent contamination of water sources by faecal sludge or other pollutants.*

5.3.22. The County Governments Act 2012 and Amendment 2020

An Act of Parliament to give effect to Chapter Eleven of the Constitution; to provide for county governments' powers, functions, and responsibilities to deliver services and for connected purposes. Section 109 of the County Government Act (2012) helps counties to ensure effective coordination of spatial developments. Sub - section (2) part C states in part; a spatial county plan shall:

- Indicate desired patterns of land use within the county.
- Address the spatial construction or re-construction of the county.
- Provide strategic guidance in respect of the location and nature of development within the county.
- Set out basic guidelines for a land use management system in the county considering any guidelines, regulations or laws as provided for under Article 67(2) (h) of the Constitution.
- Set out a capital investment framework for the county ‘s development programs.
- Contain a strategic assessment of the environmental impact of the spatial development framework.

The proponent shall:

- *Always gives rights to access the facility by the County Government officers for inspection purposes.*

5.3.23. The Energy Act, 2019

An Act of Parliament to consolidate the laws relating to energy, to provide for National and County Government functions in relation to energy, to provide for the establishment, powers and functions of the energy sector entities; promotion of renewable energy; exploration, recovery and commercial utilization of geothermal energy; regulation of midstream and downstream petroleum and coal activities; regulation, production, supply and use of electricity and other energy forms; and for connected purposes. The Act sets up the establishment of

Energy and Petroleum Regulatory Authority (EPRA) hereinafter referred to as the Authority. The Energy and Petroleum Regulatory Authority (EPRA) is established as the successor to the Energy Regulatory Commission (ERC) under the Energy Act, 2019 with an expanded mandate of inter alia regulation of upstream petroleum and coal.

The proponent shall: e*nsure that the energy supplied is consumed in accordance with the provisions of the Act and energy audits carried out on the facility.*

5.3.24. The Children Act, 2022

The Act defines a child as any human being under the age of eighteen years, and child abuse as physical, sexual, psychological, and mental injury to a child. Child labour is regarded as any situation where a child provides labour in exchange for payment and includes:

- any situation where a child provides labour as an assistant to another person and his labour is deemed to be the labour of that other person for the purposes of payment.
- any situation where a child's labour is used for gain by any individual or institution whether or not the child benefits directly or indirectly; and
- any situation where there is in existence a contract for services where the party providing the services is a child whether the person using the services does so directly or by agent.

Regarding child labour, the Act provides that every child shall be protected from economic exploitation and any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral or social development. The Act provides that a child is entitled to protection from physical and psychological abuse, neglect and any other form of exploitation including sale, trafficking, or abduction by any person.

A child shall be protected from sexual exploitation and use in prostitution, inducement, or coercion to engage in any sexual activity, and exposure to obscene materials. A child shall also be protected from use of hallucinogens, narcotics, alcohol, tobacco products or psychotropic drugs and any other drugs that may be harmful to their health.

The proponent shall: n*ot employ children in any capacity that involves payment, either directly or indirectly, and they shall not engage in any contracts for services with children, either directly or through agents.*

5.3.25. The National Construction Authority Act, 2011

The Act establishes an Authority known as the National Construction Authority whose mandate is to oversee the construction industry and coordinate its development. The Authority's functions are inter alia:

- promote and ensure quality assurance in the construction industry.

- accredit and register contractors and regulate their professional undertakings.
- accredit and certify skilled construction workers and construction site supervisors; and
- develop and publish a code of conduct for the construction industry.

The proponent shall:

- *Ensure strict compliance with NCA's construction standards and regulations throughout all phases of the faecal sludge management facility's implementation.*
- *Engage registered and licensed contractors and construction professionals who meet the NCA's requirements for licensing and registration.*

5.3.26. The Work Injury Benefits Act, 2007

The Act provides for the obtainment and maintenance by the employer, of an insurance policy, with an insurer in respect of any liability that the employer may incur under the Act to any of his employees. Act outlines employees' rights to compensation in the event of an accident resulting in the employee's disablement or death, or injury while at work. The employee is also entitled to compensation in the event he/she contracts a disease that arose out of and during the employee's employment. Further, the act provides for the reporting of injury or accident by the employer to the Director of Occupational Safety and Health Services DOSHS in a prescribed manner and directs an employer to provide and maintain such appliances and services for the rendering of first aid to his employees in case of any accident.

The proponent shall:

- *Be prepared to provide compensation to workers who sustain work-related injuries during construction or facility operations, in accordance with the Act.*
- *Develop and implement a system for reporting and recording work-related injuries or illnesses as required by the Act.*

5.3.27. The Fisheries Management and Development Act, 2016

The Act provides for the conservation, management and development of fisheries and other aquatic resources to enhance the livelihood of communities dependent on fishing, and other connected purposes. The objective of the Act is to protect, manage, use, and develop the aquatic resources in a manner which is consistent with ecologically sustainable development, to uplift the living standards of the fishing communities and to introduce fishing to traditionally non-fishing communities and to enhance food security.

Guiding principles in implementation of the Act include:

- long-term sustainable use, conservation and management of fisheries resources and habitat, and adoption and implementation of management measures in such a manner as to ensure that the fisheries resources and habitat are not overexploited, threatened, or endangered.
- conservation and protection of fisheries habitats.

- encouraging the participation of users of the fisheries resources, and the general community, in the management of fisheries

The Act provides that no person shall prepare for the introduction of, attempt to introduce or introduce into the Kenya fishery waters, directly, indirectly, deliberately, any deleterious article or substance, including articles or substances which may have toxic, hazardous or other harmful properties or effects in relation to fish or the marine environment, and which may adversely affect the habitat or health of the fish.

The proponent shall:

- *Implement measures to prevent contamination of nearby water bodies with pollutants from the faecal sludge management facility to protect fishery resources.*
- *Ensure that the facility's construction and operation do not harm aquatic ecosystems or degrade water quality that could negatively impact fisheries.*

5.3.28. The National Museums and Heritage Act, 2006

The Act establishes the National Museums of Kenya with functions to, among others, identify, protect, conserve, and transmit the cultural and natural heritage of Kenya; and promote cultural resources in the context of social and economic development.

The Act provides that where a person discovers a monument or object of archaeological or palaeontological interest, the person shall, within seven days, give notice thereof, indicating the precise site and circumstances of the discovery, to the National Museums, and in the case of an object, shall deliver the object to the National Museums or to the District Commissioner to keep it for any particular purpose or for any particular period.

Provides that no person shall move a monument or object of archaeological or palaeontological interest from the place where it has been discovered otherwise than in such manner and to such place as may be allowed by an exploration licence, or by written permit from the Minister after consultation with the National Museums.

The proponent shall:

- *Take care of their documentation, inventorying, and conservation if any finds occur during FSMF construction as directed by the Act.*

5.3.29. The Employment Act, 2007 (and Amendment 2022)

The Act prohibits forced labour and provides that no person shall use or assist any other person in recruiting, trafficking, or using forced labour and that an employer shall promote equal opportunity in employment and strive to eliminate discrimination in any employment policy or practice. Prohibits direct or indirect discrimination and harassment of employees and potential employees because of:

- race, colour, sex, language, religion, political or other opinion, nationality, ethnic or social origin, disability, pregnancy, marital status, or HIV status.

- recruitment, training, promotion, terms and conditions of employment, termination of employment or other matters arising out of the employment.

Provides for informing employees of their rights by the display of information on employee's rights in a conspicuous and accessible place.

Provides that an employer shall pay the entire amount of the wages earned by or payable to an employee in respect of work done by the employee in pursuance of a contract of service directly in cash, into an account, or by cheque. The Act includes rights and duties in employment such as regulated hours of work, entitlement to annual leave, maternity leave, sick leave, wholesome water, medical attention and provides that no person shall employ a child in any activity which constitutes worst form of child labour, that no person shall employ a child who has not attained the age of thirteen years whether gainfully or otherwise in any undertaking and that a child of between thirteen years of age and sixteen years of age may be employed to perform light work which is:

- Not likely to be harmful to the child's health or development; and
- Not such as to prejudice the child's attendance at school, his participation in vocational orientation or training programmes approved by the Cabinet Secretary or his capacity to benefit from the instructions received.

The proponent shall:

- *Ensure that all workers involved in the construction and operation of the faecal sludge management facility have valid employment contracts that comply with the Employment Act, 2007.*
- *Adhere to working hour limits and provide proper rest periods for employees to avoid violations of the Act.*

5.3.30. The Penal Code, Cap 63

Provides that any person who does an act not authorized by law or omits to discharge a legal duty and thereby causes any common injury, or danger or annoyance, or obstructs or causes inconvenience to the public in the exercise of common rights, commits the misdemeanour termed a common nuisance and that any person who voluntarily corrupts or fouls the water of any public spring or reservoir, so as to render it less fit for the purpose for which it is ordinarily used, is guilty of a misdemeanour. The act provides that any person who voluntarily vitiates the atmosphere in any place, so as to make it noxious to the health of persons in general dwelling or carrying on business in the neighbourhood or passing along a public way, is guilty of a misdemeanour. The act also condemns reckless and negligent acts that endanger human life or are likely to cause harm to any other person such as:

- in the manner of driving of any vehicle.
- acts with fire or any combustible matter or omits to take precautions against any probable danger from any fire or any combustible matter in his possession.

- acts with respect to or omits to take proper precautions against any probable danger from, any machinery of which he is solely or partly in charge.
- in the handling of poisonous substances

The proponent shall:

- *Implement measures to prevent environmental violations, such as pollution or damage to the environment, during all phases of facility implementation.*
- *Prioritize safety measures to prevent accidents or incidents that could lead to criminal charges for negligence or endangerment.*
- *Ensure that the facility's operations do not cause damage to public or private property and address any damage promptly.*

5.3.31. Occupiers Liability Act Cap 34

This is an Act of parliament to amend the law as to liability of occupiers and others for injury or damage resulting to persons or goods lawfully on land or property from dangers due to the state of the property or to things done or omitted to be done there.

The proponent shall:

- *Ensure safety of workers during construction, implementation, and possible decommissioning phases of the proposed project*
- *Warn the visitors of the likelihood of dangers within FSMF to enable the visitor to be reasonably safe.*

5.4. The World Bank Environmental and Social Framework, 2017

Table 5-1 Summary of the World Bank ESMF, 2017 Provisions

Standard	Provision
Environmental and Social Standard (ESS) 1: Assessment and Management of Environmental and Social Risks and Impacts	• Provides for environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making. • Provides for identification and evaluation of environmental and social risks and impacts of a project. • Provides for the adoption of a mitigation hierarchy to anticipate and avoid, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to workers, affected communities, and the environment. • Provides for improvement in environmental and social performance through the effective use of management systems. • Provides for mechanisms to ensure that grievances from affected communities and external communications from other stakeholders are responded to and managed appropriately. • Provides for mechanisms for adequate engagement with affected communities throughout the project cycle on issues that could potentially affect them. • Provides for measures to ensure that relevant environmental and social information is disclosed and disseminated.

Standard	Provision
ESS2: Labour and Working Conditions	• Provides for measures to promote the fair treatment, non-discrimination, and equal opportunity of workers. • Provides for measures to establish, maintain, and improve the worker-management relationship. • Provides for measures to promote compliance with national employment and labour laws. • Provides for measures to protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in an organization's supply chain. • Provides for mechanisms to promote safe and healthy working conditions, and the health of workers. • Provides for measures to avoid the use of forced labour.
ESS3: Resource Efficiency and Pollution Prevention and Management	• Provides for measures to avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities. • Provides for measures to promote more sustainable use of resources, including energy, water, and raw materials. • Provides for measures to reduce project related GHG emissions (both short and long-lived climate pollutants) • Provides for measures to minimize generation of hazardous and non-hazardous waste
ESS4: Community Health and Safety	• Provides for mechanisms to anticipate and avoid adverse impacts on the health and safety of the affected community during the project life from both routine and non-routine circumstances. • Provides for measures to ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the affected communities. • Provides for measures to avoid or minimize community exposure to project-related traffic and road safety risks, diseases, and hazardous materials. • Provides for establishment of measures to address emergency events
ESS5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement	• Provides for measures to avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives. • Provides for measures to avoid forced eviction. • Provides for measures to mitigate unavoidable adverse social and economic impacts from land acquisition or restrictions on land use by providing timely compensation for loss of assets at replacement cost and assisting displaced persons in their efforts to improve, or at least restore, their livelihoods and living standards, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher. • Provides for measures to ensure that resettlement activities are planned and implemented with appropriate disclosure of information, meaningful consultation, and the informed participation of those affected.
ESS6: Biodiversity Conservation and Sustainable	• Provides for measures to ensure the protection and conservation of biodiversity and habitats. • Provides for the application of the mitigation hierarchy and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity.

Standard	Provision
Management of Living Natural Resources	• Provides for measures to promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.
ESS7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	• Provides for measures to ensure that the development process fosters full respect for the human rights, dignity, aspirations, identity, culture, and natural resource-based livelihoods of Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities • Provides for measures to avoid adverse impacts of projects on indigenous Peoples. • Provides for mechanisms to obtain the Free, Prior, and Informed Consent (FPIC) of affected Indigenous Peoples.
ESS8: Cultural Heritage	• Provides for measures to protect cultural heritage from the adverse impacts of project activities and support its preservation. • Provides for measures to address cultural heritage as an integral aspect of sustainable development. • Provides for measures to promote meaningful consultation with stakeholders regarding cultural heritage. • Provides for measures to promote the equitable sharing of benefits from the use of cultural heritage
ESS10: Stakeholder Engagement and Information Disclosure	• Provides for measures to establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties. • Provides for measures to assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance. • Provides for measures to promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle on issues that could potentially affect them. • Provides for measures to ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner. • Provides for measures to ensure that project-affected parties are provided with accessible and inclusive means to raise issues and grievances and allow Borrowers to respond to and manage such grievances.

5.5. Multilateral environmental agreements

Table 5-2 Summary of the relevant environmental obligations in the international agreements

MEA	Relevant environmental obligations
East African Community (EAC) Protocol on Environment and Natural Resources (EAC, 1999), Amendment 2006	Article 13- Management of water resources requires that Partner States shall utilize water resources sustainably.
EAC Climate Change Policy (EACCCP) (EAC, 2011)	Section 3.1.3 Climate change adaptation Relevant sectorial obligations: c) Infrastructure

MEA	Relevant environmental obligations
	(i) Promoting climate change integration in all planning and design of infrastructure
The 1992 United Nations Framework Convention on Climate Change (UNFCCC)	States to establish methods to minimize global warming and the emission of the greenhouse gases
The Paris Agreement, 2016	The Agreement provides the framework to address climate change for a safer and sustainable future. Prevention of a global temperature increase above 1.5 degrees Celsius relative to pre-industrial levels by reduction of Greenhouse gas emissions
Vienna Convention on the Protection of the Ozone Layer	Phasing out ozone depleting substances to protect the Ozone Layer. Intergovernmental cooperation on research, systematic observation of the ozone layer, monitoring of CFC production, and the exchange of information
United Nations Convention on Biological Diversity (UNCBD)	Conservation and sustainable use of biodiversity
United Nations Convention to Combat Desertification (UNCCD)	Requires partners to address the problem of the degradation of land by desertification and the impact of drought
Convention on Biological Diversity (CBD Secretariat, 1992)	• Conservation and sustainable of biodiversity (Article 1) • International cooperation in biodiversity conservation (Article 5) • In-situ conservation protected areas (Article 8a) • Prevention of alien species (Article 8h) • Ex-situ conservation (Article 9)
Convention on Migratory Species – Bonn Convention	• Conserving migratory species and protecting their habitats (Article 2.1) • Engagement in regional and international agreements on conservation of migratory species in Appendix 1 & II (Article 5) • Prevention of alien species (Article 5.5e) • Establishment of new wildlife habitats for migratory species (Article 5.5g) • Removing threats to migratory corridors and migratory species (Articles 5.5h & i)
Convention Concerning the Protection of the World Cultural & Natural Heritage (United Nations Educational, Scientific & Cultural Organisation, 1972)	• Identifying, protecting, and conserving natural heritage (Article 4) • Cooperation between countries and involvement of local communities (Articles 6 & 7)

5.6. Institutional framework

5.6.1. Water Sector

The Ministry of Water, Sanitation and Irrigation is the key institution responsible for the water sector in Kenya. The Ministry's mandate is development and management of water resources,

transboundary waters, water harvesting and storage, water services and sanitation regulation, dams and sanitation management. The Ministry is concerned with the issues on: Water Resources Management Policy; Water Catchment Area Conservation, Control and Protection; Water and Sewerage Services Management Policy; Wastewater Treatment and Disposal Policy; Water Quality and Pollution Control; Sanitation Management; Management of Public Water Schemes and Community Water Projects; Water Harvesting and Storage for Domestic and Industrial Use; Flood Control Management; and Transboundary Water policy.

The following institutions have also been established by the Water Act 2016 and their roles and responsibilities are discussed below:

The Water Services Regulatory Board whose principal object is to protect the interests and rights of consumers in the provision of water services. The Board determines and prescribes national standards for the provision of water services and asset development for water services providers. It also approves tariffs, issues licenses to Water Service Providers and makes recommendations on how to provide basic water services to marginalised areas.

Water Resources Authority whose functions include inter alia the formulation and enforcement of standards, procedures and Regulations for the management and use of water resources and flood mitigation; and regulation of the management and use of water resources.

National Water Harvesting and Storage Authority whose functions include the development of national public water works for water resources storage and flood control; maintenance and management of national public water works infrastructure for water resources storage; and the development of a water harvesting policy and enforcement of water harvesting strategies.

Water Works Development Agencies whose functions include the development, maintenance and management of the national public water works within their area of jurisdiction and provision of technical services and capacity building to relevant county governments and water services providers within jurisdictions as necessary.

Water Resource User Associations (WRUAs) which are community-based associations for collective management of water resources and resolution of conflicts concerning the use of water resources.

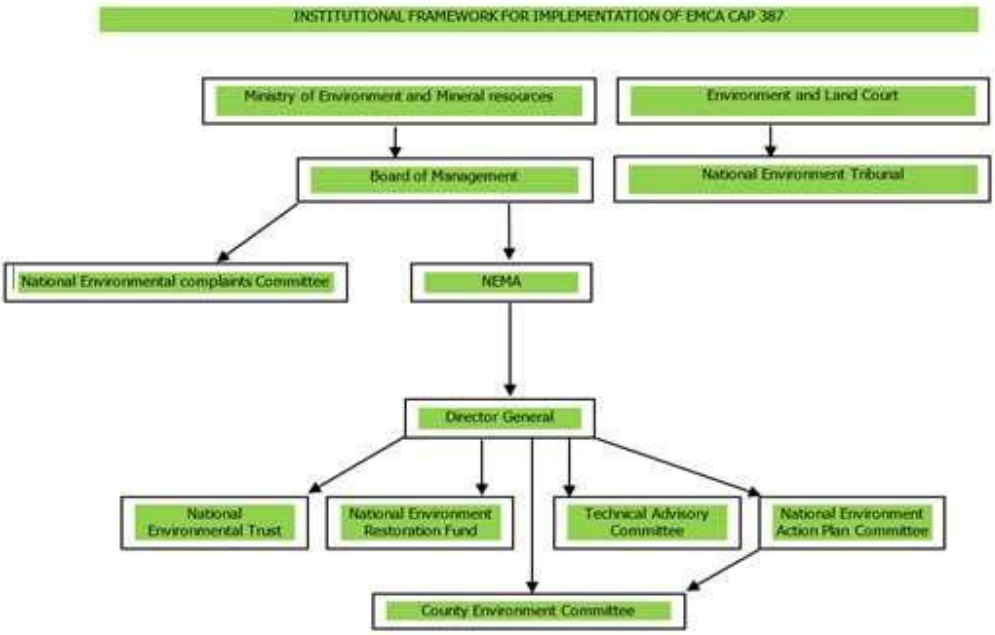
Water Services Providers (WSPs) are responsible for provision of water services within the area specified in their licenses and development of county assets. Mombasa Water Supply and Sewerage Company Limited (MOWASSCO) and Kwale Water Supply and Sewerage Company KWAWASSCO) are the WSPs in the project area and which manages the water distribution infrastructure in Mombasa and Kwale respectively.

Water Sector Trust Fund whose objective is to provide conditional and unconditional grants to counties, in addition to the Equalisation Fund and to assist in financing the development and management of water services in marginalized areas or any area which is considered by the Board of Trustees to be underserved.

5.6.2. The environment sector

There are several institutions which deal with environmental issues in Kenya. Some of the key institutions include National Environment Management Authority (NEMA), the Water Resources Authority (WRA), The Kenya Forest Service (KFS), the Kenya Wildlife Service (KWS) and the National Museums of Kenya (NMK). There are also local and international NGOs involved in environmental issues in the country. The Figure below shows the institutional framework for the EMCA, 1999 which is the umbrella framework within which all the environmental issues concerning the proposed project will be implemented.

Figure 5-1 Institutional framework for the Environmental Management and Coordination Act



5.6.2.1. National Environment Management Authority (NEMA)

The object and purpose for which NEMA was established is to exercise general supervision and co-ordinate over all matters relating to the environment and to be the principal instrument of the government in the implementation of all policies relating to the environment. Director General appointed by the president heads NEMA. The Authority's mandate includes inter alia:

- Co-ordinate the various environmental management activities being undertaken by the lead agencies and promote the integration of environmental considerations into development policies, plan, programmes, and projects with a view of ensuring the proper

management and rational utilization of the environmental resources on a sustainable yield basis for the improvement of the quality of human life in Kenya.

- Examine land use patterns to determine their impact on the quality and quantity of the natural resources.
- Identify projects and programmes or types of projects and programmes, plans and policies for which environmental audit or environmental monitoring must be conducted under EMCA.
- Initiate and evolve procedures and safeguards for the prevention of accidents, which may cause environmental degradation and evolve remedial measures where accidents occur.
- Monitor and assess activities, including activities being carried out by relevant lead agencies to ensure that the environment is not degraded by such activities, environmental management objectives are adhered to and adequate early warning on impeding environmental emergencies is given.
- Publish and disseminate manuals, codes or guidelines relating to environmental management and prevention or abatement of environmental degradation.

5.6.2.1.1. County Environment Committee

A County Environment Committee is responsible for the proper management of the environment within the County for which it is appointed. It should also perform such additional functions as prescribed by the Act or as may, from time to time be assigned by the Governor by notice in the gazette. The decisions of these committees are legal, and it is an offence not to implement them. For this project, the comments of the County Environment Committee in Mombasa and Kwale will be very crucial in the decision-making process.

5.6.2.1.2. National Environment Complaints Committee

The National Environment Complaints Committee performs the following functions:

- Investigate any allegations or complaints against any person or against the authority in relation to the condition of the environment in Kenya and on its own motion, any suspected case of environmental degradation and to make a report of its findings together with its recommendations thereon to the Council.
- Prepare and submit to the Council periodic reports of its activities which shall form part of the annual report on the state of the environment under section 9 (3); and
- Undertake public interest litigation on behalf of the citizens in environmental matters.

5.6.2.1.3. National Environment Action Plan Committee

The Authority is responsible for the development of a 6-year National Environment Action plan and shall ensure that it has undertaken public participation before the adoption of the plan. The National Environment Action Plan shall inter alia:

- Contain analysis of the natural resources of Kenya with an indication as to any pattern of change in their distribution and quantity over time.
- Set out operational guidelines for the planning and management of the environment and natural resources.
- Identify actual or likely problems that may affect the natural resources and the broader environment context in which they exist.
- Identify and appraise trends in the development of urban and rural settlements, their impact on the environment, and strategies for the amelioration of their negative impacts.
- Propose guidelines for the integration of standards of environmental protection into development planning and management.
- Identify and recommend policy and legislative approaches for preventing, controlling, or mitigating specific as well as general diverse impacts on the environment.

5.6.2.1.4. National Environment Tribunal

This tribunal guides the handling of causes related to environmental offences in the Republic of Kenya. If disputes related to environmental matters arise during the implementation of the project, the matter should be presented for hearing and legal direction to the tribunal.

5.6.3. Offences and penalties for non-compliance with provisions under Environmental Legislation

The Table below highlights the offences and penalties for non-compliance with provisions under environmental legislation in Kenya.

Table 5-3 Offences and penalties for non-compliance

Item	Offences	Penalties for an offence
General offence	• Offence against a provision of the Act, where no penalty is specifically provided for.	• Fine of not more than KES 350,000. • Imprisonment for not more than 18 months. • Or both such fine and imprisonment.
Inspection	• Offences in respect of inspection, including: • Hindering or obstructing an environmental inspector in his duties;	• Fine of not more than KES 500,000. • Imprisonment for not more than 2 years. • Or both such fine and imprisonment.

Item	Offences	Penalties for an offence
Environmental Impact Assessment	• Failure to submit project report contrary to the requirements of Section 58 of the Act. • Failure to prepare an EIA in accordance with the requirements of the Act. • Knowingly give false information in an EIA report.	• Fine of not more than KES 2,000,000. • Imprisonment for not more than 2 years. • Or both such fine and imprisonment.
Records	• Failure to keep records required under the Act. • Fraudulently or knowingly altering records. • Fraudulently or knowingly making false statements in any records required under the Act.	• Fine of not more than KES 500,000. • Imprisonment for not more than 18 months. • Or both such fine and imprisonment.
Standards	• Violation of any environmental standard established under the Act; • Contravenes any measure prescribed under the Act. • Uses the environment or natural resources in a wasteful and destructive manner contrary to measures prescribed under the Act.	• Fine of not more than KES 500,000. • Imprisonment for not more than 2 years. • Or both such fine and imprisonment.

6. Public Consultation and Participation

6.1. Introduction

This chapter describes how the relevant stakeholders were identified and consulted about the project. It also provides a summary of the feedback obtained from the stakeholders and discusses the action of the Consultant on the views/concerns obtained.

In this report, stakeholders refer to an individual or groups or entity that is directly or indirectly affected by the implementation of the proposed sanitation project. It also refers to a person(s) who may have an interest in the project and can influence the successful implementation of the project.

The Consultation ensured the relevant stakeholders, and the public are informed about the project and are involved in the identification of the anticipated impacts and suggestion of the mitigation measures for the negative impacts.

6.2. Legal and Policy Framework

6.2.1. The Constitution of Kenya 2010

Chapter Four – The Bill of Rights, and other provisions in the Constitution have a direct impact on the rights of all individuals to be protected. Article 10 on national values and principles of governance includes among others commitment to human dignity and human rights including non-discrimination and protection of the marginalized. Specifically:

Article 10 (2) indicates that public participation is among the national values and principles of governance.

Article 33 guarantees freedom of expression including the freedom to seek, receive or impart information or ideas. Hence, every person should feel constitutionally empowered to share information and ideas during public participation processes.

Article 35 provides for the right to access information and guarantees every citizen the right to access information held by the state. This includes information required for effective public participation to take place.

Article 69 (1) (d) provides that the State shall: “Encourage public participation in the management, protection, and conservation of the environment.

Article 174(c) reiterates that the powers of self-governance to the people can derive direct benefit from meaningful public participation as this contributes to better informed decision-makers armed with additional facts, values and perspectives obtained through public input.

6.2.2. The County Government Act, 2012

The legislation is based on Chapter Eleven of the constitution: Provides for county government powers, functions, and responsibilities. The legislation provides for public participation, access to information and protection of minorities and vulnerable individuals and groups.

Part VIII on citizen participation provides the principles and requirements for inter alia development, decentralization, and implementation of citizen participation.

6.2.3. The Environmental Management and Coordination Act, 1999 (amendment 2015)

The EMCA Act, 1999 and the Environmental (Impact Assessment and Audit) Regulations, 2003 provide for public participation during the process of conducting an environmental impact assessment.

6.2.4. World Bank Environmental and Social Management Framework

The World Bank Environment and Social Framework outlines several Environmental and Social Standards that have been adopted while undertaking the environmental and social impact assessment studies. The following standards were reviewed to ensure that the project is compliant with the best international practices:

- ESS 1: Assessment and Management of Environmental and Social Risks and Impacts-Ensure all the potential risks and impacts are assessed and appropriate mitigation measures provided.
- ESS 4: Community Health and Safety-Ensure the design promotes quality and safe considerations relating to climate change, sustainability as well as minimizing human exposure to risks.
- ESS 5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement-Economic displacement is anticipated within the project area.
- ESS 8: Cultural Heritage-Ensure the cultural heritage site is protected from the adverse impacts of the project activities and support its preservation.
- ESS 10: Stakeholder Engagement and Information Disclosure

6.3. Benefits of Stakeholder Engagement

Undertaking stakeholder Engagement from the project onset helps the project implementors to manage expectations and reduce any uncertainties that may result in project opposition and delays. Meaningful engagement also enables all the stakeholders to operate based on mutual respect and understanding throughout the project cycle.

6.3.1. Benefits to the Developer

- Promotes trust among the stakeholders in that the developer values their perspective in the project. The collaborative also helps in building goodwill of the developer which enhances the company's reputation.

- Education opportunities for the developer as they obtain new and diverse insights that they can learn from and improve their future operations.
- Promotes accountability-engagement requires the developer to be transparent with the external audiences on the set objectives, the process to be adopted and the expected outcomes.
- Saves time and cost- The developer gets to finish the project on time and within the stipulated budget because through stakeholder engagement any possible roadblocks that may slow the project implementation are identified and eliminated.
- Improves risk management-The stakeholders will assist the developer in identifying the potential risks and mitigate or manage them before they are harmful.

6.3.2. Benefits to the public

- The public gets to obtain timely and accurate project information and they are aware of who and which channel to utilize to share or seek any information.
- Promotion of inclusion and equity as the public are involved in service delivery through being offered employment opportunities.
- Public needs and interests are taken into consideration during project implementation.

6.3.3. Benefits to Decision makers

- Informed decision making as there is adequate information from all the relevant stakeholders.
- Promotes project sustainability as engagement encourages project acceptance and the decision makers have adequate support from the key stakeholders.

6.4. Stakeholder Identification

The identification of the stakeholders relevant to the project was guided by the following questions:

- Who is most likely to be displaced by the project?
- Who will be the host community?
- Who is most likely to be adversely affected by the potential environmental and social impacts?
- Which are the most vulnerable groups/individuals?
- At what stage will the stakeholders be most affected (design, construction, or operation phases?
- Who will be responsible for management of the facility during the construction and operation phases?
- Who is likely to influence decision making regarding the project?
- Who can formulate laws, policies and implement or enforce them in a way that it affects the project?

The stakeholders were identified and mapped into three categories based on their level of influence and level of interest.

1. **Project Affected Parties**- They consist of persons or groups that are affected or are likely to be affected by the project

2. **Other interested parties**- They are stakeholders who are indirectly affected by the project,

3. **Disadvantaged or Vulnerable groups**-The individuals or groups who because of their circumstances may require different, or separate forms of engagement.

Table 6-1 below illustrates how the identified stakeholders were mapped out.

Table 6-1: Mapped stakeholders

Project Affected Parties	Interested Parties	Disadvantaged or vulnerable individuals
Government of Kenya -Ministry of Water, Sanitation & Irrigation -Coast Water Works Development Agency (CWWDA) **County Government of Kwale** -Department of Water & Sanitation -Department of Lands -Kwale Water and Sewerage Company. **County Government of Mombasa** -Department of Water and Sanitation -Mombasa Water and Sanitation Company	**Regulatory Agencies** -National Environment Management Authority (NEMA)-Kwale & Mombasa -Water Resources Authority (WRA)-Mombasa Sub region -Kenya Maritime Authority (KMA)-Mombasa -Kenya Forest Service (KFS)-Coast Ecosystem Conservancy -Kenya Fisheries Service (KeFS)- Mombasa -Kenya Marine and Fisheries Research Institute (KEMFRI)	-Persons with disability -PAPs suffering from chronic illnesses. -The elderly, youth, children, widows/widowers
Local Community -Landowners, tenants, and business owners within the project owner -Host community -Project beneficiaries	**Ministry of Interior and National Administration** -County Commissioner-Kwale -Deputy County Commissioner-Matuga & Likoni Sub Counties -Chiefs and Assistant Chief within the project area.	
Service Providers Commercial emptiers Manual pit emptiers	**Political Class** Member of Parliament Member of County Assembly	

6.5. Methodology and Approach

The engagement undertaken during the design phase was aimed at creating awareness of the project among the stakeholders. Consultation and sensitization meetings were done to:

- Create awareness about the project by disclosing the project information.
- Obtain the feedback from the public.
- Provide clarification where necessary.
- Explain the potential project impacts and the proposed mitigation measures.
- Explain acquisition process that will be implemented as per the Kenyan law.

They were informed of the RAP process that entails census of the affected households, valuation of affected assets, the cut-off date and the grievance redress mechanism that will be adopted during the project.

The approaches and methodologies adopted in this project are discussed below:

6.5.1. Kick off meeting.

The Consultant met the Coast Water Works Development Agency (CWWDA) Environmental and Social Safeguards department team on 31/7/2023. The meeting was aimed at obtaining any existing literature and getting clarifications on the identified gaps. Also, the Consultant shared their work plan with CWWDA on the field activities for purposes of preparation of the ESIA & RAP reports. Notes of the Kick-off meeting is attached in **Appendix E.**

6.5.2. Courtesy calls

The Consultant & CWWDA visited several secondary stakeholders on 1/8/2023, 7/8/2023 and 20/8/2023. See table 6-1 below for the specific persons contacted. During the courtesy calls, the ESIA team created awareness about the proposed project and obtained project information as feedback that helped in enhancing the design and implementation of the proposed project.

Table 6-2 List of stakeholders engaged during courtesy calls.

	Name	Institution/Designation	Date
1.	Mr. Elphas Wesonga	Kenya Forest Service-Deputy Director Conservation	1st August 2023
2.	Mr. Samuel Lopokoiyit	National Environment Management Authority-County Director of Environment (Mombasa)	1st August 2023
3.	Planner Isaiah Kyengo	National Environment Management Authority-Regional Director of Environment	1st August 2023
4.	Mr. Godfrey Wafula	National Environment Management Authority-County Director of Environment (Kwale)	1st August 2023

	Name	Institution/Designation	Date
5.	Madam Lucy Ndemo	Deputy County Commissioner -Matuga Sub County	1st August 2023
6.	Mr. John Omingo	Director General -Kenya Maritime Authority	7th August 2023
7.	Mr. Hemed Mwabudzo	CECM Water-Kwale County	23rd August 2023

6.5.3. Workshops

Two Key Informant Workshop targeting the institutional stakeholders were held on 8th August 2023 at the Nyali Sun Africa Hotel and another on 11th September 2023 at Pride Inn-Diani. For the stakeholders workshop held on 8th August 2023 at the Nyali Sun Africa Hotel, the organizations that were represented include:

- Coast Water Works Development Agency (Client),
- County government of Kwale and Mombasa-Water Departments,
- Water resources Authority
- National Environmental Management Authority-Mombasa
- Kenya Maritime Authority
- Mombasa Water and Sanitation Company
- Deputy County Commissioner-Likoni and Matuga sub counties
- Assistant Chief-Pungu Sub location
- INGEROP Ltd Consultant

The proposed project design, the anticipated environmental and social impacts, and the stakeholder engagement plan were presented to the institutional stakeholders, and they provided their feedback. They recommended a separate meeting be held for the Kwale County Government staff to obtain their opinion on the proposed project. Minutes of the meeting are attached in Appendix E.

Th stakeholder workshop held on 11th September 2023 had representatives from various departments within Kwale County Government. They included:

- Kwale County Government Representatives from the department of Water, Land, Health, social services, and environment.
- National Environmental Management Authority-Kwale
- National Land Commission
- Kwale Water and Sanitation Company
- Coast Water Works Development Agency

6.5.4. Public consultation/participation meetings

The consultant conducted two public participation meetings in Ng'ombeni and Shika Adabu locations on 9th August 2023. The meetings were aimed at creating awareness about the proposed project, obtaining their views, opinions, and concerns so that they can be incorporated in the design and during project implementation. The Consultant had agreed to a meeting with the Kaya Elders after the public meeting held at Ng'ombeni location, to allow them an opportunity to share the specific concerns regarding the proposed project. The meeting was held on 11th August 2023.

A meeting with the project affected persons (land acquisition) was held at Ng'ombeni Social Hall-Chief's office on 23 October 2023.

The meeting records are provided in Appendix E.

Table 6-3 Public meeting dates and venues

Date	Venue	Participants	No. of participants
9th August 2023	Social Hall (Chief's Office-Ngombeni Location)	• Chief • Assistant Chief • MCA Rep. • CWWDA • INGEROP • Youth Representative • Kaya Elders	48
9th August 2023	Social Hall (Chief's Office -Shika Adabu Location)	• Chief • Assistant Chief • MCA Rep • INGEROP • Persons Living with Disability (PLWD) Representative • Kaya Elders	57
11th August 2023	Social Hall (Chief's Office-Ngombeni Location)	• Kaya Elders • INGEROP	8
23rd October 2023	Ng'ombeni Social Hall-Chief's office	• Landowners • NLC • DCC • Chief & Asst. Chief • MP-Matuga • CGK • Ward Administrator • Kaya elders • KWAWASCO • CWWDA • INGEROP	40

Plate 6-1: Public stakeholder pictorials


Key Stakeholders meeting held at Nyali Sun Africa Hotel on 8th August 2023


Public meeting at Ng'ombeni Location on 9th August 2023


Public meeting held at Shika Adabu Location on 9th August 2023

Public meeting held at Ng'ombeni with Landowners on 23rd October 2023

Stakeholder	Feedback
Ng'ombeni Community	The community raised the following concerns that the Consultant & CWWDA responded to during the meeting: • Concerned that the facility will degrade the air quality at the proposed site. The Consultant explained that a buffer zone will be set up around the facility where trees will be planted to mitigate the potential degradation of air quality of the area. • Landowners will not only be displaced but also suffer from loss of livelihood from the rent they receive from the miners. The Consultant assured the members present that a valuation will be done and compensation to the displaced persons made before construction commences. • Sought to understand who the project beneficiaries of the irrigation water generated from the FSMF would be. The consultant explained that the water shall be used to irrigate the trees at the buffer zone. Also, the quantity of water will depend on how much effluent shall be discharged at the facility. The more the effluent, the higher the quantity of water available for irrigation. • Benefits accorded to the youth during construction phase. The consultant explained that employment opportunities shall be available during the construction phase particularly for the casual labourers where the local youths will be prioritized. • They request that if there are business opportunities such as subcontracting services needed, they should be accorded to the local community. • Proximity of the Kaya Similan to the proposed FSMF. The Consultant indicated that a separate meeting will be held with the Kaya Elders so that the elders can show the consultant the location of the Kaya Similani's and the Consultant can point out the boundary of the facility. • Will there be a sewer network, or the effluent will be delivered using exhauster lorries? It was pointed out that the current system is decentralized, and exhausters will be used to transport the effluent. • Concerned that during construction phase, all the concerns raised during the participation meetings will not be addressed. CWWDA indicated that all opinions and feedback will be captured under the ESIA report and once the contractor is engaged, the information will be shared with them. • Texture of the manure generated. Will it be in liquid or solid form? The manure will be in solid form. • The community requested that the workers who will suffer loss of employment should be looked out for by the project. The consultant informed them that they can apply for the job opportunities that will be available during the construction phase.

Stakeholder	Feedback
	• Benefits accorded to the nearby public institutions, learning, religious and health institution. The consultant informed them that if the community presents a proposal for a CSR activity, the contractor may consider depending on the availability of funds.
Shika Adabu community	The community raised the following concerns that the Consultant & CWWDA responded to during the meeting: • Sought rationale on the justification behind the proposed project location with the view that if it was located at Shika Adabu, it would serve more residents of Likoni and generate more irrigation water that the Ng'ombeni residents would benefit from. The consultant informed them that site selection was influenced by several aspects. Amongst them was an area with no human settlement to avoid physical displacement which was what Ng'ombeni offered as Shika Adabu is densely populated. • What benefits the project offers the youth during construction. The consultant informed them that jobs will be created, business opportunities will arise and skill transfer through internship opportunities for the graduates. • They stated that the sanitation services should be offered at no cost to the residents. However, if they are to be charged, they suggest the cost to be subsidized. The consultant explained that it is impossible for the sanitation services to be free because the facility will need to meet its operational costs. The fees to be charged are determined through an informed process between the Water Service providers and the Water Service Regulatory Board. • The representative from Persons Living with Disability reported that most times they lack representation during project implementation and sought to know how they would be included. The consultant indicated that they could have a representation in the local project implementation committee that will be established. • They sought to know if the stormwater that causes havoc in the area can be treated at the facility. The project will not be addressing the stormwater issue, but the area chief indicated that they would inform the County Government to address the problem. • They also wanted to know if the chemicals used to treat the wastewater be harmful to human beings. The consultant assured them that the chemicals used are not harmful to human beings and the workers operating the facility will be provided with Personal Protective Equipment to shield them from any harm. • They wanted to know if there will be land acquisition for the proposed site of the FSMF. The consultant indicated that the identified project area lies on private land, therefore, there will be land acquisition where the owners will be compensated.
Kaya Elders Meeting	The Kaya elders expressed the following opinions. • They suggested a joint site visit with the consultant at the proposed site. This was later held on 25th October 2023. • They urged to be vigilant during the land acquisition process as land matters are sensitive in the area. • They welcomed the idea of proposing if the project could fence the Kaya conservation forests to protect them from the rampant grabbing by the private investors. • They would share with the consultant the traditional practices that needed to be done before project implementation. The elders indicated during the joint site visit that they would need to perform a ritual before construction commences and they provided a list of items for the project to provide to facilitate the ritual ceremony. The items have been captured under the RAP budget. • They also requested for tree seedlings to help in enhancing the conservation of the kaya forests.

Table 6-4 Summary of issues raised during public meetings.

6.5.5. Focused Group Discussion

The Consultant held a Focused Group Discussion with the Kaya Similani Elders on 11th August 2023. The project design of the FSMF was explained to the elders including how it is expected to operate to ensure there are no adverse environmental impacts to their forests.

The Kaya Elders requested for a joint site visit with the Consultant to be shown the boundary of the facility. The site visit was done on 25th October 2023 and the elders showed the Consultant the Kaya Similani Forest that is adjacent to the proposed FSMF and another in the Indian Ocean. They explained that if the design does not release water to the ocean, they are in support of the project. However, as part of their cultural beliefs and practices, they will need to conduct a ritual ceremony as part of their cultural practices before the project commencement. A list of items needed for the ritual ceremony were provided by the Kaya Elders and the cost of the items has also been included in the RAP budget as miscellaneous. Minutes of the Focused Group Discussion Meeting are attached in the appendix.

Plate 6-2: Joint Site visit between the consultant and the Kaya elders held on 25th October 2023

6.5.6. Socio-economic survey

The Consultant administered a structured questionnaire to 124 households in Pungu and Vijiweni areas. The primary data is aimed at determining their socio-economic characteristics and obtaining their views on the potential project impacts during construction and operation phases. The respondents also get to recommend possible mitigation measures to the identified potential adverse impacts. A list of the respondents and a sample questionnaire is attached in Appendix E of this report.

6.5.6.1. Summary of feedback from questionnaires on potential impacts

Table 6-5 Summary of feedback during construction phase

Positive impacts	Negative impacts
• Job creation • Increase in business opportunities. • Community Development • Knowledge/skill transfer • Rehabilitation of abandoned quarry sites	• Creation of community safety hazards causing incidents and accidents • Noise pollution • Loss of land and livelihood • Air pollution due to dust • Destruction of roads • Traffic nuisance

Table 6-6 Summary of feedback during operation phase

Positive impacts	Negative impacts
• Affordable sanitation services • Improved disposal of effluent • Conservation of environment • Improved roads	• Reduced value of land near the FSMF • Poor maintenance of the FSMF may lead to air pollution and odour.

6.6. Conclusion

The communities in Ng'ombeni and Shika Adabu areas are receptive of the proposed sanitation project and are anticipating it to be implemented as soon as possible. They expect the contractor to offer employment and business opportunities during construction phase especially to the local youths. The Shika Adabu community proposed that a joint local committee be formed between themselves and Ng'ombeni residents to help in addressing the issues that arise during construction phase. The Consultant supports the formation of a local joint committee that is inclusive of all groups (youths, men, women, persons living with disability) as it can also be used in grievance redress.

The Ng'ombeni residents were concerned that the opinions they share during the design phase are not considered by the Contractor during construction. It is recommended that CWWDA through the Project Implementation Unit ensures that the community needs are addressed adequately, and the engagements remain continuous throughout the project cycle.

The communities also felt that the sanitation service should be offered at no or subsidized cost. The Consultant informed them that the project can only be sustainable if the locals are charged so that the revenue collected is used to meet the operation and maintenance costs of the facility.

Around 40 acres of private land have been identified as the proposed site for the construction of the FSMF. An Abbreviated Resettlement Action Plan has been carried out alongside this study, and an ARAP Report prepared.

Potential environmental impacts that the community raised as concerns are degradation of air quality when there is poor maintenance of the facility, and the proximity to the Kaya Similani. The adverse impacts will be addressed through the project's Environmental and Social Management Plan. The Kaya elders requested the project to assist in fencing of the kaya forest and to provide tree seedlings for planting to conserve the kaya forests.

During the project operation phase, the client should appoint a community liaison officer to regularly engage the community and other stakeholders on project performance. An engagement and communication strategy should be developed that addresses:

Information: This is where the goal is to inform or educate the stakeholders and can take the form of continuous issuance of bulletins/letters/brochures, speeches/public presentations, or advertisements.

Consultation: Where the goal is to gain information and feedback from stakeholders to inform them of decisions made internally. This could entail surveys, focus groups, one-to-one meetings, public meetings, and workshops. Consultation of these types offers stakeholders opportunities to reflect on issues, mobilize and respond more critically than when brought directly to workshops.

Involvement: Where the goal is to work directly with stakeholders to ensure that their concerns are fully understood and considered in decision making. This can be achieved through multi-stakeholder forums, advisory panels, consensus building processes and participatory decision-making processes.

Social and Environmental Safeguards Office: Where the client engages the services of a competent officer to coordinate engagement with stakeholders ensuring that the communication strategy is followed through and to ensure that all social and environmental safeguards proposed in the ESIA are adhered to and that stakeholders have opportunities to be properly represented in any environmental audits in the future during operation and maintenance.

A key element in the success of the engagement process is the development and implementation of a grievance mechanism. The grievance mechanism should be scaled to fit the level of risks and impacts of the project and should follow the client's broader process of stakeholder engagement and business integrity principles and integrate the various approaches of engagement.

Grievance procedures should be established by the client and agreed with the stakeholders. The procedures would enable the stakeholders and (especially the community) to lodge complaints or concerns, without cost, and with the assurance of a timely and satisfactory resolution of the issue(s). The procedures would be in place from the beginning of the social and environmental assessment process and exist throughout construction and operations through to the end of project life. The Grievance procedures would not replace the existing

legal process but would seek to resolve issues quickly without resulting in expensive and time-consuming legal actions.

A Stakeholder Engagement Plan (SEP) was prepared to guide the consultations. The SEP is included in Appendix D.

7. Prediction and Evaluation of Environmental and Social Impacts

7.1. Introduction

This Chapter discusses the environmental and social aspects and potential impacts that could arise from the construction, operation, decommissioning and abandonment of the proposed FSMF project. It also discusses the proposed mitigation measures that could be applied to avoid, reduce, or offset the potential adverse impacts.

7.1.1. Identification of environmental and social aspects

Environmental and social aspects of the project have been identified for all activities associated with construction and operation of the Faecal Sludge Management Facility project. The activities have been broadly discussed in Section 2.3 of this Study Report.

To identify project aspects, all proposed activities, have been considered in terms of their direct or indirect potential to:

- Breach relevant policy, legal and administrative provisions including national legislation, standards and guidelines.
- Interact with the existing natural environment including its physical and biological elements; and
- Interact with the existing socio-economic environment.

Activities assessed during site preparation, construction, restoration, operation and decommissioning include:

- Planned routine activities;
- Planned but non-routine activities; and
- Unplanned or accidental events.

7.1.2. Impact assessment methodology

This section outlines the methodology used to assess the impact significance. For this study, an impact is defined as *"Any change -potential or actual, adverse or beneficial, to the physical, natural, or cultural environment, or to the surrounding community and workers, resulting wholly or partially from a project implementer's activities or products"*. An impact is defined where an interaction occurs between a project activity and an environmental receptor.

The ESIA process ranked impacts according to their significance determined by considering project activity **event magnitude** and **receptor sensitivity**.

Determination of event magnitude entailed the identification and quantification (as far as practical) of the sources of potential environmental and socio-economic effects from routine and non-routine project activities.

The approach to evaluating the significance of potential environmental and socio-economic impacts is outlined below.

7.2. Environmental impacts

7.2.1. Method for determining event magnitude.

Event magnitude was determined based on the following parameters, which were equally weighted and assigned a rating of 1, 2, or 3.

Extent/Scale

Events range from those where the effect extends across an area:

1 – Near to the source (in the range of tens to hundreds of metres).

2 – At intermediate distance from the source (in the range of hundreds to thousands of metres); and

3 – At far distance from the source (in the range thousands of metres and above).

Frequency

Events range from those occurring:

1 – Once or twice; to

2 - Repeatedly but intermittently; to

3 – Frequently and persistently.

Duration

Events range from those where effects occur over:

1 – Instantaneous/short term (i.e., hours to days); to

2 - Medium term (between a week and 3 months); to

3 - Long term (more than 3 months to permanent).

Intensity

Concentration of an emission or discharge with respect to standards of acceptability that include applicable legislation and international guidance, its toxicity or potential for bioaccumulation, and its likely persistence in the environment. And degree/permanence of disturbance or physical impact (e.g. disturbance to species, loss of habitat or damage to cultural heritage). Ranges from:

1 - A low intensity event; to

2 - A moderate intensity event; to

3 - A high intensity event.

Overall, event magnitude was scored from low (1) to high (12) by adding the individual parameter scores:

Resulting individual ratings were summed to give the overall event magnitude ranking. The Table below presents the score ranges for magnitude rankings of Low, Medium and High.

Table 7-1 Event Magnitude Rankings

Event Magnitude	Score (Summed Parameter Rankings)
Low	1 - 4
Medium	5 - 8
High	9 - 12

7.2.2. Method for determining receptor sensitivity.

Receptor sensitivity considered the type of receptor (namely, biological/ecological, human and physical receptor/feature); and was determined based on the following parameters, which are equally weighted and are each assigned a rating of 1, 2, or 3:

Biological/ Ecological Receptors

Presence ranges from:

3 – Internationally threatened species/protected area within the area impacted by the project activities during period of high sensitivity and during routine or reliably predictable peak presence; to

2 - Internationally threatened species/protected area within the area impacted by the project activities outside of period of high sensitivity or during routine or reliably predictable peak presence.

Internationally near threatened species within the area impacted by the project activities during period of high sensitivity and/or during routine or reliably predictable peak presence.

Nationally protected species and/or species which are of importance to the local and regional ecosystem within the area impacted by the project activities.

1 - Presence of species which is none of the above.

Resilience (to the identified stressor) ranges from:

3 - Species and/or population which has little or no capacity to absorb or adapt to change (i.e. little or no capacity to move away from or adapt to the project impact), leading to potential for substantial change of character and/or loss of ecological functionality.

2 - Species and/or population which has moderate capacity to absorb or adapt to change (i.e. has capacity to move away from or adapt to the project impact), leading to potential temporary but sustainable effect which does not substantially alter character or result in significant loss of ecological functionality.

1 - Species and/or population has high capacity to absorb or adapt to change (i.e. has capacity to move away from or adapt to the project impact) and is potentially unaffected or marginally affected.

Human Receptors

Presence ranges from:

3 - People being permanently present (e.g. residential property) in the geographical area of anticipated impact; to

2 - People being present some of the time (e.g., commercial property); to

1 - People being uncommon in the geographical area of anticipated impact.

Resilience (to the identified stressor) ranges from:

3 - Most vulnerable groups (i.e., ambient conditions such as air quality are at or above adopted standards); to

2 - People being vulnerable to change or disturbance (i.e., ambient conditions such as air quality are below adopted standards); to

1 - People being least vulnerable to change or disturbance (i.e., ambient conditions such as air quality are well below applicable legislation and international guidance).

Physical Receptors/Features:

Presence (to the identified stressor) ranges from:

3 - Presence of feature which has, in reverse order, national or international value (e.g. state protected monument); to

2 – Feature with local or regional value and is *sensitive* to disturbance; to

1 - Feature which is none of the above.

Resilience (to the identified stressor) ranges from:

3 – Highly vulnerable (i.e., potential for substantial damage or loss of physical integrity).

2 – Undergoes moderate but sustainable change which stabilises under constant presence of impact source, with physical integrity maintained; and

1 – Feature/receptor is unaffected or marginally affected (i.e., resilient to change).

Overall, receptor sensitivity was then be scored on a scale from low (1) to high (6) by adding the individual parameter scores:

The Table below presents the score ranges for sensitivity rankings of Low, Medium and High

Table 7-2 Receptor sensitivity ranking

Receptor Sensitivity	Score (Summed Parameter Rankings)
Low	1 - 2
Medium	3 - 4
High	5 - 6

7.3. Socio-economic impacts

The socio-economic impact assessment used a semi-qualitative assessment approach to describe and evaluate potential impacts based on the event magnitude and receptor sensitivity rankings set out in the tables above. Indirect socio-economic impacts (i.e., induced effects) were also assessed using a similar approach.

Table 7-3 Event Magnitude Rankings

Magnitude	Criteria
Low	Changes in social, economic, or cultural dynamics with slight and temporary effect on any given sector performance and/ or population wellbeing. These impacts are unlikely to result in concerns being raised by governmental bodies or stakeholders. Events may include: • Minor disruption to livelihoods or living conditions resulting in a localized, reversible, and temporary nuisance. • Temporary disruption to businesses that does not result in a loss of revenue or any reputational damage. • No change in the health status of local communities; and • Temporary disruption to public infrastructure (such as a road closure) that results in minor inconveniences to affected communities.
Medium	Changes in social, economic, or cultural dynamics with moderate and noticeable adverse effect on any given sector performance and/or population wellbeing. Such impact may result in concerns being raised by governmental bodies or stakeholders. Events may include: • Negative change in livelihood status, household assets/income or living conditions. • Temporary disruption to businesses resulting in a small drop in business revenue.

	• Increased risk to public health that can be controlled using detailed mitigation measures; and • Disruption to public infrastructure that results in an inconvenience to other users.
High	Changes in social, economic, or cultural dynamics with major adverse effect on any given sector performance and/or population wellbeing. Such impacts may result in immediate intervention by governmental bodies and stakeholders. Events may include: • Negative change in livelihood status, household income/assets or living conditions affecting a high proportion of people resulting in economic loss and protests against the project; • Reputational damage and/or drop in business revenue that threatens the future viability of the economic activity. • Increased risk to public health leading to a fatality or injury to a member of a community; and • Damage to public infrastructure leading to environmental or socio-economic impacts to other users.

Table 7-4 Receptor sensitivity ranking

Sensitivity	Criteria
Low	Receptor sensitivity will be considered low when there is a moderate to high capacity and means to adapt to a given change and maintain / improve quality of life. Receptors of low sensitivity may include: • Individuals who are able to quickly adapt to temporary disruption in their living conditions, livelihood status or a change in the status of public infrastructure (such as a road closure); and • Businesses with a robust economic model that are able to adapt easily to any restrictions placed upon their activities, or who are able to gain economically from such changes.
Medium	Receptor sensitivity will be considered medium when there is limited capacity and means to adapt to a given change and maintain / improve quality of life. Receptors of medium sensitivity may include: • Individuals who rely heavily on their livelihood to maintain their socio-economic status and have a limited ability to adapt to change; and • Businesses that have a limited ability to adapt to change and are sensitive to any reduction in economic revenue or reputation.
High	Receptor sensitivity will be considered high in the case of vulnerable receptors, who have little capacity and means to adapt to a given change and maintain / improve quality of life (e.g. homeless people, Internally Displaced Persons community in temporary accommodation, people with low access to recourse (e.g. no land titles), people with no or low representation (e.g. migrants, seasonal herders with no permanent assets in the area). Receptors of high sensitivity may include:

Sensitivity	Criteria
	• Individuals with a marginal livelihood, low socio-economic income or poor-quality living conditions. • Individuals who are vulnerable due to their age, disability, or other reason and who may require special assistance during engagement activities; and • Businesses with a marginal economic existence which are not able to easily adapt to change.

7.3.1. Environmental and socioeconomic impact significance

For both environmental and socioeconomic impacts, **impact significance**, as a function of **event magnitude** and **receptor sensitivity**, was ranked as **Negligible**, **Minor**, **Moderate** or **Major** as presented in the table below.

Table 7-5 Impact significance

		Receptor Sensitivity		
		Low	Medium	High
Event Magnitude	Low	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	High	Moderate	Major	Major

Any impact classified as Major or Moderate was of importance and, where the impact was negative, required additional mitigation. Impacts classified as Negligible or Minor were of less importance, and therefore would not require further mitigation.

8. Potential Impacts and Mitigation Measures

The project's central benefit resides in its capacity to elevate sanitation standards in the project area, consequently yielding better public health results. A significant segment of the South Mainland population currently faces challenges related to insufficient infrastructure for faecal sludge management. This, combined with the widespread utilization of onsite sanitation systems such as pit latrines, septic tanks, and soak pits, has led to the pollution of groundwater aquifers in the project vicinity. These instances of contamination pose substantial health hazards, underscoring the critical importance of the project's sanitation-oriented efforts in ameliorating their impact on public welfare.

By addressing sanitation needs, the Project will significantly enhance the quality of life for its primary target population. Through improved sanitation facilities and the implementation of effective faecal sludge management practices, the project will alleviate health risks and promote a healthier living environment. This focus on sanitation directly contributes to the betterment of people's lives, especially those within the project's target demographic, by reducing waterborne diseases and improving overall public health.

The following sub-sections identify the potential risks and impacts and define a set of environmental and social mitigation and management measures that can be taken during the implementation of the project to avoid, minimize, or compensate/offset for risks and adverse environmental and social impacts.

The identified risks and impacts are discussed under the following categories in line with the World Bank's Environmental and Social Standards (ESS) contained in the Environmental and Social Management Framework, 2017.

- Impacts related to labour and working conditions (ESS2);
- Impacts related to Resource Efficiency and Pollution Prevention and Management (ESS3);
- Impacts related to Community Health and Safety (ESS4);
- Impacts related to Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement (ESS5);
- Impacts related to Biodiversity Conservation and Sustainable Management of Living Natural Resources (ESS6).
- Impacts on Indigenous Peoples (ESS7); and
- Impacts on Cultural Heritage (ESS8).

8.1. Impacts related to labour and working conditions

8.1.1. Improvement of household incomes

Several new direct employment opportunities will be created during the construction period. The detailed labour requirements for the project will not be known until the appointment of the construction contractor. It is, however, expected that construction activities will require engineers, project managers/foremen, workers/labourers, and specific equipment operators, among others.

The project will create direct business opportunities for the supply of goods and services such as construction materials, consumables, cleaning services etc. There will also be indirect employment opportunities on the supply side as the suppliers increase their resource capacity to meet project demands.

With the creation of employment and business opportunities, taxes will be remitted to the exchequer from the purchase of materials and other consumables, and payment for services offered by various parties in the construction process.

The in-migration of workers into the surrounding area has potential to provide a stimulus to the local economy since they will provide a larger market for local traders and farmers to whom to sell their goods. Others may also find opportunities to supply materials to the Project. This impact is judged to be moderate, and positive if it is managed and monitored, and it will last for the duration of the construction phase of the project. It will continue until the construction-related opportunities cease.

8.1.2. Labour influx

The project will need to employ labourers and although most of the unskilled and semi-skilled labour requirements could be filled locally (from within the project area) congregation of potential labourers from outside the project area is likely, as these seek employment opportunities. The labourers could also be followed by other people seeking to exploit new business opportunities arising from the increased labour population.

This has the potential to result in a strain on local social dynamics including increased competition for local social and health services, other goods and services, increased crime rates and illicit behaviour, social conflicts, and the risk of spread of communicable diseases. There may also arise complaints and dissatisfaction among the communities affected by the project if recruitment of workers is perceived to be biased and without local representation.

Labour influx management

To mitigate labour influx and local representation concerns, the Contractor should establish local employment targets to maximize local employment. Unemployed and able workers among

the affected communities in each locality should be given priority in recruitment of casual laborers.

The Contractor should also have a credible procedure to identify and verify the areas in which the potential workers live, as well as information on experience and skills. It may be necessary to enlist the help of the local administration (chiefs, assistant chiefs and village elders) in vetting the workers.

8.1.3. Working conditions

Due to high unemployment rates in the project area, those seeking employment in the project may, out of desperation, be willing to work under various forms of exploitation. These may include forced labour, threats, poor wages, working beyond normal time, limited freedom of association, or working in unsafe conditions. Exploitation may also include employment of underage workers, sexual exploitation and harassment, as well as unequal opportunities and treatment among the workforces.

Impact significance

Apart from the social injustice meted on workers, such acts could also precipitate unrest, protests, violence, destruction of the contractor's and project assets, delays in project implementation, and escalation of project costs. The significance of the potential adverse impacts is assessed as major.

To mitigate against such social injustice, the Contractor will be required to develop an employment policy in line with International Labour Standards and the local labour administration requirements. The Project Proponent will also vet the Contractor's employment policy and carry out random inspections to ensure compliance with the relevant standards.

Ensuring proper working conditions will also entail maintaining high occupational health and safety standards for the wellbeing of the workforce.

8.1.4. Occupational health and safety

The construction works inevitably expose workers to health and safety risks. Some of the likely hazards include accidents on site (involving workers and machinery, or the public and construction works such as excavation for foundation and other related earth works) or along accesses to the site (involving construction vehicles and the public), or exposure to dust leading to respiratory illnesses.

The lack of provision of potable fresh water for sanitation during construction can also lead to health hazards affecting construction workers.

Impact significance

Whereas some incidences/accidents can be minor resulting in minor bruises/injuries, others can be serious to fatal resulting in both loss of life and destruction of property.

Table 8-1 Exposure of workers to health and safety hazards

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
1	3	2	2	8	Medium
Human Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance
Presence	Resilience				
3	2	5	High		Major

Occupational health and safety management

To reduce accidents and hazards involving/ posed to workers, the contractor should develop and implement Site Health and Safety rules and regulations. Other health and safety measures should also include:

- Provision of all workers on site with the necessary Personal Protective Equipment (PPE) and ensuring a safe and healthy environment for the construction workers.
- Worker's accidents during construction can be mitigated by enforcing adherence to safety procedures and preparing contingency plans for accident response. In addition, regular and frequent safety education and training should be emphasized.
- The Contractor should have qualified first aid personnel among the workers and maintain fully stocked first aid kits at the sites.
- The Contractor should ensure that workers are provided potable drinking water, and that all workers, including females, have access to appropriate and separate sanitary facilities at the sites and are provided with basic water, sanitation, and hygiene training; and
- The Contractor should develop and implement detailed and site-specific Occupational Health and Safety Management Plan and Emergency Preparedness and Response Plan.
- Have an MOU with an established medical facility.

8.1.4.1. Operation phase

Upon the FSMF becoming operational, the primary concerns related to occupational safety and health within the project components will stem from waste handling tasks, potentially leading to exposure to harmful substances and pathogens contained within faecal sludge. Workers involved in the collection and processing of this waste face the possibility of contracting illnesses or infections if they lack sufficient protection. The expectation is that the project operator, will execute operations while adhering to established health and safety protocols. With these procedures firmly in practice, the occupational safety and health risks associated with project facilities are anticipated to be minor.

8.2. Impacts Related to Resource Efficiency and Pollution Prevention and Management

8.2.1. Air quality

8.2.1.1. Construction stage

Construction activities are likely to generate air pollutants which will have potential to adversely affect the local air quality, and thereby affect human and vegetation health. The air pollutants include:

Dust: Dust in the vicinity of construction sites and along material hauling routes is a pressing concern with multifaceted implications. Dust particles, inherent to construction activities, pose a direct threat to both the environment and public health. Prolonged exposure to these pollutants can lead to respiratory ailments and exacerbate pre-existing conditions, while simultaneously undermining the quality of life for communities residing in the vicinity. Moreover, environmental degradation is a significant by-product, with dust settling on nearby ecosystems, soil, and water bodies, potentially harming biodiversity and disrupting the natural balance. Additionally, reduced visibility due to airborne dust can jeopardize safety on construction sites and roads, increasing the likelihood of accidents. Hence, proactive measures, such as stringent dust control protocols and adherence to emission standards, are imperative to mitigate these adverse consequences and ensure that construction activities proceed with minimal impact on both human well-being and the environment.

The dust impact on vegetation is assessed as moderate. The nature/type of soil at site together with management measures presented herein, the dust generated is not anticipated to have a long-term impact on local air quality.

Exhaust emissions: Construction vehicles and machinery are likely to emit oxides of carbon, nitrogen, and sulphur. Emission levels will depend on the state of maintenance of the vehicles and machinery, and the type of fuel used. Exhaust gases will be quickly diffused in light wind conditions and would most probably only affect receptors near the point sources.

Impact significance

Due to the nature of the construction process, emissions will be constant and restricted to the project site. The emissions are likely to be of low to medium significance due to the localized nature. Pollution from exhaust emissions is also dependent on the maintenance conditions of the engines.

Table 8-2 Nuisance and health effects on humans

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
1	2	3	1	7	Medium
Human Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance
Presence	Resilience				
1	2	3	Medium		Moderate

Table 8-3 Adverse impacts on natural vegetation

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
1	2	2	1	6	Medium
Biological Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance
Presence	Resilience				
2	2	4	Medium		Moderate

Air quality management

To control point source and fugitive emissions that may occur during construction of FSMF, the following measures should be implemented:

- Maintenance of equipment and machinery to manufacturers' specifications by regular servicing to maintain efficiency in combustion and reduce carbon emissions.
- Use environmentally friendly fuels such as low sulphur diesel.
- Minimize idling of machinery.
- Ensure no burning of waste on sites/non-designated areas.
- Regular sprinkling of all active construction areas.
- Control of construction vehicle speeds by imposition and enforcement of speed limits
- Rehabilitation of disturbed areas once completed.
- Use of tarpaulins to cover trucks carting away spoil using public roads. Additionally, the trucks should maintain at least two feet of freeboard.
- Proper planning of transportation of spoil to ensure that the number of trips and/or the number of vehicles used is minimized.
- Provision of appropriate Personnel Protective Equipment (PPE) such as dust masks to site workers; and

8.2.1.2. Operation phase

The FSMF can emit various pollutants, including odorous gases, particulate matter, and potentially harmful compounds, which, if not managed effectively, can have several consequences. Firstly, odorous emissions from the treatment process can lead to discomfort and annoyance for nearby communities, affecting their quality of life. These emissions can contribute to poor air quality in the surrounding area, leading to potential health concerns, particularly for individuals with respiratory conditions. Additionally, particulate matter and pollutants from the treatment process may have environmental implications, such as soil and water contamination, potentially harming local ecosystems and aquatic life. The treatment process will be implemented as per the engineering design which is expected to eliminate all these impacts. To address these issues, effective air quality monitoring, emission control systems, and odour management strategies are essential for faecal sludge treatment plants to ensure that their operations are both environmentally responsible and community friendly. Air quality impacts during the operation of a faecal sludge management plant are of low significant consideration.

8.2.2. Ambient noise and vibrations levels

8.2.2.1. Construction phase

The project is in a sparsely populated rural setting with minimal human settlement, the anticipated impacts on ambient noise and vibrations levels during the construction phase of a faecal sludge management facility are generally expected to be relatively low. It's crucial to identify and engage with any nearby residents or communities that could be affected. Consultation with these residents and adherence to any local noise ordinances or regulations is important to minimize potential disruptions. Nearby wildlife and ecosystems could be affected. Noise and vibrations from heavy machinery can pose risks to on-site workers, and measures such as hearing protection and safe equipment operation should be implemented to safeguard their well-being.

Impact significance

Elevated noise and vibrations levels during construction of the FSMF may be of some nuisance to the neighbouring public to the construction site. The increase in traffic movements on access roads may cause a noticeable increase in daytime noise levels through the settled areas. This effect will be localized and temporary, and will, for the most part, be restricted to the construction phase of the project. The expected impact magnitude will thus be moderate.

Table 8-4 Vibrations and noise nuisance

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
1	2	2	1	6	Medium
Human Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance
Presence	Resilience				
3	1	4	Medium		Moderate

Noise management

The significance of noise impacts depends on whether the construction activities will increase noise levels above the existing ambient levels by introducing new sources of noise. Noise impacts would be considered significant if the activities would result in the following:

- Exposure of persons to, or generation of, noise levels in excess of standards established in the applicable standards for noise.
- Exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels.
- A substantial permanent increase in ambient noise levels (more than 3dBA) in the project vicinity above levels existing before the project; and
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing before the project.

The following noise-suppression techniques should be employed to minimize the impact of temporary construction noise at project sites.

- Portable hoods should be installed to shield compressors and other small stationary equipment where necessary.
- Pumps, generators and other mobile equipment should be sited as far as practicable from residential homes and other noise sensitive locations.
- The contractor should endeavour to use equipment installed with noise abatement devices as much as practicable.
- Idling time on trucks and other noisy equipment should be limited to a minimum. Drivers should be encouraged to turn off vehicle engines when not in use and avoid unnecessary hooting or revving of engines.
- Personal protective equipment such as noise-cancelling earmuffs should be provided to workers at the sites as necessary; and
- Monitoring of the grievance mechanism register for noise-related grievances from stakeholders.

Noise monitoring is also proposed especially at noise-sensitive receptor locations (such as homesteads) and proximal to construction site.

8.2.2.2. Operation phase

Noise and vibrations are not expected to increase considerably during the operation faecal sludge management facility project. The likely sources of noise are ad-hoc maintenance activities on the facility requiring use of noisy equipment/tools and the movement of exhauster trucks to and from the FSMF. The significance of this impact during operations is assessed as Moderate.

8.2.3. Water resources, ecology, and biodiversity

8.2.3.1. Construction phase

Contamination from spillages

Various risks to the quality of local water resources could arise from construction activities and incidences such as spillage of fuels, lubricants and other toxic materials at construction sites, discharge of silt laden runoff from sites, and the inadequate treatment and disposal of waste and wastewater from worker facilities.

Materials such as oil, diesel fuel, concrete additives, and solvents are likely to be stored and used at/on construction sites and lay down areas and in construction vehicles and equipment. Storage and handling of these materials could lead to spills on site, along roads and in surrounding areas.

Contaminated run-off from spill sites could adversely affect soils and vegetation and if it reaches a water course, it could have an adverse impact on water resource quality. The extent of impact would depend on the size, frequency and timing of spills in relation to flow conditions in the receiving waters and the nature of the materials involved including their toxicity and likelihood for biomagnification or bioaccumulation.

Table 8-5 Contamination of water resources by spillages

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
2	1	1	1	5	Medium
Physical Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance
Presence	Resilience				
2	2	4	Medium		Moderate

The risk of water pollution from these sources can be reduced by adopting protective measures to prevent spills and establishing suitable spill response plans to be implemented in the event of accidents occurring.

Suitable measures to collect, treat and dispose of chemical wastes will also be required. With good construction site practices, the risk of water pollution from spills and waste could be downgraded to **Minor**.

Erosion and sedimentation

Due to the relatively flat terrain of the project area, erosion at disturbed sites and sedimentation levels in water courses are likely to be low. Soil disturbance is likely to occur on the proposed site during excavation and other related earth works.

Loosening of soils and compaction in other areas by construction traffic has potential to cause soil sealing and erosion following rain episodes, and pollution of the watercourses with silt. The increased sediment load is likely to affect water quality with consequent effects on aquatic habitats and species.

The significance of the impact of soil erosion on water resources during construction is **Moderate**.

Table 8-6 Siltation of water courses by construction activities

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
1	2	1	2	6	Medium
Physical Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance
Presence	Resilience				
1	2	3	Medium		Moderate

The risks of soil erosion and degradation can be significantly reduced by adoption of good construction site management practices, such as protection of soil storage areas and controlled site drainage.

Direct discharge of waste into watercourses

Facilities and/or activities will generate liquid wastes such as sewage, concrete wash water and/or other wastewater which if not appropriately managed, could result in direct flows into surface drainage systems.

Inappropriate disposal of waste and wastewater from the construction camp and sites would have negative effects on local water quality causing loss of aquatic organisms. The extent of impact will depend on the location of discharge points and the dilution potential of receiving waters.

Table 8-7 Contamination of water resources by direct discharges

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
2	2	1	2	7	Medium
Physical Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance
Presence	Resilience				
2	2	4	Medium		Moderate

Impacts on water quality could include reduction in dissolved oxygen levels, nutrient loading causing increased algal growth, and the spread of pathogenic disease vectors. Uncontrolled discharge of waste would have a **Moderate** adverse effect on water quality, but this could be mitigated by provisions for on-site waste and wastewater management during construction. This would reduce the magnitude of these impacts to **Minor**.

Increased water demand

Clean water will be required in mortar and concrete works, drinking and cleaning purposes, and for laying of dust at construction sites as necessary. Although the quantity of water to be used is not expected to be significant, proper management of the resource is required due to its scarcity in the project area. With good construction site management practices, the impact of the increased demand by project activities is viewed as Minor.

Management of construction phase impacts

To avoid and/or reduce impacts on water resources, the following measures are proposed:

- Establishment of a comprehensive spill control/response plan including:
  - Installation of secondary containment measures in areas where fuels, oils, lubricants etc. are stored and loaded or unloaded, including filling points.
  - Delivery of updated training to construction workers on safe and proper storage, handling, use, clean- up, and disposal of oils, fuels and other chemicals.
- Implementation of soil erosion control measures including:
  - Installation and maintenance of sediment traps in surface drains around construction areas.
  - Minimize soil disturbance and excavation during wet season.
- Provision of appropriate sanitary facilities at construction camp and site.

8.2.3.2. Operation phase

During the operational phase of the proposed faecal sludge management facility, several water resources, ecology, and biodiversity impacts must be carefully considered. Firstly, there may be potential positive impacts, such as the reduction of contamination in nearby water sources due to improved faecal waste management practices. By treating and disposing of faecal sludge safely, the risk of groundwater and surface water contamination can be mitigated, benefiting local water resources and aquatic ecosystems.

During operation, the application/ use of treated effluent for irrigation should be closely monitored to ensure that the effluents meet regulatory standards and do not negatively the ecosystem. The ecological and biodiversity impacts can vary depending on the scale of the operation and the proximity to sensitive ecosystems. Increased water usage for treatment processes may lead to higher water demand, potentially affecting local water availability. Additionally, the construction and ongoing operation of the treatment plant itself can disrupt local habitats and ecosystems. To mitigate these impacts, regular monitoring of effluent quality, and the implementation of sustainable water management practices should be integral parts of the operational phase to ensure minimal adverse effects on water resources, ecology, and biodiversity. This would reduce the magnitude of these impacts to **Minor**.

8.2.4. Soil resources

8.2.4.1. Construction phase impacts

The construction phase of the proposed faecal sludge treatment plant is expected to bring about several soil resource impacts. Firstly, excavation and earth-moving activities necessary for constructing the facility and associated infrastructure can disrupt local soil profiles and structures. Soil erosion is a concern during construction, as the removal of vegetation and disturbance of the soil can leave it vulnerable to erosion by wind and water, leading to sedimentation in nearby water bodies. Effective erosion control measures, such as sediment basins and erosion control blankets, should be implemented to mitigate this impact. Lastly, soil contamination is a risk during construction, especially if hazardous materials or pollutants are not handled and stored properly. Comprehensive soil management practices and adherence to environmental regulations are vital to minimize soil resource impacts and protect the long-term health of the local ecosystem.

Impact significance

Soil compaction alters drainage characteristics and decreases the ability of vegetation to re-establish. Topsoil stripping at the construction site also breaks up the soil structure, and this may lead to an increase in erosion (from the topsoil and subsoil piles).

Hazardous materials spillage at construction site and camp is likely to cause soil contamination and/or eventual surface/groundwater contamination. Vehicle, plant and machinery

maintenance on site can also lead to soil pollution in the event of spillage of hydrocarbons (such as oil and fuel).

Due to the limited spatial extent of soil compaction, contamination from pollution incidences and minimal soil loss from off-site disposal, impacts on soil resources are assessed as moderate.

Table 8-8 Soil loss resulting from erosion and carting to spoil and contamination

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
1	2	1	1	5	Medium
Physical Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance
Presence	Resilience				
1	2	3	Medium		Moderate

Soil resources management

- Pre-construction Assessment: Conduct a comprehensive soil survey to understand the existing soil conditions, composition, and structure at the construction site. Identify any potential soil contamination risks or areas with high erosion susceptibility.
- Erosion and Sediment Control: Implement erosion control measures such as silt fences, sediment basins, and erosion control blankets to prevent soil erosion during construction. Develop and maintain sedimentation ponds to capture and treat runoff water, preventing sedimentation in nearby water bodies.
- Soil Excavation and Handling: Minimize soil disturbance by using appropriate construction techniques and equipment to reduce compaction and soil disruption. Ensure that excavation activities are carried out with minimal impact on soil structure and quality.
- Soil Contamination Management: Implement strict measures for handling and disposal of hazardous materials to prevent soil contamination. Conduct soil testing and monitoring to detect any signs of contamination and take corrective actions promptly if contamination is suspected.
- Sustainable Land Use Planning: Develop a sustainable land use plan for the construction site that minimizes soil disturbance and ensures long-term soil health. Consider site restoration and re-vegetation plans to restore disturbed areas after construction.

8.2.4.2. Operation phase impacts

During the operational phase of the proposed faecal sludge treatment plant, several soil resource impacts are anticipated. The most significant positive impact is related to improved soil health in the surrounding areas due to the responsible disposal of treated effluents, which can act as a valuable soil ameliorant. Treated sludge contains organic matter and nutrients that can enhance soil fertility and structure, potentially benefiting local agriculture. However, if not managed properly, the discharge of treated effluents into the soil can also lead to soil contamination, particularly if there are inadequate safeguards to prevent the release of

pathogens or harmful chemicals. The impact significance on soils during operations is assessed as Minor.

8.2.5. Energy resources

8.2.5.1. Construction phase impacts

Fossil fuels (mainly diesel) will be used in the running of project vehicles and machinery. Fossil energy is non-renewable, and its use emits greenhouse gases and other air pollutants.

Impact significance

Construction activities for the project will not require significant volumes of fossil fuels. At the local scale, depletion of the resource is of little significance and is best analysed/quantified at a national/global scale.

Table 8-9 Depletion of fossil fuel resources

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
1	1	1	1	4	Low
Physical Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance
Presence	Resilience				
1	2	3	medium		Minor

Energy resource management

Despite the low impact on energy resources, it is prudent to institute measures to conserve fossil fuel. Proposed measures include:

- Minimize idling of machinery.
- Regularly service vehicles, plant and machinery for efficiency in operation.

8.2.5.2. Operation phase

The planned FSMF will have a minimal reliance on grid energy for its operations. The significance of this impact is however assessed as negligible.

8.2.6. Waste generation

8.2.6.1. Construction phase

Construction activities will generate inert, non-hazardous, and hazardous wastes over the construction period. Wastes likely to be generated during construction include spoils (soil and rock from excavations), vegetation (felled trees, shrubs, stumps and their root systems)

packaging materials used for packing cement, plastics, reject materials including damaged bricks/blocks, and leftovers/excesses, wastewater (concrete washout) etc.

The Construction camp will need to dispose of ordinary waste (from the kitchen, offices, and other areas) sanitary waste (sewerage and wash water), and maintenance wastes (from maintenance of plant and machinery at the camp). The project is expected to manage all waste in accordance to regulations and guidelines.

Impact significance

Improper waste management at construction site and camp will interfere with the aesthetic status of the surrounding while creating health and safety hazards. Improper disposal of the wastes off-site could also cause nuisance, health, and safety hazards, and create breeding grounds for vermin.

Table 8-10 Pollution and health & safety hazards from poor management of wastes

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
2	2	2	2	8	Medium
Human Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance
Presence	Resilience				
3	2	5	High		Major

Construction phase waste management

The following measures are proposed to manage wastes generated at the sites:

- Land-fill spoils as much as possible within the sites or identified fill areas.
- Felled trees, shrubs and stumps can be isolated for collection by locals as firewood.
- Organic wastes can be composted on site.
- Provide sanitation facilities at the camp and construction site for use by workers.
- Vehicle maintenance should as much as possible be done off-site (at designated garage/workshop or commercial garage) and wastes (used oil, oily rags, cans and used parts) disposed in a designated area.
- The Contractor should ensure that construction materials left over at the end of construction are used elsewhere rather than be disposed off.
- The Contractor should put in place measures to ensure that construction material requirements are carefully budgeted and to ensure that the amount of construction materials left on site after construction is kept minimal. Additional measures for minimization of solid waste during construction of the proposed Project could include the use of durable, long-lasting materials that will not need to be replaced often, thereby reducing the amount of construction waste generated over the project lifetime.

Concrete waste management: Concrete will be used in construction of FSMF, and there will be wastes arising from its use. The following measures are proposed for concrete waste management:

- The Contractor should avoid mixing of excess concrete if possible and should discard excess concrete in a designated area away from water courses.
- Washing of concrete coated vehicles or equipment should be done off-site or in a designated wash area a minimum of 50 feet away from drainage channels. The runoff from the on-site concrete wash area should be contained in a temporary pit where the concrete can set, and water used for dust suppression within site.

8.2.6.2. Operation phase

During the operational phase of the proposed faecal sludge management facility, waste generation impacts are expected but can be managed effectively. The primary waste generated will be residual sludge after the treatment process. While this sludge is significantly reduced in volume and less hazardous than raw faecal waste, its proper handling and disposal are critical. The plant must have well-designed processes for sludge dewatering, drying, and disposal or reuse to minimize the environmental impact. Moreover, operational waste, such as maintenance materials, and packaging, may be generated. Effective waste management practices, including recycling and responsible disposal methods, will be essential to minimize the environmental footprint and maintain the facility's sustainable operation. Proactive waste management planning and compliance with relevant regulations will ensure that waste generation impacts during the operational phase are controlled and mitigated responsibly. The proponent shall also ensure workers and other users are well sensitized towards spillage at the discharge point during delivery of raw waste. The significance of waste generation during operations is therefore assessed as moderate.

8.2.7. Visual and landscape

8.2.7.1. Construction phase

There are two recognized types of visual impact: intrusion and obstruction. Visual intrusion occurs when a pre-existing view of the landscape is encroached upon adversely by a new element which is of a poorer visual quality. Conversely, visual obstruction results from such a feature blocking and preventing visibility of any pre-existing view. Visual impact is brought about by one or a combination of three factors:

- Elements which contrast in terms of form, height, mass, colour thereby creating incongruity in the landscape.
- Perceived negative association with industrial processes, dereliction, and disturbance; and
- Long-term and therefore perceived permanent duration.

The factors are affected by:

- Meteorological conditions: such as rain, strong sunlight, cloud cover.

- Topographic position of facilities/infrastructure in relation to surrounding relief.
- Observer characteristics – psychology, age, reason for presence.
- Viewpoint characteristics – nature, sensitivity, and distance.
- Geology – affects slope angle, and method of working; and
- Method of working – affects processing, progressive restoration, transportation.

The aspects of the project that will impact on the landscape and visual integrity of the area are the clearance of natural and planted vegetation for permanent components of FSMF, contractors camp and materials storage yards).

Impact significance

During construction, the visual integrity of the landscape will be reduced since disturbance on the FSMF site, and the temporary facilities will be visible from the time of vegetation or topsoil removal until restoration is complete and vegetation has re-established fully.

In all areas of construction activities, items such as large machinery/equipment, earthworks, and other vehicles will be visible throughout construction. This is a temporary impact, the duration of which will be minimized by the prompt removal of vehicles, plant, and materials on completion of the works.

Table 8-11 Visual disturbance effects on humans

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
1	2	2	1	6	Medium
Human Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance
Presence	Resilience				
2	1	3	Medium		Moderate

Visual and landscape impact management

All disturbed areas should be restored in accordance with the project's restoration specification. The Contractor should prepare a Restoration Plan for the project based on the specifications. The main objective of restoration of the sites should be to return the visual integrity of the landscape as closely as possible to its previous condition.

Wherever possible, the removal of existing mature trees which form important visual focal points should be avoided. Provided that the integrity of the FSMF is not jeopardized, any removed trees should be replaced/ compensated within the project site (landscaping and buffer zone) or elsewhere. Indigenous species should be preferred and the trees should be nurtured to maturity.

8.2.7.2. Operation phase

During the operational phase of the facility, the visual integrity of the surrounding area may be impacted to some extent. The significance of this impact is typically moderate, as efforts are made to incorporate design elements that blend with the environment or screen the facility from view. The facility design incorporates effective landscaping, green buffer zone, and

architectural considerations will help mitigate the visual impact of the facility, ensuring that it remains harmonious with the surrounding landscape while providing vital sanitation services to the community.

8.2.8. Other natural resources

8.2.8.1. Construction phase

Construction materials that will be used include steel, aggregate, sand, cement, and iron bars etc. Aggregate and sand will be obtained from quarries and sand harvesters who extract such materials from natural resource banks such as riverbanks and land.

Impact significance

Unsustainable extraction of these resources can cause serious environmental degradation in the source areas.

Table 8-12 Environmental degradation at materials sites

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
3	1	3	1	8	Medium
Physical Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact Significance
Presence	Resilience				
2	2	4	Medium		Moderate

Raw materials management

The Contractor should source construction materials such as sand and aggregate from approved quarries and mining sites which have undergone satisfactory environmental impact assessment and are licensed according to the regulations. Since the approved quarries/mining sites are expected to apply acceptable environmental performance standards, the negative impacts of their activities at the extraction sites are considerably well mitigated.

The Contractor should implement stringent inventory management mechanisms and only order for materials after an accurate estimation of actual construction requirements.

Where possible, building elements should be manufactured off-site and delivered to site, to maximize benefits of off-site manufacture including minimizing waste, maximizing recycling (because manufacture is in one location), high quality elements, better occupational health and safety management, less noise and dust.

Material delivery, storage, and use

The Contractor should provide appropriate training of workers on proper material delivery and storage practices and procedures. He should designate on-site materials delivery and storage areas, and these should be located near construction entrances and away from watercourses.

The Contractor should maintain accurate and up to date records of materials delivered and stored on site and should at all instances endeavour to minimize site inventory.

Any materials remaining on the ground after the completion of construction works should be removed for reuse in other construction activities.

8.3. Impacts related to Community Health and Safety

8.3.1. Construction phase

Poor construction management practices by the Contractor have potential to cause direct adverse effects on the safety, human health, and wellbeing of the surrounding community. Such include inadequate management of air emissions, wastes generated, traffic and other safety hazards posed by construction site or construction activities.

Any incident that harms a person has potential to diminish the quality of life for that person, negatively impacting them or their household livelihood, and potentially creating tension between the local community and project teams.

Indirect impacts on the community can be the introduction of new communicable diseases such as HIV/AIDS due to in-migration, poverty, and prostitution. The extent of disease transmission between the communities and in-migrants would depend on the level of interaction between the two, the workforce size and health status of the workforce and casual migrants, and their susceptibility to disease infection. In addition, the living conditions, access to healthcare and workforce management would determine the significance of disease transmissions.

During construction, works such as excavation, movement of materials and spoils, and the general increase in vehicular traffic is likely to increase dust and noise pollution in the project area. Consequently, it is likely that respiratory infections, eye infections (e.g., trachoma), hearing impairment, malaria, work-related accidents, and traffic accidents could increase in incidence.

Increased respiratory health incidence and eye infections: Dust emissions can irritate the eyes causing trachoma and respiratory problems. Although these problems are reversible, the long-term exposure to dust can have a serious impact on the health status of those close to construction areas. In addition, it is expected that the project transportation activities will increase the level of dust created in the local environment, especially in dry weather. Dust emissions from passing traffic will irritate the eyes and lead to an exacerbation of respiratory illnesses for those near key access routes. Without mitigation, the significance of the impact is likely to be Moderate.

The impacts are likely to be most severe on the construction workforce. However, it is expected that good construction practices will be applied to minimize or eliminate the hazards, and provision of appropriate PPE to workers and visitors.

Disturbance or hearing impairment: In addition to the dust produced, noise levels are likely to significantly increase, especially from the use of noisy construction vehicles and machinery.

Although intermittent, the noise levels during the peak construction period may cause hearing impairment, sleep disturbance, behavioural change, or anxiety. The significance of the impacts would be Moderate.

Table 8-13 Nuisance and increased safety hazards to other road users

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
2	2	2	1	7	Medium
Human Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact significance
Presence	Resilience				
2	2	4	Medium		Moderate

Introduction/spread of communicable diseases such as HIV/AIDS: The extent of disease transmission between local communities and workers would depend on the level of interactions, health status of both parties, susceptibility to disease infection, and established communicable disease management/prevention measures. In-migration of construction workers into an area can be a cause of introduction and spreading of otherwise absent/low prevalence diseases among communities in a project area.

Sexually transmitted infections such as HIV/AIDS, Syphilis and Herpes can spread between workers and the community, and their impacts can either be life threatening, irreversible or require immediate, complex, and lengthy treatment. The significance of the impacts is therefore considered as Major.

Management of impacts on community health, safety, and security

Implementation of specific management plans on housekeeping, waste, air quality, health and safety and pollution prevention will ensure that community health, safety and security is enhanced. Measures should include but not be limited to:

- Informing local communities of major activities in advance.
- Ensuring all dangerous construction sites are cordoned off.
- Enforcing and monitoring road safety standards.
- Implementation of measures to prevent the entry of sediment from construction areas into local waterways.
- Following best practice to prevent the creation of breeding areas for vermin.
- Spraying construction areas and roads regularly with water to suppress dust emissions.
- Ensuring that potentially disturbing construction noise is not produced outside of working hours.
- Safety training, traffic management and a high prioritization of public safety by the Contractor.
- Ensuring that construction areas are open only to authorised personnel.
- Developing and enforcing a strict code of conduct for workers to regulate behaviour in the local communities.

- Providing contraceptives and awareness training to the workforce protection and prevention of transmission of STDs.
- Establishment of appropriate health protocols and provision of PPE.
- Provision of adequate sanitation for workers.
- Provision of the workforce with access to healthcare.
- Awareness meetings and campaigns on Sexual Gender Based Violence among the workers and the community.
- Policies on children protection against violence and protection from labour will be developed and awareness done within the community.

The Contractor should also appoint one or more community liaison officers to work with communities to manage issues or anxiety and to advice on the risks and dangers associated with the project.

A series of support measures to mitigate social, health and economic impacts can be provided to local communities. These could include:

- A local employment and sourcing policy to discourage in-migration, entailing a ban on the employment of casual migrants to the site, and the recruitment of labour through offices located away from the site.
- Informing local communities of employment and procurement opportunities.
- Supporting local healthcare facilities i.e., training of local healthcare professionals, supply of regular medical supplies and updated equipment; and
- A community health program including support to existing or new local programs such as mother and child, nutrition, community health awareness, HIV/AIDS awareness, hygiene and immunization, malaria control measures, campaigns to raise traffic awareness, and local Voluntary Counselling and Testing (VCT) programs.

Traffic Management principles should be fully utilized and implemented by the Contractor to ensure safety, and prevention of nuisance to the public. A traffic management plan that minimizes the interface whenever possible between the public and construction traffic, reduces the number of Heavy Goods Vehicles (HGV) movements where practicable, and controlling vehicular movements on the project sites should be developed and implemented. The traffic management plan should cover:

- Planning and managing both vehicles and pedestrian routes.
- The elimination of reversing where possible.
- Safe driving and working practices.
- Protection of the public.
- Adequate vision and lines of sight.
- The provision of signs and barriers; and
- Adequate parking and offloading areas.

Appropriate signs, barricades, and other traffic management measures should be used to minimize road user inconvenience.

8.3.2. Operation phase

Traffic accidents involving project vehicles and the community: During project operations, impacts on community health and safety could arise from traffic accidents involving the Exhauster trucks, Project Operator's vehicles and the public. The potential impacts and mitigation measures for these impacts are alluded to in preceding sections of this Report. It is expected that the operator has and will implement traffic safety measures and require that drivers of company vehicles uphold the required public safety standards when driving.

8.4. Impacts related to Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement

The proposed land for the construction of the proposed Faecal Sludge Management facility is privately owned. About 40 acres of land needs to be acquired which will result in loss of land and loss of livelihood.

Rock mining is the main activity practiced on the identified targeted land parcels. Rock mining attracts different players ranging from:

1. Landowner-They rent out their land at a fee for purposes of rock mining.
2. Dealers (Sellers/agents)-They are involved in the business of selling rocks. They rent out the land from the landowners and mine rocks for sale.
3. Miners-They are involved in the actual mining of the rocks and are paid wages.
4. Transporters-They offer transport services of the harvested rocks to the buyer's destination,

An abbreviated resettlement action plan has been carried out alongside this study. The proponent, CWWWDA will implement the ARAP to ensure affected persons are compensated prior impact. The impact is assessed as major.

Impact Significance

Table 8-14 Impact as result of resettlements

Extent/Scale	Frequency	Duration	Intensity	Score	Event Magnitude
2	2	3	2	9	High
Human Receptors		Receptor Sensitivity	Receptor Sensitivity Ranking		Impact significance
Presence	Resilience				
2	2	4	Medium		Major

8.5. Impacts related to Biodiversity Conservation and Sustainable Management of Living Natural Resources

8.5.1. Impacts on flora and habitats.

Land clearing and site preparation can disrupt local ecosystems, potentially leading to the removal of vegetation and disturbance of wildlife habitats. Construction-related runoff and

sedimentation can pose risks to nearby water bodies, potentially affecting aquatic ecosystems and species. Sediment-laden runoff can harm water quality and aquatic habitats, which may be particularly important in rural areas where bodies of water often support unique flora and fauna (Fishing). To mitigate these impacts, erosion control measures, sediment basins, and effective stormwater management practices should be implemented during construction and operation phase. Additionally, adherence to environmental regulations and close monitoring of the construction site's impact on nearby ecosystems is essential to ensure that the long-term health and biodiversity of the local environment are preserved.

8.5.2. Impacts of climate change

8.5.2.1. Climate change and variability in the global and local context

It is generally understood that the climate is changing, and average global temperature has been shown to have increased by 0.85 °C (0.65 to 1.06) over the period between 1880–2012. Surface temperatures across Africa have increased by 0.5 - 2°C over the past 100 years, and since 1950, climate change has altered the magnitude and frequency of extreme weather events (GoK, 2018). The frequency of cold days, cold nights and frost has decreased, while the frequency of hot days, hot nights and heat waves has increased.

Temperature increase has been observed across all seasons, but particularly from March to May. Rainfall patterns have also changed, with the long rainy season becoming shorter and drier, while the short rainy season has become longer and wetter. However, the overall annual rainfall remains low. The long rains have been declining continuously in recent decades, and droughts have become longer and more intense and tend to continue across rainy seasons.

The frequency of rainfall events causing floods has increased in East Africa from an average of less than three events per year in the 1980s to over seven events per year in the 1990s and 10 events per year from 2000 to 2006, with a particular increase in floods. Droughts and heavy rainfall have become more frequent in the last 30 years.

The current trend of rising annual temperatures is expected to continue in Kenya in all seasons, with models suggesting that warming of about 1°C will occur by the 2020s, and 4°C by 2100. Precipitation projections are more uncertain and suggest that by the end of the 21st century East Africa will have a wetter climate with more intense wet seasons and less severe droughts. The proportion of rainfall that occurs in heavy events is also expected to increase. Some models also project a general decrease in mean annual precipitation, but with wetter conditions during the short rains of October to December.

8.5.2.2. Climate risk profile of the wastewater in Kenya

Climate change and its associated variability present significant challenges for wastewater treatment plants, including those handling faecal sludge, both globally and locally in Kenya.

Globally, climate change has resulted in increased frequency and intensity of extreme weather events, such as heavy rainfall and flooding, which can overwhelm treatment facilities and lead to the discharge of untreated or partially treated wastewater into water bodies. These events can pose serious environmental and public health risks as they may spread pathogens and contaminants. Conversely, climate change can also result in prolonged droughts and water scarcity, affecting the availability of water resources necessary for effective wastewater treatment.

In Kenya, the impacts of climate change on wastewater treatment plants are notably pronounced. The country has experienced erratic rainfall patterns, with periods of excessive rainfall and prolonged dry spells. This variability has direct implications for faecal sludge management as heavy rains can inundate pit latrines and septic tanks, causing overflows and the contamination of water sources. Conversely, droughts can lead to water scarcity, affecting the dilution of wastewater and the proper functioning of treatment plants. Additionally, rising temperatures can accelerate the decomposition of faecal sludge, potentially increasing odours, and the generation of greenhouse gases from treatment processes.

To address these challenges, wastewater treatment facilities in Kenya and globally are adopting climate-resilient designs and technologies. These include improved stormwater management, enhanced wastewater treatment processes, and measures to conserve water resources. Furthermore, climate adaptation and mitigation strategies are being integrated into wastewater management policies to ensure that these facilities can continue to operate effectively in the face of climate change, thereby safeguarding public health and environmental quality.

8.5.2.3. Historic and future trends in Kwale County

Historic and future trends of climate change and vulnerability in Kwale County significantly impact wastewater treatment plants, particularly those handling faecal sludge. Historically, the county has witnessed several climate-related challenges. Kwale County, like many parts of Kenya, has experienced shifts in rainfall patterns, with more intense and unpredictable rain events in some seasons and prolonged droughts in others.

Looking ahead, the future trends in climate change and vulnerability in Kwale County are concerning. Projections indicate that the region will likely face more extreme weather events, including heavier rainfall, flooding, and prolonged dry spells due to rising global temperatures. These changes will place further pressure on wastewater treatment plants, as they will need to contend with increased volumes of wastewater during rainy seasons and the challenges of treating it during periods of water scarcity. Additionally, rising temperatures may accelerate the decomposition of faecal sludge, potentially leading to higher odours, and increased greenhouse gas emissions from treatment processes.

To address these challenges, wastewater treatment facilities will adapt and prepare for climate-related impacts. This includes implementing climate-resilient designs, improving stormwater management, and enhancing treatment processes to accommodate fluctuations in wastewater

flow and quality. Furthermore, integrated water resource management and conservation practices will be essential to ensure the availability of water resources necessary for treatment, even during periods of scarcity. By taking proactive measures and incorporating climate adaptation strategies, wastewater treatment facilities and continue to provide vital sanitation services while mitigating the impacts of climate change and vulnerability on their operations.

8.5.2.4. Resilience/vulnerability of the wastewater project to climate change risks

Climate-related stressors have profound implications. Rising temperatures can impact the efficiency of treatment processes and the biodegradation of contaminants within wastewater. Changes in flow volume and timing can affect the dilution of wastewater and the capacity of treatment plants to manage varying wastewater loads. Increased sedimentation due to more intense rainfall can lead to clogging of treatment systems. Droughts can reduce the availability of water for dilution and treatment, while floods can inundate treatment plants and disrupt operations.

All of these stressors emphasize the critical need for wastewater treatment facilities to adapt to climate change impacts by designing resilient systems that can cope with changing weather patterns and environmental conditions throughout the entire wastewater treatment process, from abstraction and treatment to distribution and disposal. Inadequate consideration of these impacts during project planning can result in higher long-term costs and reduced performance of wastewater treatment infrastructure, underscoring the importance of proactive climate adaptation measures.

Table 8-15 Summary of climate stressor impact on the FSMF

Climate Stressor	Change	Relative effect on the wastewater (faecal sludge) facility			
		smaller decrease	bigger decrease	smaller increase	larger increase
Temperature	Increase				
	Decrease				
Flow volume and timing	Increase				
	Decrease				
Sedimentation	Increase				
	Decrease				
Drought	Increase				
	Decrease				
Flood extremes	Increase				
	Decrease				

Source: Modified from USAID (2017)

Potential impacts relevant to the FSMF project are summarised in the Table below:

Table 8-16 Potential climate impacts on FSMF

Climate impacts	Impacts on FSMF
Warmer temperatures	• Warmer temperatures can promote the survival and proliferation of pathogens within faecal sludge, making the treatment process less effective in reducing microbial contamination. • Higher temperatures can accelerate the decomposition of organic matter in faecal sludge. While this may reduce the overall volume of sludge, it can also lead to the release of foul odours, and the production of gases like methane. • Warmer temperatures can affect the operational efficiency of treatment processes, potentially requiring more energy for aeration, pumping, and other aspects of treatment. • Faecal sludge treatment processes often rely on water for dilution and transport, and reduced water availability can disrupt these processes
More Frequent and/or Intense Extreme Weather Events	• lead to flooding and inundation of faecal sludge treatment facilities • Heavy rainfall and flooding can increase erosion in the surrounding area, leading to sedimentation in treatment ponds and tanks. • Intense storms, hurricanes, or cyclones can cause physical damage to treatment plant infrastructure, including buildings, tanks, and pipelines. • Extreme weather events, such as severe storms, can result in power outages, which can disrupt the operation of faecal sludge treatment plants
Changes in Precipitation	• Changes in precipitation patterns, such as increased rainfall in certain seasons or intense rain events, can result in a higher inflow of faecal sludge to treatment plants. This increased volume may challenge the capacity of treatment facilities, potentially leading to overflows or reduced treatment efficiency.

To adapt to these climate impacts, faecal sludge management facility will incorporate flexible designs, effective stormwater management, and water conservation practices. These measures will help ensure the resilience of treatment processes in the face of changing precipitation patterns, changing temperatures, extreme weather events and maintain the effectiveness of these critical sanitation facilities.

Management of climate impacts

Various climate-proofing options are available for projects in the wastewater management facility including both engineering (structural) and non-engineering options. These include:

- Incorporate climate-resilient designs and construction techniques that can withstand extreme weather events, such as flooding, storms, and temperature variations.
- Implement effective stormwater management and drainage systems to prevent flooding and minimize the impact of heavy rainfall on treatment facilities.
- Install backup power sources, such as generators or renewable energy systems, to ensure continuous operation during power outages caused by extreme weather events.

- Develop adaptive operation protocols that can be adjusted in response to changing climate conditions, such as modifying treatment processes during periods of heavy rainfall or drought.
- Conduct regular maintenance and inspection of treatment plant infrastructure to identify and address damage or wear and tear caused by extreme weather events.
- Implement water conservation measures within the treatment process to reduce dependence on external water sources, especially in regions experiencing water scarcity.
- Build flood protection infrastructure, such as levees, berms, or floodwalls, to safeguard treatment facilities from inundation during heavy rainfall and flooding.
- Use climate-resilient materials and coatings for infrastructure components to enhance their durability and resistance to climate-related impacts.

8.6. Impact on Indigenous Peoples

Indigenous Peoples are defined in World Bank's ESMF as 'a distinct social and cultural group possessing the following characteristics in varying degrees:

- Self-identification as members of a distinct indigenous social and cultural group and recognition of this identity by others; and
- Collective attachment to geographically distinct habitats, ancestral territories, or areas of seasonal use or occupation, as well as to the natural resources in these areas; and
- Customary cultural, economic, social, or political institutions that are distinct or separate from those of the mainstream society or culture; and
- A distinct language or dialect, often different from the official language or languages of the country or region in which they reside.

Indigenous peoples are otherwise defined in the Indigenous and Tribal Peoples Convention (1989) as:

"Tribal peoples in independent countries whose social, cultural and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs *or traditions or by special laws or regulations.*

Peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present state boundaries and who, irrespective *of their legal status, retain some or all of their own social, economic, cultural and political institutions."*

Based on the above criteria, there are no indigenous people identified in the project area likely to be affected by implementation of the project.

8.7. Impacts on cultural heritage of the project area

Project activities that could impact on archaeological resources and cultural property include the removal of topsoil and subsoil during earthworks/ excavation. These activities may damage/destroy any existing archaeological monument(s) or cultural property whether marked/recorded or new discoveries.

Based on field studies and feedback from area stakeholders, no sites/ features with cultural heritage significance were identified at site and in the immediate project area. There are also no known archaeological/cultural assets existing in the immediate project area. The overall significance of the risk to archaeological and cultural heritage in the project area is assessed as negligible.

However, adjacent to the proposed project area is a Kaya Forest which is defined under the ESS 8 as a natural feature with cultural heritage significance. The anticipated impacts due to the proximity of the Kaya to the FSMF are listed in Table 8-17.

Table 8-17 Impacts on cultural heritage

Issue/impact	Mitigation/management measures
Construction phase	
Breach of confidentiality	Consultation with the Kaya Elders on the extent of information to be shared with the project personnel and the public to enhance confidentiality
Noise and dust during construction can be a menace when undertaking the ceremonies.	Consult with the Kaya Elders on when they are undertaking the ceremonies to ensure minimal disruption from the project activities.
Operation Phase	
Exposure of the Kaya Forest to the Public leading to destruction of the forest and land grabbing	Enhance protection and use of the heritage place by fencing.

8.8. Decommissioning phase impacts & mitigation measures

8.8.1. Post-construction decommissioning

Following completion of construction works, decommissioning of the construction camp will be necessary entailing dismantling of equipment, demolition and/or removal of all erected structures, removal of all materials and wastes, and site restoration.

Impacts likely to arise from decommissioning works are similar to those of construction, and therefore will require similar mitigation measures.

8.8.2. Post-operation decommissioning

The FSMF project has a design horizon of the year 2040, after which it may require decommissioning or major rehabilitation and upgrade. Rehabilitation and upgrade of the infrastructure is more probable than decommissioning. In the event that decommissioning is proposed for the project, adequate arrangements would be made to dismantle and remove all movable infrastructure.

Decommissioning of the FSMF project may also be carried out for situations in which multiple environmental or other concerns are evident before the design horizon is reached. It may range from relatively simple activities such as shutting off, to full obliteration, i.e., demolition of all project structures.

8.8.3. Project decommissioning guidelines

8.8.3.1. Overview

Once the Proponent has decided to proceed with decommissioning –of the entire or some components of the Project, a Project Decommissioning Plan will be prepared and submitted to NEMA for approval. Only after NEMA's approval and after the Proponent has completed any precursor activities, and a decommissioning schedule shall the decommissioning process begin.

The following steps would be followed in the decommissioning process.

8.8.3.2. Scoping

This is a consultative process to discuss the scope of the decommissioning action for all project components, including the schedule, budget, risks, and approach for performing the work.

8.8.3.3. Project sites walk-down.

Site personnel would perform a walk down to obtain the information necessary to prepare the hazard assessment and the Reconnaissance Level Characterization Report (RLCR). Safety and physical hazards at the sites would be identified as part of the initial project reconnaissance.

The safety and physical hazard assessment would help site personnel determine the possible risks to workers, the public and the environment during decommissioning.

To identify and control hazards, an Integrated Safety Management (ISM) process description and implementation plan would be followed. The ISM integrates the identification, analysis and control of hazards and provides feedback for improvement. The ISM would consist of five core safety management functions which include:

- Definition of the scope of work.

- Identification and analysis of hazards associated with the work.
- Development and implementation of hazard controls.
- Performance of the work within such controls; and
- Provision of feedback on the adequacy of the controls; and
- Reconnaissance level characterization.

The Reconnaissance Level Characterization produces an overall assessment of the hazards, and other conditions associated with each structure to be decommissioned. The physical condition of the structures/facilities would be assessed to identify hazards, as well as physical obstacles or other conditions that could affect decommissioning activities.

The Reconnaissance Level Characterization would include a detailed review of hazards that require special work controls to complete decommissioning safely. In all cases, the team performing the RLC would check the historic information against current observed conditions.

8.8.3.4. Prepare reconnaissance level characterization report (RLCR)

Based on the Reconnaissance Level Characterization, the Proponent would prepare a report for review and approval by NEMA. The report summarizes the results of the Reconnaissance Level Characterization and provides an analysis of the risks presented by the project. The RLCR would also contain sufficient detail to establish the basis for decommissioning activities.

The project points of contact and staff would use the RLCR to provide input to the preparation of the health and safety analysis, the determination of the engineering support requirements, and the determination of appropriate milestones.

8.8.3.5. Perform physical work of disposition operations

These activities include, for example, excavation, dismantling, demolition, and removal of components. After demonstration that the structure/facility meets the established criteria, it would be demolished or excavated. The requirements and procedures set out in the ISM plans would be followed by workers performing decommissioning.

8.8.3.6. Perform and validate final characterization

At the end of the decommissioning, site personnel would confirm that their activities have achieved the standard required in the completion of disposition for structures/facilities that are demolished such that only environmental restoration activities remain.

After the structure/facility is demolished, the final characterization would occur. The demolition survey would be conducted in accordance with the site's characterization protocols and would provide sufficient data to demonstrate that the site has successfully been decommissioned in conformance with the set regulation requirements.

The post-demolition survey may result in a loop of activity for site decommissioning personnel, because if the survey reveals insufficient decommissioning to meet the requirements of the regulations, additional action would have to be taken. Only at such time as the site agent is satisfied that the post-demolition survey shows that decommissioning is complete, would the survey be deemed final.

8.8.3.7. Environmental restoration

Environmental Restoration constitutes those activities necessary to characterize, assess and remediate contamination in soils, sediments, surface, and ground water from past activities at the site. It may also entail restoration and re-vegetation of the site(s) through planting of indigenous trees and shrubs. Re-vegetation would be carried out to the extent determined by the proposed future use of the sites.

9. Environmental and Social Risks and Impacts Management and Monitoring

9.1. Overview

For the effective management of environmental and social risks and impacts during the various phases of project implementation, the parties involved must adopt tools and processes to identify, address and monitor potential risks and impacts throughout the project life cycle i.e., during design, construction, operation, and decommissioning phases. Such tools and processes include an environmental and social management system (ESMS), and an Environmental and Social Management and Monitoring Plan (ESMMP) that define the principles, objectives, procedures, and activities necessary to protect the environment and enhance the sustainability of project activities.

This ESIA study has assessed the environmental and social risks and impacts of the project during the planning, construction, operation, and decommissioning phases and provided for measures to: anticipate and avoid risks and impacts; minimize or reduce risks and impacts to acceptable levels where avoidance is not possible; mitigate once risks and impacts have been minimized or reduced; and compensate for or offset them where technically and financially feasible, especially where significant residual impacts remain.

The ESIA study has also identified that most of the anticipated project risks and impacts will arise during project planning and construction, with fewer concerns during operations once the project is commissioned. Project decommissioning also presents E&S risks and impacts, and a specific decommissioning plan would be prepared by the Project Operator closer to the end of project life, considering the prevailing environmental and social conditions. The focus of the subsections below is thus on the planning and construction stages of the Project where greater risks and impacts lie, with a brief mention on operation stage plans and activities to be implemented by the project developer (CWWDA).

9.2. Project Environmental and Social Management System (ESMS)

An ESMS is required where a project implementer has control and/or influence over activities that present environmental and/or social risks. A project ESMS is a tool and process that enables the management of project-related environmental and social risks in a structured manner following an established business management iterative process of planning, doing, checking, and acting (the PDCA cycle).

Planning: This requires establishment of environmental objectives and processes necessary to deliver results in accordance with the organization's environmental policy; understanding the risks and opportunities; and a determination of the support required to achieve the outcomes required.

Doing: Entails implementing the processes as planned to include operational planning and control and emergency preparedness and response.

Checking: Entails monitoring, measuring, and evaluating environmental performance. It includes internal audit and management review.

Acting: Requires taking actions to continually improve and address nonconformity

The intended outcomes of an ESMS include:

- Enhancement of environmental and social performance
- Fulfilment of compliance obligations; and
- Achievement of environmental and social objectives

The construction Contractor appointed for the project must establish an environmental management system (EMS) with procedures to ensure that actions and mitigation necessary to protect the environment as contained in the construction environmental and social management and monitoring plan (CP-ESMMP) are implemented and monitored. At a minimum, the EMS must address the following:

- Policy.
- Planning.
- Implementation and Operation.

9.2.1.1. Policy

The Contractor should have or develop an environmental policy that integrates E&S requirements and that includes, as a minimum, the following:

- A commitment to comply with applicable regulations and other requirements that the construction company subscribes to;
- A commitment to provide a safe work environment.
- A commitment to provide the training and equipment necessary for employees to conduct their work safely.
- A commitment to continuously improve performance and to pollution prevention; and
- A commitment to communicate the policy to all persons working for and on behalf of the company.

9.2.1.2. Planning

Environmental and social issues and the legal and other requirements in construction of the Faecal Sludge Management Facility project have been identified in this ESIA study. The

construction contractor must demonstrate within his plan that he has read and understood the ESIA Study Report and its provisions for environmental management and monitoring.

9.2.1.3. Implementation and Operation

Roles, responsibilities, and authorities should be defined, documented, and communicated to ensure effective environmental and social management. A specific management representative (i.e., ESHS officer) should be assigned that is responsible for ensuring that the CP-ESMMP is established, implemented, and maintained and is responsible for reporting performance, reviewing the Plan, and making recommendations for improvement.

Documented confirmation is required that the training needs of all persons working for or on the Contractor's behalf whose work pose significant hazards to their health and safety and/or may create a significant impact on the environment has been identified. Records of all training must be maintained.

Management, supervisory, and employee responsibilities must be communicated to all employees through training, formal job descriptions, work experience, hiring practices, etc. Awareness training should be provided that include the importance of conforming to the policy and procedures, the significant environmental issues, and the roles and responsibilities of management and staff.

Records should be legible, identifiable, and traceable to the activity. Records should be stored and maintained in such a way that they are retrievable and protected against damage, deterioration, or loss.

The Contractor should establish, implement, and maintain procedures to identify potential emergency situations and potential accidents that can have an impact on the environment, surrounding communities, the employees, and/or the public.

The Contractor should be prepared to respond to actual emergency situations and accidents and prevent or mitigate associated adverse environmental or social impacts. The CP-ESMMP must also address how the Contractor will receive, document and respond to external interested parties, i.e., through a Stakeholder Engagement Plan (SEP). Additionally, the Contractor must maintain a Grievance Redress Mechanism (GRM) to attend to emerging issues/complaints during the construction stage.

A SEP and a GRM have been developed which the Contractor is expected to implement/adhere to while engaging stakeholders and complainants.

9.3. Project Environmental and Social Management and Monitoring Plan (ESMMP)

The measures presented in the ESMP summarize in a matrix format, the key impacts identified, the remedial measures to be taken, the responsible person(s) for execution, and the monitoring activities to be undertaken. An indication of the timing for implementation and the cost involved is also provided.

The actions proposed in the ESMMP are designed to ensure compliance with local legislation and adoption of best practices that apply to environmental and social management.

The outline management plans have been developed and will be further expanded (for construction and operations purposes) with documented procedures and guidelines for work practices in order to be responsive to the situations that the construction Contractor and Project Operator will encounter.

The effectiveness of the ESMMP will be monitored and assessed regularly through inspections and reporting throughout construction and during operations.

9.4. Implementation of the ESMMP during the construction phase

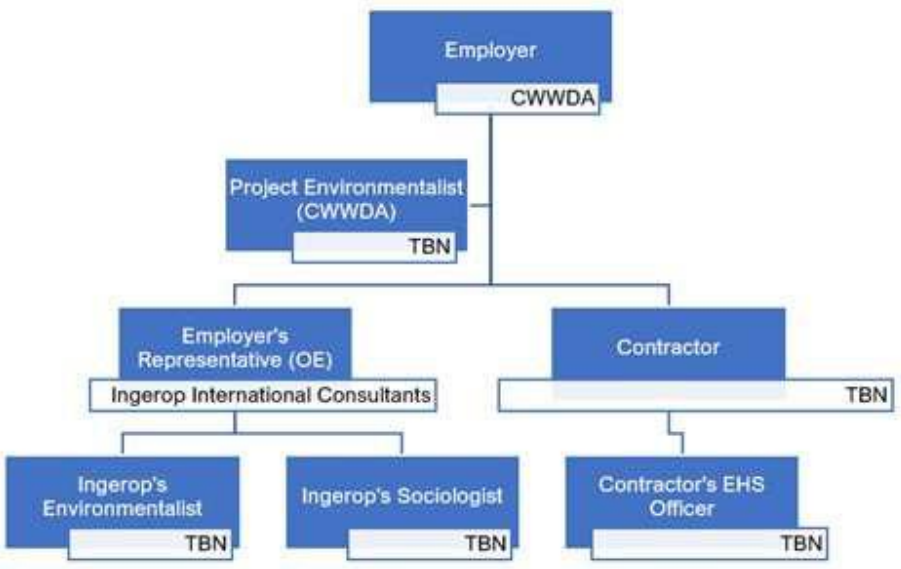
9.4.1. Project organization structure

The project will be implemented as a unit pricing construction contract whereby the appointed contractor will be responsible for all construction, commissioning, and handover of the project to CWWDA who will thereafter entrust it to the licensed Operator to operate.

Overall Project Management (PM) during construction will be performed by the project proponent through the Employers Representative (OE) – Ingerop International Consultants. There will be Environmental, Social, Health & Safety (ESHS) resources in the OE team who will be responsible for achievement of E&S objectives in construction work. To strengthen his role, the Project Proponent will include in the construction contract, E&S provisions in line with local standards and good international industry practice (GIIP) to ensure that the Contractor gives full attention to the requirements.

Below is the organogram for the implementation of the ESMP.

Figure 9-1 Organogram for the monitoring/implementation of the ESMMP



9.4.2. Environmental and social monitoring

Environmental and social monitoring will commence at the initiation of the construction activities for the project and will be carried out through the construction phase to commissioning and operations phase of the infrastructure.

The environmentalist and sociologist in the OE's team will perform the following:

- Verify that all project approvals and permits are in place prior to the start of construction.
- Evaluate contractor plans and monitor their implementation.
- Develop inspection checklists to ensure site inspections are focused and useful.
- Conduct environmental and social monitoring of construction works to ensure that that mitigation measures are appropriately implemented, and that emergent issues are addressed; and
- Prepare regular written reports to the Project Management Team (PMT), Contractor and, where need be, NEMA on an agreed schedule.

9.4.3. Outline management plans during the construction phase

Construction phase potential impacts and mitigation measures were identified during the ESIA study. These have been carried forward to outline management plans proposed for

construction phase activities. The outline plans will be further detailed in the Construction Phase Environmental & Social Management Plan (CP-ESMMP) which is a practical and achievable plan of management to ensure that any environmental, social health and safety impacts during the construction phase are minimized.

The CP-ESMMP contains a series of sub-plans to deal with the various aspects of the construction process/activities and the related environmental, social, health and safety risks.

Outline sub-plans have been proposed to deal with the following issues during construction of the FSMF project:

- General site management.
- Air quality.
- Noise and vibrations.
- Aesthetics (visual and landscape).
- Ecology and biodiversity (flora and fauna).
- Soil resources.
- Energy resources.
- Water resources.
- Waste management.
- Traffic Management.
- Occupational health and safety.
- Community health and safety; and
- Displacement and disruption of livelihoods.

9.4.3.1. Construction Phase Environmental and Social Management and Monitoring Plan

Table 9-1 Construction ESMMP Matrix

Aspect	Source of impact	Potential Impact	Management Strategy	Controls	Performance Indicator	Monitoring Requirements	Reporting	Responsibility	Budget (KES)
Water Resources	Release of hazardous substances and sediments into water courses; and consumption in construction works/ activities.	Pollution and increased sediment load in the receiving waters; Deterioration of the water quality; consumption.	Conservative use of water; Prevention of water pollution by construction activities	Institution of spill prevention and control measures; Conservative use of water in construction works; implement a construction waste management plan; Implement soil erosion control measures; Install and regularly empty sediment traps in surface drains around construction areas.	Water consumption levels; Water pollution incidences; Housekeeping practices	Regular inspections (weekly), and measurements	Site logs of inspections and proposed corrective actions	Contractor; Environmental Monitor	400,000
Air Quality	Exhaust emissions from construction equipment; Dust from vehicle movements and excavations; Burning of wastes on site	Degradation of local air quality by Particulate Matter, and Oxides of Carbon, Nitrogen and Sulphur; Nuisance and adverse effects on human health; Adverse effects on growth and productivity of vegetation; Uncontrolled spread of fires	Reduction of emissions from significant sources	Proper equipment and vehicle maintenance; use of low sulphur fuels; Regulation of construction vehicle speeds; sprinkling of dusty accesses and other dust prone areas to lay dust; provision of PPE eg dust masks to workers; Minimize the period for machinery idling; Rehabilitation of disturbed areas once completed; The Contractor will document the maintenance records for its fleet of vehicles, machinery and equipment. When storage, handling and transportation of bulk materials is made in the open air and exposed to the wind, the Contractor implements the necessary dust abatement measures such as tarpaulin cover for trucks when in the vicinity of sensitive receptors.	Complaints or lack of complaints; Dust deposition on surrounding vegetation and homes; Vehicle maintenance schedules; Use of PPE by workforce; Vehicle speeds on sites; Waste management practices	Weekly site inspections and observations; Air quality measurements if necessary;	Site logs of inspections; Vehicle maintenance logs; Logs of sprinkling of dusty sections	Contractor; Environmental Monitor	1,000,000
Noise levels	Noise emissions by construction equipment and activities	Nuisance to surrounding communities	Prevention of noise pollution and vibrations by equipment	Use of noise abatement equipment for machinery; Limit construction activities to daytime only; Switch off noisy equipment when not in use; Provide PPE such as earmuffs to workers at the site as necessary; Conduct regular quantitative monitoring; Locate noisy equipment away from receptors / site boundaries if possible; Sensitize drivers/ operators against hooting, revving and other measures when in the vicinity of sensitive receptors.	Noise levels at point sources and receptor locations; Noise complaints entered in complaints register	Regular noise measurements at point sources and receptor locations	Noise measurement records; Entries in the complaints register	Contractor; Environmental Monitor	500,000
Ecology and Biodiversity	Clearance of existing natural vegetation; Mobilization of sediments from soil disturbance; spillages of hazardous substances; Inappropriate disposal of wastes	Loss of important species of plants and animals; Potential death of aquatic organisms from pollution; Smothering and death of vegetation; Environmental degradation from pollution;	Establish measures to protect water and soil resources potentially affected by construction works	Development of a Reinstatement Plan and a landscaping/revegetation plan; Ensure minimal stripping of vegetation at work areas; Establishment of sediment traps and silt fences; Institution of containment measures for hazardous substances; Institution of a waste management plan; Only clear vegetation absolutely necessary for the construction activities; Vegetate areas that may be cleared during the construction phase; Specific agreement from the Employer's Representative is obtained prior to any clearing works; No burning of vegetation, no clearing with chemicals; The Contractor shall ensure that all personnel are informed and aware of the importance to protect fauna and flora. Information and awareness training is documented.	Number of trees planted; Number of pollution incidences recorded and mitigated; Effectiveness of sediment traps and silt fences;	Weekly site inspections	Logs of pollution incidences (spillages and cleanups); Records of trees planted	Contractor; Environmental Monitor	600,000
Aesthetics and visual integrity	Use of land to put up FSMF, Construction Camp, materials storage yards; Permanent occupation of land by facilities; Presence of construction activities,	Loss of natural vegetation; Visual disturbance effects on humans	Modification of construction activities and methods to reduce potential	Reinstatement of disturbed site; Avoid removal of mature trees that form important visual focal points; Replacement of removed trees where possible; Proper housekeeping at construction site to reduce visual nuisance	Complaints on views opened up; Extent of mature trees cleared; Visibility from critical viewpoints such as public footpaths, roads and settlements	Weekly field surveys	Periodic Inspection Reports	Contractor; Environmental Monitor	600,000

Aspect	Source of impact	Potential Impact	Management Strategy	Controls	Performance Indicator	Monitoring Requirements	Reporting	Responsibility	Budget (KES)
			adverse impacts						
Soil resources	Earthworks involving site clearance and excavation; Spillage of hazardous substances on the ground; Compaction of soil by vehicles and machinery;	Loss of topsoil from soil erosion or offsite disposal of spoil; Contamination of soil resources; Soil erosion from change in drainage characteristics; Scour, soil erosion and deposition of silt in water courses	Prevention of pollution and depletion of soil resources	Avoid offsite disposal of spoil; Salvage, stockpile and ensure re-use of native topsoil during re-vegetation activities in disturbed areas; Implementation of a site-specific reinstatement plan; Institution of spill prevention and control measures; Oils, fuels, paints and any hazardous materials to be stored in accordance with their respective MSDS's; Use of designated routes and avoid deviation from established roads;; Stabilize and maintain access roads created to access project sites to minimize erosion and dust from vehicular traffic; Stabilize construction site and camp(s) entrances/exits to reduce the amount of sediment tracked off-site by construction vehicles;	Level of soil erosion observed at sites; Quantity of excavated soil carted away against that used on site; Housekeeping practices with an impact on erosion and pollution	Regular Inspections (Weekly)	Records of soil pollution incidences; Volumes of spoil disposed off-site	Contractor; Environmental Monitor	1,000,000
Energy resources	Use of fossil fuels by vehicles and machinery	High demand for fossil fuels; Higher emissions of CO2	Adopt fuel-economy practices for vehicles and equipment	Minimize idling of machinery; Avoid overloading of trucks and machinery; Regular service of vehicles, plant, and machinery; Use environmentally friendly fuels such as low sulphur diesel; Specify and procure the most energy efficient plant options fit for purpose and avoid use of plant with unnecessary and excess capacity	Energy conservation measures instituted and functional at sites; Vehicles and equipment maintenance schedules	Physical inspections	Logs of maintenance; Fuel consumption records	Contractor; Environmental Monitor	No Additional Cost (NAC)
Waste	Construction activities which generate wastes; Residence in construction camp which generates wastes; Poor management of wastes generated	Creation of health and safety hazards for workforce and surrounding community; Environmental pollution; Degradation of the aesthetic value of the area	Reduce, Reuse, Recycle and appropriately dispose generated wastes	Modification of construction activities and methods to reduce potential adverse impacts. Segregate wastes generated into inert fill materials, recyclable/ reusable materials and hazardous wastes for appropriate disposal Compost organic wastes; Provide adequate sanitary facilities at construction camp and sites; Adopt best practices in concrete waste management; Isolate woody vegetation cleared and facilitate collection by neighboring residents.	Waste management plan developed and implemented; Site status; Quantities of wastes recycled/reused; Waste disposal records	Weekly inspections of sites to establish adequacy of plans in place	Periodic Inspection Reports;	Contractor; Environmental Monitor	500,000
Cultural heritage and archaeology	Excavation of FSMF foundation and associated earthworks	Damage/destruction of marked or undiscovered archaeological monuments or cultural property	Develop procedures for identification and protection of cultural and archaeological assets	Implement a 'Chance Finds' Procedure in consultation with landowners and the National Museums of Kenya; Induction of construction crew on the significance of archaeological and cultural heritage resources and how to identify such sites and features; Where significant features are found, modification of activities or project designs to avoid damage to the feature	Number of identified assets; Condition of identified assets	Periodic inspections by NMK staff	Logs of identified assets	Contractor; Environmental Monitor; NMK; Landowner	500,000
Occupational health and safety	Construction activities – hazards and risks (Unsafe sites/conditions; Unsafe practices/acts; Unsafe tools/equipment/machinery/materials)	Injury or fatality to construction workforce; Damage or destruction of property	Mainstream safety issues in operations; Provide a safe working environment for workers; provide PPE and safety facilities for workers; Increase safety awareness among workers; Set H&S performance targets	Implement a health and safety management plan, including an emergency evacuation with a service provider; Designate a health and safety officer to oversee health and safety matters at construction site; Health and safety training of workforce; Comply with the OSHA, 2007 and all other relevant regulations governing health and safety at workplaces; Restrict access to construction sites; Provide appropriate signage and warnings in work areas; Workers should all be provided with PPEs with a policy "NO PPE NO WORK" established to ensure all the workers have PPEs during working hours. Provide for First Aid kits/boxes should be provided and be available on site in case of accident occurrence; All the workers involved in the construction should be well educated on potential accidents that may occur during construction. Training should be done to all the workers on safety, health and the environment (SHE) to increase awareness. Provide adequate sanitary facilities	H&S awareness levels among workers; Housekeeping practices; construction methods; frequency and number of incidents/accidents	Daily inspection of work areas	Daily logs of activities, incidents/accidents; Minutes of toolbox meetings; Records of H&S training	Contractor; H&S Monitor	500,000

Aspect	Source of impact	Potential Impact	Management Strategy	Controls	Performance Indicator	Monitoring Requirements	Reporting	Responsibility	Budget (KES)
				Fire extinguishers should be provided and placed in areas that have potential fire threat. Set of clear working plan for all the workers to avoid overworking them.					
Community health and safety	Construction activities (Unsafe sites; Unsafe practices/acts by construction workforce; inappropriate worker interactions with surrounding communities)	Injury or fatality to members of the surrounding community; damage to community/public assets; spread of diseases	Establish mechanisms in operations that safeguard community interests	Implement a community safety management plan; community engagements on awareness and feedback; implementation of the project grievance redress mechanism Inform local communities of major activities in advance; Ensure all dangerous construction sites are fenced off; Enforce and monitor road safety through traffic management at work sites and routes; Controlled access to construction camp and work areas; Enforce a strict code of conduct for workers to regulate behavior in the local communities.	Number of public awareness meetings; Number and frequency of Incidents/accidents involving communities; Periodic reports on training and activities undertaken to mitigate spread of HIV/AIDS	Daily inspection of work areas	Minutes of public awareness meetings; Daily logs of activities, incidents and accidents	Contractor; H&S Monitor; Sociologist	2,000,000
Social	Community and project work force interaction	Influence in behavior change Increase in HIV spread	Cultivate good bahavour/ ethics	HIV awareness campaigns through a service provider to workers and community; Provision of Condoms regularly to workers; prioritize employment of people within the work locality to prevent influx from people in other areas.	Engagement of a service provider; Number of awareness sessions/ counselling/ voluntary testing; displayed awareness materials; Number of condoms supplied.	Feedback sessions from community and workers	Periodic reports on training and activities undertaken to mitigate spread of HIV/AIDS	Contractor/ social monitor	1,000,000
Social	Human interactions with different groups (both community & workers)	GBV/ sexual harassment		Develop and implement code of conduct, signed by all workers. Provide training and awareness programs to project staff, contractors, and community members on GBV and sexual harassment prevention and reporting. Implement clear and confidential reporting mechanisms for any incidents of GBV or sexual harassment. Collaborate with local communities, leaders, and women's groups to address concerns related to GBV and sexual harassment. Collaborate with local law enforcement and authorities to address and prevent GBV incidents.	Number of reported incidents of GBV or sexual harassment. Percentage increase in awareness levels and understanding of GBV and sexual harassment. Number of individuals accessing support services for GBV or sexual harassment. Cases investigated and support offered to victims	Regularly collect and analyse data on reported incidents.	Awareness records/ reports. Investigation reports	Contractor/ social monitor	500,000
Land use	Temporary and permanent uptake of land by project components	Physical displacement/ land loss for PAPs	Redesign project components as necessary; Promptly compensate affected persons	Preparation of a Abbreviated Resettlement Action Plan; Training/ sensitization of PAP's to ensure project enhances their wellbeing; Compensation of PAPs prior impact	PAPs clearly captured; issued vacation notices; payments/settlement	Weekly inspections of active areas	Implementation reports	CWWDA/ social monitor	ARAP Budget
Labour and working conditions	Unethical exploitation of the local community and workforce; discrimination in employment of locals; poor working conditions	Community conflicts including strikes and demonstrations; Loss of community goodwill; Delays or stalling of project implementation; Escalation of project costs	Adopt best practices in employment of casuals; Compliance with local labour laws	Sustained community engagement and resolution of grievances; Employment of locals through the local administration and through a transparent process; Abide by local labour/employment standards; Management of labour issues by a qualified human resource staff	Number of human resources cases/disputes; Existence of welfare services/facilities for workers;	Monthly inspections	Labour records including logs of labour disputes	Contractor; Sociologist	1,000,000

9.5. Implementation of the ESMMP during operations phase

The potential impacts and mitigation measures during the operation of the FSMF were predicted/evaluated.

The Project will be handed over to the Utility Company to operate upon commissioning. Part of the operator's obligations will include management of the predicted and any unforeseen environmental and social impacts. The initial and annual environmental and social audits as per regulations will offer an opportunity to update the measures especially for emerging issues.

9.5.1. Outline management and monitoring plans during the operation phase

The table below provides the outline management plans and indicative budget to address environmental and social concerns arising during the operation phase of the FSMF project.

9.5.1.1. Operation Phase Environmental and Social Management Plan

Table 9-2 OP- ESMMP Matrix

Aspect	Source of impact	Potential Impact	Objective	Management Strategy	Controls	Performance Indicator	Monitoring Requirements	Reporting	Responsibility	Budget (KES)
Waste management	FSMF Operational activities	Environmental pollution and creation of health and safety hazards	Prevent pollution from Faecal Sludge operation activities	Implement a site waste management plan	Disposal of generated wastes appropriately applying the mitigation hierarchy. Regular analysis of effluent and sludge to ensure within/acceptable levels to avoid contaminating receiving environment.	quantities generated and levels of parameters; reuse.	Annual Audit of operations	Inspection and audit records/ reports	Utility Company/ Operator	TBD
Air Quality	Vehicle movements to and from FSMF (access road)	Dust nuisance and adverse health effects on communities along roads and the FSMF	Avoid air pollution by project activities	Implement dust control measures for project activities	Regulation of driving speeds along dusty roads; Use of designated accesses	Community complaints; Dust deposition on vegetation and buildings along project roads	Annual Audit of operations	Annual Audit Report	Utility Company/ Operator	NAC
Water Pollution	Effluent discharge	Pollution to ground and surface waters in the surroundings through leaching or surface runoff (effluent will be used to irrigate buffer zone)	ground and surface waters protection	Close monitoring of the facility to ensure it functions as planned.	monitoring of irrigation/ soil demand requirement. Ensure adequate treatment to NEMA standards prior discharge.	Measurement of efferent discharge to confirm with required standards	Periodically	Weekly inspection and monthly reports	Utility Company/ Operator	TBD
Accidents and injuries	Project operation and maintenance activities	When doing repairs adjacent to roadways, implement procedures and traffic controls, such as:	Make workplace safe	Establishing and adherence to health and safety requirements	Number of accidents/ incidents reported	Annual statutory audits (environmental-NEMA and safety and health-DOSHS)	Periodic inspections and statutory audits	Inspection records/ reports	Utility Company/ Operator	Project operation cost

10. Grievance Redress Mechanism

10.1. Brief

This Grievance Redress Mechanism (GRM) for the FSMF Project provides institutions, instruments, methods, and processes by which resolutions to grievance will be sought and provided in order to ensure transparency and accountability in the project.

The GRM has set goals and objectives and defined scope for its intervention as well as procedures for receiving, recording and handling of complaints during implementation of any activity under the project. The Mechanism will ensure that that the views and concerns of project beneficiaries and of those affected by the construction and activities are heard and acted upon in a timely, effective and transparent manner. The proposed GRM is presented in **Figure 10-1.**

10.2. Objectives of GRM

The objectives of establishing the Grievance Redress Mechanism are to;

(i). Address complaints and grievances and enhance conflict resolution arising from, and during project implementation.

(ii). Ensure transparency and accountability throughout the implementation of projects amongst the relevant stakeholders including project beneficiaries.

(iii). Resolve any emerging environmental and social grievances in project areas.

(iv). Promote relations between the project implementers, executers and beneficiaries.

10.3. Principles of the GRM

The effectiveness of this GRM will be guided by the following principles:

(i). Accessibility: The GRM should be accessible to everyone and at any time. It should take into consideration potential barriers such as literacy, awareness and seek to address them.

(ii). Predictability: GRM should be time-bound at each stage and have specified time frames for the responses.

(iii). Fairness: All the procedures therein should be widely perceived as unbiased in regard to access of information and meaningful public participation.

(iv). Rights compatibility: The outcomes of the mechanism should be consistent with the international and national standards. It should also not restrict access to other redress mechanisms.

(v). Transparency and accountability: The entire GRM process should be done out of public interest.

(vi). Capability: For an effective GRM, the system needs to be endowed the necessary resources, that is, technical, financial and human resources.

(vii). Feedback: It should serve as a means to channel PAPs and other project stakeholder's feedback to improve project outcomes.

10.4. Grievance Redress Structure

A three level Redress mechanism is planned to address complaints during the project implementation. This is shown in Figure 10-1.

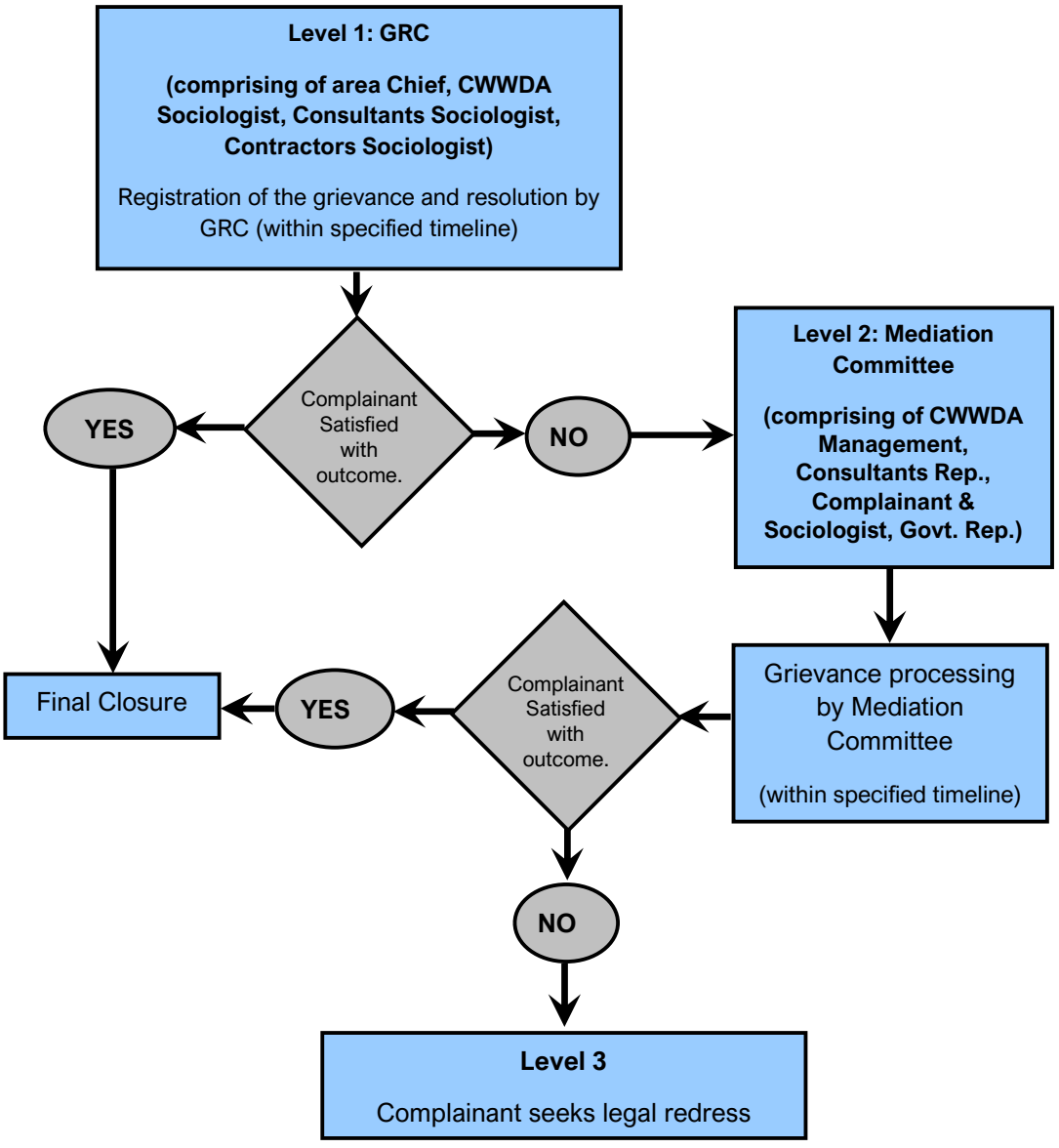


Figure 10-1 Proposed Grievance Flow Chart

10.5. Communication Plan for the Grievance Redress Mechanism

This communication plan describes the approach to be taken by the project team in communicating and collaborating with relevant stakeholders on the Grievance Redress Mechanism. This plan facilitates effective and coordinated communication between the Project Interested Parties, PAPs, Project Executing Entity, project beneficiaries and the general public on standard procedures of the GRM before and during project implementation.

10.5.1. Communication plan objectives

The primary objective of this GRM communication plan is to outline the strategy and methodologies to be used for GRM communications, GRM information distribution, feedback and stakeholder engagement, and how these will be managed during the project implementation.

Other objectives are to:

a. Share information on GRM procedures to the relevant stakeholders before and during project implementation.

b. Develop a detailed communication methodology of disseminating GRM information to the target audience.

c. Foster collaboration with the project executors, project beneficiaries and the general public for successful grievance handling throughout the implementation of the project.

d. Assign responsibilities for the Project implementing institutions involved and the GRC Committees in regard to GRM procedures and structure.

10.5.2. GRM Communication Channels

In order to communicate all information regarding the GRM to the targeted audience, the project will need to have platforms and utilize already existing avenue to reach their stakeholders at the different tiers. It is noteworthy that the communication channels will vary for each target audience due to group dynamics and accessibility of such platforms especially to the project beneficiaries and local communities.

The project will use the communication channels listed depending on its target audience:

- Print media; e.g. posters, flyers, booklets, notices, monthly/quarterly reports
- Use of ICT
- Radio and/or television stations

In addition, the following communication activities and methods will be conducted to promote a two-way communication between the project and all its relevant stakeholders, that is:

- Information sessions and workshops on GRM
- Bulletins
- GRM awareness literature
- Public forums
- Training on GRM procedures and structure at the community level.

11. Conclusion and Recommendations

An environmental and social impact assessment (ESIA) has been carried out for the proposed Faecal Sludge Management Facility Project and an ESIA Study Report prepared detailing the potential positive and adverse impacts of the project.

For the predictable and potential adverse impacts identified, the study assessed their significance, and presented practical mitigation measures to eliminate or reduce the anticipated adverse effects.

The proposed project is a positive intervention because it will address the sanitation challenges in the County and ameliorate the public sanitation shortage within Likoni subcounty. This will trigger socioeconomic growth of the area as residents enjoy availability of sanitation services and reduced disease burden from water-borne diseases. Area residents will also benefit from employment and business opportunities created during construction work.

Adverse impacts identified include land requirements (acquisition), the potential increase in noise pollution, air pollution, soil and water resources pollution, and occupational and community health and safety hazards/risks during construction phase of the project.

Mitigation measures proposed during construction include implementation of an Abbreviated Resettlement Action Plan for land take, institution of noise management mechanisms on machinery at the sites, dust control around construction areas and stockpiles, soil, and water pollution prevention through proper management of construction wastewater, storage and use of hazardous chemicals, and implementation of occupational and community health and safety management plans.

From the foregoing, no adverse environmental impacts are anticipated that cannot be mitigated. An environmental and social audit is recommended upon the completion of construction works to corroborate the implementation of the proposed mitigation measures. Any unforeseen project impacts will be identified and addressed through annual environmental audits.

References

ADB Guidelines for Climate Proofing Investment in the Water Sector: Water Supply and Sanitation [Report]. - [s.l.] : Asian Development Bank, 2017.

CGM Second County Integrated Development Plan (2018-2022) [Report]. - [s.l.] : County Government of Mombasa, 2018.

CGM Second County Integrated Development Plan, 2018 - 2022 [Report]. - Mombasa : County Government of Mombasa, 2018.

GoK Kenya Vision 2030 [Report]. - [s.l.] : Government of Kenya, 2007.

GoK National Climate Change Action Plan 2018-2022 Vol. I [Report]. - [s.l.] : Government of Kenya, Ministry of Environment and Forestry, 2018.

KNBS 2019 Kenya Population and Housing Census, VolIV: Distribution of Population by Socio-Economic Charactoristics [Book]. - Nairobi : Kenya National Bureau of Statistics, 2019.

KWTA Kenya Water Towers Status Report for Shimba Hills [Report]. - [s.l.] : Kenya Water Towers Agency, 2020.

KWTA Kenya Water Towers; Chyulu Hills - Revised [Report]. - [s.l.] : Kenya Water Towers Agency, 2020.

MIBP Environmental and Social Impact Assessment (ESIA) Project Report for the Proposed Water Distribution Medium Term Works for Mombasa South Mainland [Report]. - [s.l.] : Mangat I.B. Patel (MIBP) Limited, Consulting Engineers, 2020.

MIBP Environmental and Social Impact Assessment (ESIA) Project Report for the Proposed Water Distribution Short Term Works for Mombasa Water Supply and Sanitation Co. Ltd (MOWASSCO) [Report]. - Nairobi : Mangat I.B Patel (MIBP) Limited, 2019.

MIBP Environmental and Social Impact Assessment (ESIA) Project Report for the Proposed Water Distribution Short-Term Works for Mombasa South Mainland [Report]. - [s.l.] : Mangat I.B. Patel (MIBP) Limited Consulting Engineers, 2020.

MIBP/Nippon Water Distribution Mster Plans for Water Services Providers (5WSPs) in Mombasa, Kilifi, Taita Taveta and Kwale Counties [Report]. - Mombasa : Coast Water Services Board, 2017.

Tahal/Bhundia Water Supply Master Plan for Mombasa and Other Towns within Coast Province [Report]. - Mombasa : Coast Water Services Board, 2014.

UNDP Climate Risks, Vulnerability and Governance in Kenya: A review [Report]. - [s.l.] : United Nations Development Programme, 2012.

APPENDIX A - NEMA License

EAE 23060132

FORM 7 (r.15(2))

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No : NEMA/EIA/ERPL/20323

Application Reference No: NEMA/EIA/EL/26812

M/S **Lawrence K. Njue**
(individual or firm) of address
P.O. Box 30156 - 00100 Nairobi

is licensed to practice in the capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
General

registration number **781**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: **1/9/2024** Expiry Date: **12/31/2024**

Signature....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001 : 2015 Certified

APPENDIX B – Project Layout

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

LEGEND:

- Fence boundary
- Pipelines
- Buffer zone limit
- Manholes
- Inspection chambers

FOR TENDER
Signed: .....

COAST WATER WORKS DEVELOPMENT AGENCY
Mikindani St., Off Nkurumah Rd., Mombasa
P.O Box 90417 – 80100
Mombasa – Kenya.

Design and Supervision Consultant:

INGEROP
Devan Plaza, Crossway Road,
Westlands.
P.O Box 2758 – 00606
Nairobi.

Project Title:

CONSTRUCTION SUPERVISION OF WATER DISTRIBUTION PIPELINES IN MOMBASA AND SANITATION FACILITIES IN MOMBASA SOUTH MAINLAND (LIKONI)

Contract No.: CWWDA/AFD/MWCE/C/5/2020

Drawing Title:

GENERAL SITE LAYOUT AND SECTIONS

Designed by: KKT		Drawn by: NOA	
Checked by: NMM		Approved by: WM	
Scale: 1:600		Date: Sept, 2023	
Drawing Number: KK002800/3/SL/01		Sheet Number: 2 of 4	Revision 00

APPENDIX C – TOR Approval

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY

Telcom Wireless: 020-2183718, 020-2101370, 020-2103696
Mobile Line: 0724 253 398, 0723 363 010, 0735 013 046
Incident Line: 0786 101 100

P. O. Box 67839 - 00200
Popo Road, Nairobi, Kenya
Email: dgnema@nema.go.ke
Website: www.nema.go.ke

TOR: NEMA/TOR/5/2/614 **DATE:** 5th September, 2023

The Director
Coast Water Works Development Agency
P.O. Box 90417-80100
MOMBASA.

RE: TERMS OF REFERENCE (TOR) FOR ENVIROMENTAL IMPACT ASSESSMENT FOR THE PROPOSED FAECAL SLUDGE MANAGEMENT FACILTY IN MOMBASA SOUTH MAINLAND (LIKONI).

We acknowledge the receipt of your TOR for the above subject.

Pursuant to the Environmental Management and Coordination Act, 1999, the Environmental (Impact Assessment and Audit) Regulations 2003 and Legal notice 31 & 32 of 2019, your terms of reference for the Environmental and Social Impact Assessment (EIA) **FOR THE PROPOSED FAECAL SLUDGE MANAGEMENT FACILTY IN MOMBASA SOUTH MAINLAND (LIKONI)** has been approved on condition that you shall develop and implement a comprehensive stakeholder engagement plan.

You shall submit ten (10) copies of the study report, upon payment of the applicable EIA processing and monitoring fees being 0.1% of the total project cost, a soft copy of the summarised ESMP in **WORD** format for preparation of public notice and one electronic copy of the report prepared by the team of experts to the Authority.

JOSEPH MAKAU
FOR: DIRECTOR GENERAL

APPENDIX D– Stakeholder Engagement Plan

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AFD
AGENCE FRANÇAISE DE DÉVELOPPEMENT

Republic of Kenya

COAST WATER WORKS DEVELOPMENT AGENCY
WATER FOR GENERATIONS

COAST WATER WORKS DEVELOPMENT AGENCY

improvement of Drinking Water and Sanitation Systems in Mombasa – Mwache Project

Contract: CWWDA/AFD/MWCE/C/5/2020

Detailed Design Review and Adoption and Construction Supervision of Water Distribution Pipelines in Mombasa and Sanitation Facilities in Mombasa South Mainland (Likoni)

Proposed Faecal Sludge Management Facility

Stakeholder Engagement Plan

August 2023

Ingerop Document Information

Project Number	KK002800
File Path	
Ingerop Office Contact Details	Ingerop East Africa 5th Floor, Devan Plaza Crossway Road Westlands Nairobi
Contact Person	W. Mulaku

Revision Control

Version	Date	Summary of Changes

Signatures

Originator	Reviewer	Approver
AR Koki	L Njue N Munyiri	W. Mulaku
Date:	Date:	Date:

Disclaimer

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List of Abbreviation

ACC	:	Assistant County Commissioner
AFD	:	Agence Française de Développement
CWWDA	:	Coast Water Works Development Agency
DCC	:	Deputy County Commissioner
EMCA	:	Environmental Management and Coordination Act
ESIA	:	Environmental and Social Impact Assessment
ESMP	:	Environmental and Social Management Plan
FSMF	:	Faecal Sludge Management Facility
GMC	:	Grievance Management Committee
GO	:	Grievance Officer
GoK	:	Government of Kenya
IDA	:	International Development Association
KMA	:	Kenya Maritime Authority
KPLC	:	Kenya Power and Lighting Company
MCA	:	Member of County Assembly
MOWASCO	:	Mombasa Water and Sanitation Company
MP	:	Member of Parliament
NEMA	:	National Environment and Management Authority
NGOs	:	Non-Governmental Organization
NLC	:	National Land Commission
PAPs	:	Project Affected Persons
RAP	:	Resettlement Action Plan
SEP	:	Stakeholder Engagement Plan
WRA	:	Water Resources Authority
WWTP	:	Wastewater Treatment Plant

1. Introduction

The Government of Kenya (GoK) through Coast Water Works Development Agency (CWWDA) has obtained funds from Agence Française de Développement (AFD) and the International Development Association (IDA) to implement ***'The Construction of Water International Development Association Distribution Pipelines in Mombasa and Sanitation Facilities in Mombasa South Mainland (Likoni).***'

Subsequently, Coast Water Works Development Agency (CWWDA-Client) has engaged Ingerop International Consultants to provide '***Engineering Services for the Construction of Water Supply Pipelines in Mombasa's North, West and South Mainland's and Construction of Sanitation Facilities in Mombasa South Mainland.*** The assignment also includes undertaking the Environmental and Social Impact Assessment Studies and preparation of a Resettlement Action Plan (RAP) for the proposed works.

1.1. Project Background

South Mainland (Likoni) does not have an existing septage and Faecal Sludge Management Facility. The nearest treatment plant is the Kipevu Wastewater Treatment Plant which as per the South Mainland (Likoni) FSTP Brief Report (2023), it is non-functional. This implies that even if the Kipevu WWTP was made operational, faecal sludge would have to be ferried over long distance for safe treatment and disposal.

In addition, with the development of the Mwache Dam, construction, and improvement of water supply pipelines in South Mainland, the quantity of wastewater is expected to increase once the residents have access to a reliable and consistent water supply. In this regard, the proposed Faecal Sludge Management Facility is a critical project that will help in improving sanitation in Mombasa and Kwale counties.

1.2. Need for Stakeholder Engagement

In this project, stakeholders refer to all individuals or groups who are likely to be affected by the project either directly or indirectly (*affected persons*) as well as those who have an interest in the project (*interested parties*).

Stakeholder engagement is an integral part of any infrastructural project because it helps in promoting acceptance and ownership among the affected and interested parties. This is achieved by establishing an open channel of communication where timely and accurate information is shared.

Creating awareness during the initial phase of the project also enables the stakeholders to develop strong and reliable relations throughout the project period. It eases any potential conflicts that may arise as the team cohesively addresses the challenges that are likely to arise.

Stakeholder engagement also allows the project team to make informed decisions about the project. The decisions are based on the feedback from stakeholders that eases the designer's ability to anticipate stakeholder's needs and the next course of action.

Public participation is also essential as it helps in prediction of potential impacts and risks and development of mitigation measures or management strategies. Stakeholder engagement also provides the affected and interest parties with an opportunity to share their views/concerns that can significantly affect the project's success.

1.3. Objectives of Stakeholder Engagement Plan

A stakeholder engagement plan is generally aimed at providing a detailed and organized approach for interacting with the interested and affected parties during the design, construction, and operational phases of the project. The specific objectives of the stakeholder engagement plan are to:

- Identify all the stakeholders who are likely to be affected or be interested in the project and determining their level of interest and influence.
- Establish the most appropriate way of working together and building a healthy relationship.
- Understand the needs of the stakeholders and determine how the proposed project will meet their needs.
- Ensure an efficient communication approach is established and utilized to promote transparency and free flow of accurate and timely information.
- Review to what extent the final designs address the identified risks.

2. Policy and Legal Framework

2.1. Legal Framework

2.1.1. The Constitution of Kenya 2010

Chapter Four – The Bill of Rights, and other provisions in the Constitution have a direct impact on rights of all individuals to be protected. Article 10 on national values and principles of governance include among others commitment to human dignity and human rights including non-discrimination and protection of the marginalized. Specifically:

- Article 10 (2) indicates that public participation is among the national values and principles of governance.
- Article 33 guarantees the freedom of expression including the freedom to seek, receive or impart information or ideas. Hence, every person should feel constitutionally empowered to share information and ideas during public participation processes.
- Article 35 provides for the right to access information and guarantees every citizen the right to access information held by the state. This includes information required for effective public participation to take place.
- Article 69 (1) (d) provides that the State shall: "Encourage public participation in the management, protection, and conservation of the environment.
- Article 174(c) reiterates that the powers of self-governance to the people can derive direct benefit from meaningful public participation as this contributes to better informed decision-makers armed with additional facts, values and perspectives obtained through public input.

2.1.2. The County Government Act, 2012

The legislation is based on Chapter Eleven of the constitution: Provides for county government powers, functions, and responsibilities. The legislation provides for public participation, access to information and protection of minorities and vulnerable individuals and groups.

Part VIII on citizen participation provides the principles and requirements for inter alia development, decentralization, and implementation of citizen participation.

2.1.3. The Land Act, 2012 (amended 2016)

This Act is the substantive law governing land in Kenya and specifies the manner for determination and the award for compulsory acquisition to be served on the persons determined to have interest in the affected land. According to Section 128 of the Act, any dispute arising out of any matter under the Act, which involves compulsory acquisition process, should be referred to the Land and Environmental Court for determination. Sections 107-133 of the Land Act specify the procedure to be followed in the process of compulsory land acquisition. Section 134 of the Act creates a Settlement Fund for land acquisition to provide shelter and livelihoods to people who are involuntarily displaced.

In managing public land, the Commission is further required in section 10(1) to prescribe guidelines for the management of public land by all public agencies, statutory bodies and

state corporations in actual occupation or use. In these guidelines, management priorities and operational principles for management of public land resources for identified uses shall be stated.

This means that the Commission shall take appropriate action to maintain public land that has endangered or endemic species of flora and fauna, critical habitats, or protected areas. As well the commission shall identify ecologically sensitive areas that are within public land and demarcate or take any other justified action on those areas and act to prevent environmental degradation and climate change.

2.1.4. The National Land Commission Act, 2012

The Act creates the National Land Commission (NLC) whose mandate is drawn from the National Land Policy of 2009, Constitution of Kenya 2010, National Land Commission Act, 2012, the Land Act 2012 and the Land Registration Act of 2012. Pursuant to Article 67(2) of the Constitution, the functions of the Commission shall be — on behalf of, and with the consent of the national and county governments, alienate public land and carry out compulsory acquisition as may be necessary.

2.1.5. The Environment and Land Court Act, 2012

The Act enacts Article 162(2) (b) of the Constitution; to establish a superior court to hear and determine disputes relating to the environment and the use and occupation of, and title to land, and to make provisions for its jurisdiction, functions, and powers, and for connected purposes. It has power to hear and determine disputes relating to.

- Environmental planning and protection, climate issues, land use planning, title, tenure, boundaries, rates, rents, valuations, mining, minerals, and other natural resources.
- Compulsory acquisition of land.
- Land administration and management of public, private and Community land and contracts, choices in action or other instruments granting any enforceable interests in land; and
- Any other dispute relating to environment and land.
- It shall be an important institution in case of grievances and other issues that cannot be solved through the proposed grievance redress systems.

2.1.6. The Environmental Management and Coordination Act, 1999 (amendment 2015)

The EMCA Act, 1999 and the Environmental (Impact Assessment and Audit) Regulations, 2003 provide for public participation during the process of conducting an environmental impact assessment.

2.2. Policy Framework

2.2.1. World Bank Environmental and Social Management Framework

The preparation of this SEP has considered the World Bank Environment and Social Framework regarding consultation as the international standards. The proposed sanitation project will serve both Mombasa and Kwale residents. The SEP has reviewed the following standards to ensure that the project is compliant with the best international practices:

- ESS 1: Assessment and Management of Environmental and Social Risks and Impacts- Ensure all the potential risks and impacts are assessed and appropriate mitigation measures provided.
- ESS 4: Community Health and Safety-Ensure the design promotes quality and safe considerations relating to climate change, sustainability as well as minimizing human exposure to risks.
- ESS 5: Land Acquisition, Restrictions on Land Use, and Involuntary Resettlement-Economic displacement is anticipated within the project area.
- ESS 8: Cultural Heritage-Ensure the cultural heritage site is protected from the adverse impacts of the project activities and support its preservation.
- ESS 10: Stakeholder Engagement and Information Disclosure

3. Stakeholder Engagement

3.1. Stakeholder Identification

It is the initial step undertaken to determine all persons or groups that are likely to be affected by the project either directly or indirectly. This also includes the interested parties who can influence the project's outcome.

Stakeholder identification is based on the following aspects:

- Who is most likely to be displaced by the project?
- Who will be the host community?
- Who is most likely to be adversely affected by the potential environmental and social impacts?
- Which are the most vulnerable groups/individuals?
- At what stage will the stakeholders be most affected (design, construction, or operation phases?)
- Who will be responsible for management of the facility during the construction and operation phases?
- Who is likely to influence decision making regarding the project?
- Who can formulate laws, policies and implement or enforce them in a way that it affects the project?

3.2. Stakeholder Mapping

Once all the stakeholders have been identified, the relevant ones are mapped based on their level of interest and their level of influence as shown in the figure above. The highly influential and interested stakeholders need to be engaged regularly as they lead and support the project. Those with a high interest in the project but low influence should be kept aware of the project progress and be encouraged to participate in the project development. The highly influential stakeholders but with minimal interest are critical as they can resist or prevent the project's implementation. The Consultant will ensure they have access to project information when needed and inform them of any changes to the design in due time. The stakeholders who have low interest and low influence should be encouraged to participate in the project activities despite having minimal input or influence. Figure 3-1 below shows how the relevant stakeholders have been mapped based on the level of influence and interest.

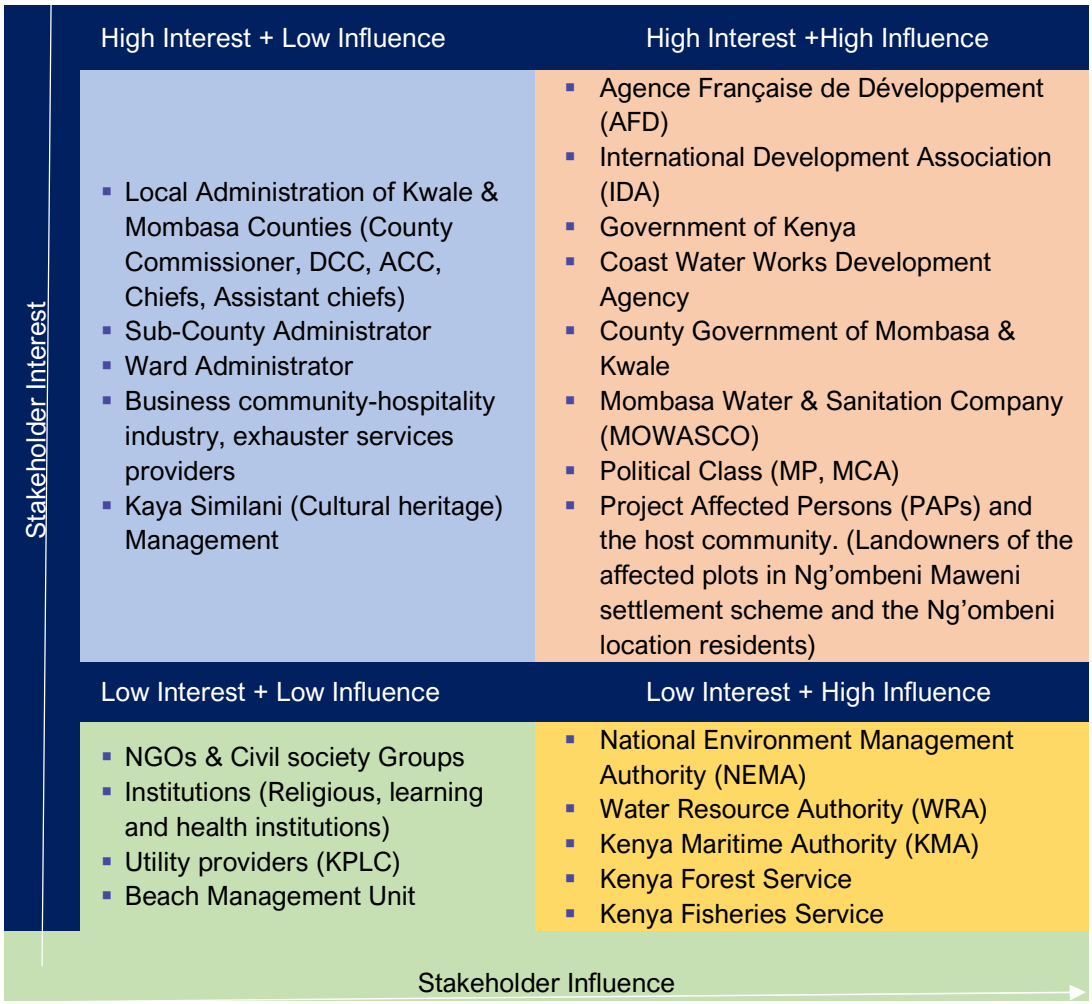


Figure 3-1: Stakeholder mapping

3.3. Stakeholder Analysis

The stakeholders who have been identified as relevant to the project have been analysed based on the impact of the project. The stakeholders who are directly affected by the project have been categorised as the primary stakeholders while those who are indirectly affected by the project are known as secondary stakeholders.

Table 3-1 overleaf shows how the relevant stakeholders have been analysed and describes their interest to the proposed project.

Table 3-1: Analysis of identified stakeholders based on the project impacts and level of interest.

Stakeholder Category	Stakeholder	Relevance
Primary Stakeholders	Agence Française de Développement (AFD)	As the project financiers they can halt the project implementation by not providing funds. They are highly interested to see how the project is implemented to determine if the implementing agencies are adhering to all the defined terms and standards.
	International Development Association (IDA)	
	Government of Kenya	The Government manages and allocates funds received from the financiers to the project.
	Coast Water Works Development Agency	Client responsible for the project implementation.
	Kwale Water and Sewerage Company	Project beneficiary. Responsible for managing the FSMF and collecting revenue from the exhauster tracks.
	Project Affected Persons (PAPs) & Host community	PAPs comprise of individuals who own the parcels of land targeted for acquisition. They will be involuntary displaced by the project. The host community comprises of the neighbouring villages located next to or near the FSTP. They will not be displaced by the project, but they are likely to be impacted during the construction and operation phases.
Secondary Stakeholders	County Government of Kwale	Responsible for issuing of construction permits. During the design phase, the department of lands will assist by providing cadastral maps and names of the registered landowners of the target areas. The department of water, environment and health will support the project as key informants and assist in creating project awareness.
	NEMA, WRA, KMA,	They issue approvals and licenses needed before construction. They ensure the designs meet all the necessary requirements before construction.
	Political class (MP, MCA)	They represent the needs and issues of their residents. They will assist in community engagement to ensure project acceptance.
	Local Administration (CC, DCC, ACC, Chiefs & Assistant Chiefs, Ward Administrator, Subcounty administrator	Play a crucial role in stakeholder engagement as they will be linking the Consultant with the community. During construction phase, they will be part of the Grievance Redress Committees to assist in conflict resolution.
	Business community (exhauster tracks owners)	The hospitality industry will benefit by having minimal water pollution from sewage. The exhauster services providers will positively benefit from the project as they will have a facility that is nearby for depositing the sludge. It will reduce the time and distance they have been going before and they can

Stakeholder Category	Stakeholder	Relevance
		consider the lowering the cost they charge their customers.
	Civil Society groups/Non-Governmental Organizations (NGOs)	As organizations that deal with social issues affecting the human population, they can advise on how to handle the social problems that may arise in the project.
	Utility service providers - KPLC	There are existing power lines traversing across the targeted land. KPLC involvement from the design phase will help to avoid delays during construction phase.
	Institutions -Religious, Learning & Health	As public areas, they would be interested to see how the proposed project is likely to affect their activities.

3.4. Stakeholder Engagement Approach

The different stakeholder categories warrant the Consultant to employ diverse approaches for engaging the identified stakeholders. Any special or vulnerable groups that will be identified within the project area will be prioritised and given fair and equal opportunities during the engagement. The special groups may vary from the vulnerable groups to persons with disability.

The approaches recommended in this stakeholder engagement plan are for the three project phases: design, construction, operation.

3.4.1. Engagement during design phase

The engagement undertaken during the design phase is mainly aimed at creating awareness of the project among both the primary and secondary stakeholders. Consultation and sensitization meetings will be done up to the grassroot level to ensure the potential PAPs understand the acquisition process that will be implemented as per the Kenyan law. They will be informed of the RAP process that entails census of the affected households, valuation of affected assets, the cut-off date and the grievance redress mechanism that will be adopted during the project.

The approaches and methodologies that will be adopted in this project are discussed below:

3.4.1.1. Kick off meeting.

The Consultant will meet with the Coast Water Works Development Agency (CWWDA) representatives from the Environmental and Social Safeguards department. The meeting will be aimed at obtaining any existing literature and getting clarifications on any identified gaps. The Client will also link the Consultant to the relevant stakeholders for engagement purposes.

3.4.1.2. Courtesy calls

The Consultant will pay Courtesy calls to the secondary stakeholders such as County Commissioners, government agencies like NEMA, WRA, KMA to inform them about the proposed projects and the planned field activities. They will also be consulted on the proposed design at the pre-liminary stage so that their input can be incorporated in the final design.

3.4.1.3. Key Informant Workshops/Interviews

The Consultant will organize a key informant workshop that will target the institutional stakeholders and present the proposed project designs for their feedback that will help in improving the final proposed design. The Consultant will also seek from the stakeholders the potential impacts of the proposed design especially on the environment and the society.

The key stakeholders who will not have attended the workshop will be engaged through key informant interviews that will either be face to face or via telephone interviews.

3.4.1.4. Public consultation/participation meetings

The Consultant will organize public consultation/participation meeting targeting the residents of Shika Adabu and Ng'ombeni Locations. The meetings will be aimed at creating awareness about the proposed project, obtaining their views, opinions, and concerns for consideration in the final design.

A RAP awareness meeting targeting the landowners of the affected plots within the Ng'ombeni-Maweni settlement scheme will also be held to ensure that they are sensitized on the Resettlement Action Plan activities such as census and valuation. The displaced persons for this project will be the landowners of the targeted 40-acre piece of land. An eligibility matrix will be established to ensure other individuals such as tenants whose livelihoods might be interrupted are considered as part of the displaced persons.

3.4.1.5. Socio-economic/census survey

Enumerators will be recruited and trained to undertake a socio-economic survey. The survey is aimed at understanding the baseline conditions of the residents within the project area. The outcome of the socio-economic survey will help during monitoring and evaluation to determine the project impact and whether the set objectives have been attained.

3.4.2. Engagement during Construction Phase

Stakeholder engagement during the construction phase will relate to all activities including civil works, and establishment, operation and decommissioning of the construction camp and other facilities. The stakeholders will be engaged in monitoring of the impacts identified during the ESIA. The following activities in Table 3-2 will be undertaken.

Table 3-2: Engagement during construction phase

Activity	Information to be relayed	Engagement strategy
• Notifying local stakeholders of construction activities and any changes to already laid schedule	• Project start date and duration • Potential impacts • Who to contact in cases of concern	• Print Media • Local vernacular radio • Informal meetings
• Involving the stakeholders in monitoring of anticipated impacts • Reporting to the stakeholders on the progress of implementation of the ESMP	• Emerging issues during implementation and monitoring of the ESMP. • Success of mitigation plans	• One on one meetings • Public barazas • Formal meetings
• Resolution of grievances	• Measures taken to resolve grievances	• One on one meetings • Public barazas
• Management of risks to stakeholder relations from contractor(s)	• Contractor's obligations to the community during construction	• Public barazas
• Industrial labour relations	• Unrealized expectations if any	• Informal meetings (Baraza)

As the project approaches completion, construction works will be characterised by down scaling of the construction activities. The anticipated impacts include loss of employment opportunities, general decline in the local economic activities. Stakeholders need to be engaged prior to these events to avoid the element of surprise. This will ensure rehabilitation of the material sites and borrow pits and development of workers retrenchment programs. The following activities in Table 3-3 will be undertaken.

Table 3-3: Engagement during decommissioning

Activity	Information to be relayed	Engagement Strategy
Notification on construction completion and downscaling of activities	• Scaling down of management presence • Termination of casual employment contracts and other lease agreements • Closure of outstanding issues • Site restoration/rehabilitation plans	• Formal meetings between contract parties • Public barazas

3.4.3. Engagement during Operation Phase

During the operation phase the numerous impacts associated with civil works decrease but the transition brings with it many changes which require to be managed to ensure continuity in stakeholder relationships. There will be a reduction in overall employee and contractor workforce, and the number of grievances and frequency of engagement with stakeholders will decrease. The following activities in Table 3-4 will be undertaken:

Table 3-4: Engagement during operation phase

Activity	Information to be relayed	Consultation method
Managing transition from construction to operation including the changes in staff	• Introductions of in-coming teams to local communities • The changes that are to be expected and what impacts this might have, on residents	• Public barazas• Informal meetings
Establishment/evaluation of internal systems and functions	Departmental plans, procedures, functions, and management systems	• One on one meetings • Round-table discussions
Disclosure, consultations and reporting to stakeholders	• Status of implementation of the project's commitments to stakeholders • Emergency preparedness and response plans • Resolution of grievances	• Public barazas • Informal meetings • One on one meetings
Environmental and social audit of the project's performance	Overall environmental and social performance	• One on one meetings • Public barazas

4. Grievance Redress Mechanism

4.1. Introduction

During the life of the proposed FSMF, it is inevitable that complaints will arise among the affected people over contentious issues. The purpose of a Grievance Mechanism is to offer stakeholders an opportunity to freely report their complaints that will be investigated, and satisfactory solution provided.

This section defines the community grievance management procedure, specifically the process of receiving, acknowledging, and registering, reviewing, investigating, and resolving grievances submitted by individuals, families, groups and/or communities and other local stakeholders' resident within the project affected areas.

The Grievance Mechanism seeks to:

- Provide an equitable and context-specific process which respects the confidentiality of all parties, protects all parties from retaliation and builds trust as an integral component of broader community relations activities.
- Provide a predictable, accessible, transparent, and legitimate process to all parties, resulting in outcomes that are seen as fair, effective, and lasting; and
- Enable more systematic identification of emerging issues and trends, facilitating corrective action and pro-active engagement.

The procedure outlines how the Project Proponent will receive grievances pertaining to project activities. It will capture grievances arising from actual project impacts, as well as issues that are simply perceived to be related to the Proponent, irrespective of whether they derive directly from the Proponent or contractor activities.

4.2. Grievance redress Mechanism

Grievances shall be investigated and resolved through a defined series of steps as outlined in this procedure. This process allows for three stages of resolution. Specifically:

- Tier 1 (Entry level) is managed by the First Level Committee. The procedures define the means through which community-level grievances may be:
    (i) received, acknowledged, and registered by the project; and
    (ii) how field-level investigation and resolution of grievances will occur.
- Tier 2 procedures allow for unresolved grievances to be escalated for further review at the field level. They are managed by the Second Level Committee
- Tier 3 grievance management, which allows for the grievant to proceed to court if the grievance cannot be resolved to the satisfaction of the grievant and the project. The procedure will remain outside the scope of this Grievance Redress Mechanism as it adopts the judicial process.

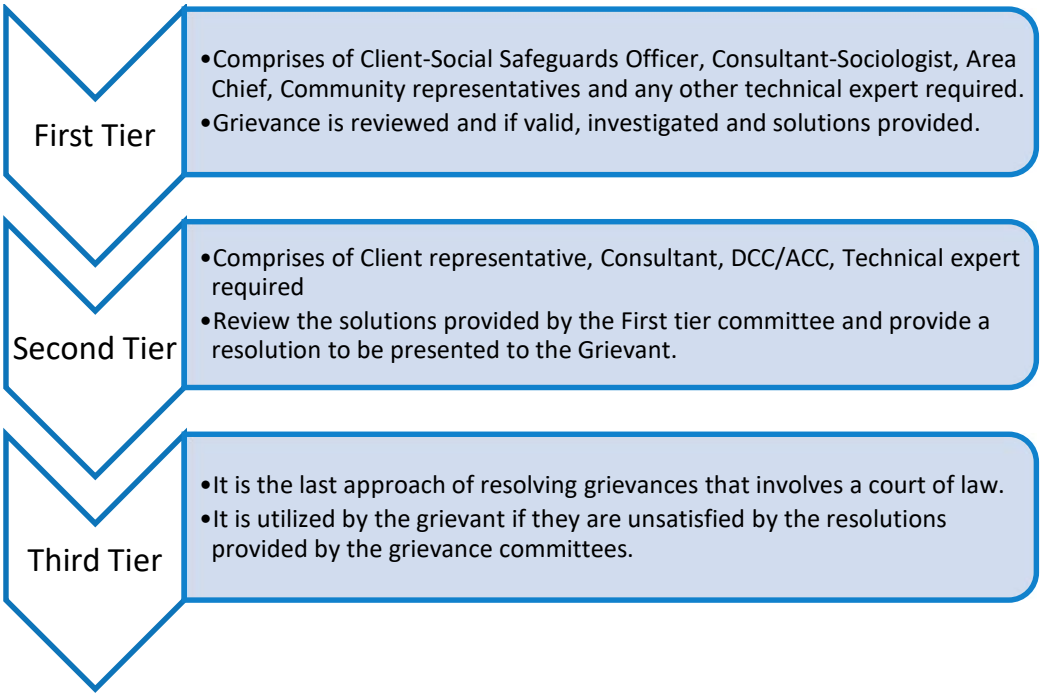


Figure 4-1: Grievance Redress Mechanism

4.3. Grievance Management Procedure

The Grievance Mechanism is based on a step-by-step procedure for receiving, acknowledging, and registering, reviewing, investigating, and resolving complaints and grievances from all Project Affected Persons resident within the project area.

4.3.1. Tier 1 -First Level Committee

4.3.1.1. Receipt

The First Tier of the grievance management procedure captures all grievances or complaints at the field (operational) level as an entry level method of receipt. Grievances may be received through a variety of channels:

- The Proponent's dedicated grievance hotline and/or email address.
- The Proponent's Community Office.
- The Proponent's staff who hold responsibility for stakeholder engagement and who visit the communities within the project area of operations on a regular basis; and
- The Proponent's Grievance Officer (GO) or any representative of the Grievance Management Committee (GMC).

4.3.1.2. Register/Acknowledge

When a grievance is presented, the GO will note and record the grievance onto a Grievance Log Form and confirm the content with the grievant. If appropriate, the GO could take pictures related to the issue to substantiate the claim. Where relevant, GPS coordinates shall also be noted. If the grievant is unable to present the complaint in writing, the GO will complete the appropriate forms. All forms will be signed, or thumb printed by the grievant, a witness (if necessary) and the GO. Each grievant should receive a copy of the Grievance

Log Form, which has a reference number. If possible, grievances will be addressed immediately through dialogue with the Grievant. As noted above, the details of the grievance will be recorded from respondents and witnesses contacted during the grievance review and will be detailed on the Grievance Log Form. If accepted, the agreed resolution will be documented on the Grievance Resolution Form, the latter signed by the complainant, witnesses and/or any other individuals who decide to comment on the grievance. If further review is required, the GO will describe the process and the timeline for further review to the grievant/complainant. A sample of the Grievance Log form is attached in Appendix A of this SEP.

4.3.1.3. Review

In the case of a grievance that has not been resolved at the time of registration, the GO will investigate the grievance to determine its validity and where appropriate ensure appropriate redress as part of the process of closing out the grievance.

4.3.1.4. Investigate

The GO is responsible for determining how to investigate a grievance. The aims of the investigation are:

- To determine the validity and truthfulness of the grievance.
- To verify the claims made by the Grievant, and evidence provided to substantiate the claims; and
- To determine appropriate redress where required. Investigation should seek to examine the event leading to the grievance and to verify the impact thereof.

Investigation may involve visiting the location of the event leading to the grievance; photographs of the scene; engagement with other stakeholders in the field (i.e., triangulation) to confirm reliability of the account; and other evidence as appropriate. Potential redress options include an apology, compensation of the aggrieved or any other resolution option within the limits and capacity of the field staff. If investigation and resolution cannot be achieved within 5 days, a letter will be sent to the Grievant informing them that their grievance is being investigated, setting out the reason for the delay and advising the Grievant of anticipated closure day.

4.3.1.5. Resolve and close.

It is the responsibility of the GO to communicate the outcome of the review to the aggrieved person in writing through the Grievance Resolution Form and verbally if requested by a Grievant. This response will be either:

- The outcome of the grievance review; or
- Notification that the company needs additional time to examine the issue further.

The GO shall have two (2) copies of the Grievance Resolution Form (attached in the appendix); one for the Grievant and one to be signed for company records. If the Grievant is not satisfied with the outcome of the review, alternative resolutions should be considered and discussed among field operational management and with the Grievant before the case is escalated to the Second Tier (Second level Grievance Management Committee). Where resolutions have been approved and agreed upon by the complainant, the GO ensures that the administrative process for redressing the grievance is immediately initiated. The

resolution details and target timeframe should be updated in the Complaint/Grievance Register. In cases where the complainant "walks away" without signing the Grievance Review Outcome Form, the grievance can only be closed out following agreement by site management after it is determined that everything reasonable has been done to resolve the case.

4.3.2. Tier 2 -Second Level Committee

The Second-Tier process is for grievances that cannot be resolved directly between the GO and the complainant and requires involvement by a Grievance Management Committee (GMC), which may also include appropriate external representation to resolve the complaint. If a grievance is escalated from the First Tier to the Second Tier, the GO should sign off that appropriate measures have been taken to resolve the grievance through the Entry Level (First Tier) process. The need to include an appropriate third party on the GMC will be determined on a case-by-case basis. The Second-Tier process is used when First Tier procedures are not acceptable to one or more parties for the situation of concern; there are disputes of fact or conflicts about data; or the parties have been unable to reach a voluntary resolution. In such cases:

- The Grievant can contact the GO in the first instance to seek further clarification if for any reason he/she is dissatisfied with the explanation of the review (not for further negotiation).
- The GO points out the next level resource mechanisms available to the complainant (i.e., use of the GMC to review and offer resolutions for the case; use of a third party);
- If a case is referred to an approved third party or subject specialist, rather than utilising the GMC, the GO will report on the status of the case on a bi-weekly basis to the Proponent until closure; and
- To demonstrate good faith, that the Proponent will within reason, attempt to comply with the requirement of the third party if one is used.

Where resolution cannot be reached through the Tier 1 or Tier 2 community grievance management procedures, the grievant/complainant can refer the issue to official agencies or statutory judicial processes for resolution. Such agencies include the National Environment Management Authority (NEMA); the National Environment Tribunal (NET); and Land and Environment Court and should be considered as a last resort for grievance redress.

Figure 4-2: Grievance management procedure

5. SEP Monitoring

Monitoring and evaluation of the stakeholder engagement program is critical for ensuring that stakeholder engagement activities do not simply occur in isolation, but that they support the objectives of the proposed project and occur in an on-water s-going coordinated manner across and between functions with responsibility for stakeholder engagement.

A monthly summary of engagement activities carried out will be produced. The information will inform stakeholders of project activities, the environmental and social performance, outcomes of engagement activities carried out, and grievances and their resolution.

The stakeholder engagement program will be reviewed periodically and may result in updating of the SEP.

6. References

Ingerop, E. A. (2023). *South Mainland (Likoni) Faecal Sludge Management Facility Brief.*

The World Bank. (2017). The World Bank Environmental and Social Framework. Retrieved from ESFFramework.pdf (worldbank.org) Accessed on 17/7/2023.

Appendices

Appendix A: Grievance Form

FORM 1 - GRIEVANCE LOG FORM	
Reference:	**Date received:**
Complainant/ site details: Name:	
National Identity Card Number (*Attach copy of ID)***:**	
Address:	
Telephone/ other contact details:	
Location/Sub-Location/Village:	
Specific Details of Grievance (*the nature and facts of the grievance: who was involved, when did it occur, where did it occur, what happened, describe if there are any damages*)	
Remedy sought (*What action needs to be taken to resolve the grievance*)	
Disposition of the grievance (*what happened*)	
Follow up actions (*any follow up required*)	
Form filled by:	
Name:	
Location/ Organization:	
Signature & Stamp	**Date:**

FORM 2-GREIVANCE RESOLUTION FORM		
Part A (*To be filled by Grievance officer)*		
Ref No:	**Date**	
Name of Grievant:		
Address		
Contact Details	**Phone**	
	Email	
Location/Sub-Location/Village		
TYPE OF GRIEVANCE COMMITTEE:		
RESOLUTION PROVIDED:		
Signed by:		
Date:		
Organization:		
Witnessed by:		
Date:		
Organization:		
PART B: (To be filled by Grievant)		
Do you accept the solution provided? *(Tick appropriately)* Yes ☐ **No** ☐ If answer is No, what are the reasons for declining the resolution?		
Signed by:		
Phone Number:		
National ID number:		
Date:		
Witnessed by:		
Date:		
Organization:		

APPENDIX E – Consultation Records

E.1 - Meeting Minutes

Meeting Notes

Project:	The Construction of Water Distribution Pipelines in Mombasa and Sanitation Facilities in Mombasa South Mainland (Likoni)

Subject:	Planning Meeting on Faecal Sludge Management Facility		
Meeting place:	Coast Water Works Development Agency Offices		
Date and time:	31st July 2023 12:00pm	Minutes by:	Anne Rita Koki - INGEROP

Attendees

Name	Organization	Designation
1. Haji Massa	CWWDA	MECM
2. Thomas Chula Kai	CWWDA	PEO
3. Hope Makalo	CWWDA	Environmental Safeguards
4. Peter Kimani	INGEROP	Environmentalist
5. Robert Ngunjiri	INGEROP	Sociologist
6. Anne Rita Koki	INGEROP	Surveyor

Agenda -

1. Welcoming and Opening remarks
2. Reconnaissance site visit
3. Stakeholder engagement
4. Project Area
5. Way forward
6. Closing remarks
7. Adjournment

1-1. Welcome and Opening Remarks

The meeting was called to order at 12:00pm. Haji Massa welcomed everyone to the meeting and all the members present introduced themselves.

The agenda of the meeting was for the Consultant to share their work plan with CWWDA on the field activities for purposes of preparation of the ESIA & RAP reports.

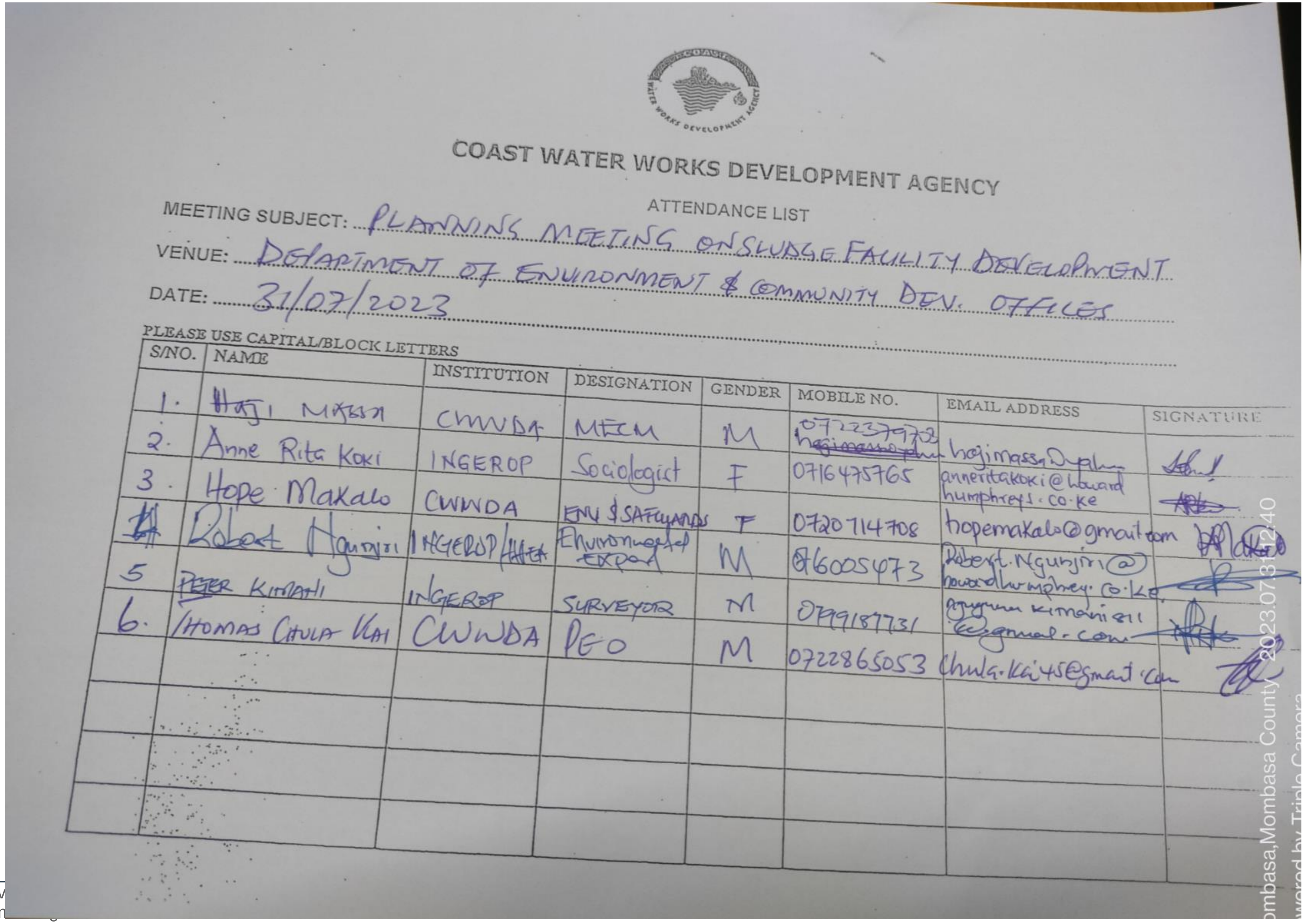
ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1-2	Reconnaissance site visit The ESIA team informed the members present that the reconnaissance site visit for the proposed site for the Faecal Sludge Management Facility (FSMF) has been scheduled for 31/7/2023. On 1/8/2023, the Consultant will be paying courtesy calls to NEMA, KFS, WRA, KMA, County governments and Local administration. .		All to note.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1-3	Stakeholder Engagement The Consultant reported that they were planning to undertake stakeholder engagement meetings from 8th August 2023 to 11th August 2023. The targeted stakeholder meetings will include: • Key institutional stakeholders • Public participation and consultation meetings • RAP Awareness meetings The dates of the meetings would be confirmed by the Consultant after the reconnaissance site visit. The Client asked the Consultant to ensure they engage the Kenya Forest Services, Kenya Maritime Authority, the quarry groups, and the beach management unit.		All to note INGEROP
1-4	Project Area The Client highlighted that the proposed site may be situated about 200m away from a cultural heritage site (kaya) and urged the Consultant to identify the exact locations and engage the Kaya elders when undertaking the ESIA studies. The Client indicated that the proposed land is located within the Ng'ombeni-Maweni Settlement scheme. The Chief -Shika Adabu location had shared the list of landowners as obtained from the chairman of the scheme. The Consultant was urged to obtain the initial plan of the scheme and its environs to understand any future developments of the neighbouring areas to determine how it may influence the proposed project. Also, Consultant to confirm the registered landowners as some of the targeted plots of land might have been sold to Mombasa and Bamburi cement companies. The Consultant was asked to vigilant as there could be an existing boundary conflict between Mombasa and Kwale Counties at the proposed site. Administratively, the project area lies in Kwale, but the area is in Mombasa County.		All to note INGEROP INGEROP INGEROP
1-5	Way Forward • The Consultant to alert the local area chief before commencing the reconnaissance site visit of their presence in the project area. • The Consultant to share the list of stakeholders to be invited for the key stakeholders meeting, invitation letters and notices for signing and mobilization. • It was agreed that Hope Makalo would accompany the Consultant during the courtesy calls to the identified stakeholders.		INGEROP
1-6	Closing remarks The Consultant appreciated the Client for the shared insights and agreed to communicate any developments to CWWDA.		All to Note
1-7	Adjournment There being no other business, the meeting ended at 12:50pm.		

COAST WATER WORKS DEVELOPMENT AGENCY

WATER FOR GENERATIONS

INGEROP Inventing for tomorrow



COAST WATER WORKS DEVELOPMENT AGENCY

ATTENDANCE LIST

MEETING SUBJECT: PLANNING MEETING ON SLUDGE FACILITY DEVELOPMENT

VENUE: DEPARTMENT OF ENVIRONMENT & COMMUNITY DEV. OFFICES

DATE: 31/07/2023

PLEASE USE CAPITAL/BLOCK LETTERS

S/NO.	NAME	INSTITUTION	DESIGNATION	GENDER	MOBILE NO.	EMAIL ADDRESS	SIGNATURE
1.	Haji Massa	CWWDA	MECM	M	[illegible]	hajimassa@yahoo...	
2.	Anne Rita Koki	INGEROP	Sociologist	F	0716475765	anneritakoki@howardhumphreys.co.ke	
3.	Hope Makalo	CWWDA	ENV & SAFEGUARDS	F	0720714708	hopemakalo@gmail.com	
4	Robert Ngunjiri	INGEROP/HHEA	Environmental Expert	M	0716005473	Robert.Ngunjiri@howardhumphrey.co.ke	
5	PETER KIMANI	INGEROP	SURVEYOR	M	0799187731	[illegible]kimani811@gmail.com	
6.	THOMAS CHULA KAI	CWWDA	PEO	M	0722865053	chula.kai45@gmail.com	

Meeting Notes

Project:	The Construction of Water Distribution Pipelines in Mombasa and Sanitation Facilities in Mombasa South Mainland (Likoni)

Subject:	Key Stakeholders Meeting		
Meeting place:	Nyali Sun Africa Hotel		
Date and time:	8th August 2023 11:10am	Minutes by:	Anne Rita Koki - INGEROP

Attendees

Name	Organization	Designation
1. Abdulrahim Keir	CWWDA	Engineer
2. Sidney Chihanga	CWWDA	Hydrogeologist
3. Hope Makalo	CWWDA	Environmental Safeguards
4. Sophie Majhala Maghanga	CWWDA	Intern
5. Iyvonne A Ayoyi	CWWDA	GIS
6. Ali M Sibabu	Pungu Sub-Location	Assistant Chief
7. T. N. Kinyua	WRA	Sub Regional Manager
8. Mathew Wambugu	Likoni Sub County	Deputy County
9. Lucy Ndemo	Matuga Sub County	Commissioner
10. Criscom K. Mwalimu	MOWASCO	Deputy County
11. James Mutinda	NEMA	Commissioner
12. Marian Mapenzi	County Government of Mombasa	Environmental Safeguards
13. Dorothy Mose	KMA	Environmental Officer
14. Ali Chalala	Kwale County	Chief Officer-Water
15. Nelson Munyiri	INGEROP	Engineer
16. Robert Ngunjiri	INGEROP	Environmentalist
17. Anne Rita Koki	INGEROP	Sociologist

Agenda -

1. Welcoming and Opening remarks
2. Project Presentation by Consultant
3. Q & A
4. Closing remarks
5. Adjournment

1-1. Welcome and Opening Remarks

The meeting commenced at 11:00am with a word of prayer from Robert Ngunjiri. Hope Makalo welcomed all the members present and thanked them for honouring the invitation to the meeting. She then introduced the CWWDA team and welcomed the Consultant-INGEROP.

Anne Rita Koki introduced the Consultant's team and invited all the members present to a round of self-introduction.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1-2	Project Presentation • **Technical Details** **(i) Project Area and Design parameters** Eng. Nelson indicated that the Client-CWWDA was planning to implement a sanitation project, Faecal Sludge Treatment Plant. The Mombasa County Masterplan recommends the need for setting up a proper system for collection, disposal, and management of wastewater. The proposed project intends to serve the residents of Kwale been adopted with the initial year of 2020, the future year of 2030 and the ultimate year of 2040. **(ii) Faecal Sludge Management (FSM) Assessment** He reported that an analysis of wastewater management in Mombasa indicates that only 7% of the wastewater is safely discharged while the remaining 93% of the wastewater is unsafely discharged. This poses a public health hazard. The critical areas for attention in the FSM are: ✓ **Installation and sustained management** of effective faecal sludge treatment facilities ✓ **Stronger enforcement** of discharge regulations on emptier and transporters. ✓ **Upgrading of manual emptier** to improve their technical performance and business practices. ✓ **Legal recognition and regulation** of manual emptier; ✓ **Introduction of subsidies** for emptying for low-income customers. **(iii) Site Selection** The Consultant informed the members that an iterative process had been followed during the selection of the proposed site for the FSTP at the Ng'ombeni-Maweni Settlement Scheme. Approximately 40 acres of private land have been identified as suitable for the proposed FSTP. The human settles are >100m from the proposed site. A site layout illustrating the location of the FSTP and the buffer zone within the 40acres was presented to the members present. (iv) **Faecal Sludge Treatment Process** The facility will adopt a decentralized system where the waste is subjected through a treatment process to separate the solid and liquid waste. The liquid waste will be treated, and wetlands constructed where the treated water can be used for irrigation purposes. The solid waste will also be dried, and the final product used as manure by farmers. • **Environmental and Social Aspect** Anne Rita Koki reported that as earlier mentioned, the main economic activity in the proposed target area is rock mining. Other sensitive receptors within the project area include the Kaya Similani ecosystem, institutions (schools and dispensary), beach management unit due to the project's proximity to the ocean. The Consultant is planning to engage all these stakeholders including the public in both Ng'ombeni and Shika Adabu location who are considered as the project affected persons and project beneficiaries respectively. Robert Ngunjiri reported that the environmental assessment has considered potential impacts especially on the sensitive receptors such as the proximity to the ocean and the Kaya Similani Ecosystem. Land displacement is also anticipated in the area.		All to note.
1-3	Q&A The Consultant welcomed the members present to discuss on the benefits and challenges of the proposed road in relation to the proposed road. The engagement would help in mitigating/reducing		All to note

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	the negative impacts that will be identified while enhancing the positive impacts.		
1-3-1	Jurisdiction Lucy Ndemo reported that the proposed site lies within the Kwale County administration. She also asked the Ass. Chief of the target area to comment on the human activities being undertaken in the area. Ass. Chief stated that there are no human settlements in the proposed site. The main economic activity being undertaken in the targeted land is rock mining. He also stated that the Consultant had sought assistance in the identification of the landowners, but they had asked them to get an updated map and list of landowners from the Kwale Lands office that they are yet to receive from INGEROP.		All to note
1-3-2	Stakeholder Engagement Mathew Wambugu stated that there is a need for the political class to be involved in the stakeholder engagement as well as NGOs & CBOs within the project area. Lucy Ndemo echoed similar sentiments and emphasized on the need to also include the SCA, MCA, Ward Admin as well. Ali Chalala stated that he will share a list of additional Stakeholders who should be consulted on the proposed project. Criscom Mwalimu also added that KEMFRI should also be engaged.		All to note.
1-3-3	Project Design Criscom Mwalimu urged the Consultant to ensure the facility is sustainable especially with regards to operation and maintenance. He also added the need for the Consultant to undertake a bathymetric survey of the Indian Ocean as it will help in determining the operations and management of the facility. A ground water analysis is also important especially to determine the compliance standards set for air quality. Sidney supported the need for ground water analysis by providing for establishment of monitoring wells. Nelson informed the members that they the consultant is planning to engage a marine ecologist to establish the impact of the facility on the marine ecosystem. Marian urged the Consultant to consider treating the effluent and use the water for irrigation purposes. She also added that the Consultant should consider improving the existing forest using the manure and rehabilitate the abandoned quarry sites.		All to note
1-3-4	Land Acquisition Ali Chalala asked the consultant to be keen on land acquisition process as the project may experience delays if the land issues are not well sorted.		All to note
1-3-5	Project Location Marian enquired about the exact project location which the Consultant pointed out it will be within the Ng'ombeni-Maweni Settlement Scheme. She reported that the name of the project might need to be changed since it might be serving the needs of Likoni residents, yet it is in Kwale County.		All to note

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1-3-6	Project Management Sidney highlighted the need for CWWDA management to discuss with the Mombasa and Kwale County governments on who will be responsible for the management of the proposed facility. The Assistant chief emphasized on the need of the leaders to come together and speak in one voice to ensure the project serves the interest of the Kwale and Mombasa residents. Abdulrahim Kheir urged the Consultant to consider training and capacity building of staff who will be managing and operating the FSTP to avoid management crisis as the one being witnessed at Kipevu water treatment plant.		All to note
1-3-7	Waste Management Dorothy Mose enquired whether the Consultant had identified a dump site for the waste generated during construction. She reported that Kenya Maritime Authority (KMA) should issue approvals for the exact location of dumping waste if the target area is the ocean. Robert Ngunjiri stated that the Consultant is not recommending dumping of waste to the ocean. They are targeting the abandoned quarry sites that have not been rehabilitated to function as the dumpsites.		All to note All to note
1-4	Closing remarks Ali Chalala stated that the management of the facility can be determined by CWWDA and the management of the two counties. He urged the Consultant to focus on the land, social and environmental issues that can significantly affect the project progress. James Mutinda informed the members that approvals and licenses needed for the project implementation can be easily obtained. However, it is important to focus on the social and economic impacts that may affect the success of the project. The Consultant thanked the stakeholders for honouring the invitation and the interactive session. She assured the members that all views will be taken into consideration. The client urged the consultant to be keen on the social and environmental issues. CWWDA will continue to provide any necessary support needed.		All to Note
1-5	Adjournment There being no other business, the meeting was closed by a word of Prayer from Lucy Ndemo at 12:50pm.		

Signed on Behalf of CWWDA

Name ..... Hope Makalo .....

Designation ..... Environmental Unit Offra .....

Signature .....

Date ..... 19/10/2023 .....

COAST WATER WORKS DEVELOPMENT AGENCY
P. O. Box 90417-80100
MOMBASA
TEL: +254(41)2315230

Signed on Behalf of INGEROP

Name ..... Robert Ngunjiri .....

Designation ..... Environmental Expert .....

Signature .....

Date ..... 19/10/2023 .....

HOWARD HUMPHREYS (EAST AFRICA) LTD.

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COAST WATER WORKS DEVELOPMENT AGENCY — WATER FOR GENERATIONS

DETAILED DESIGN REVIEW & ADOPTION & CONSTRUCTION SUPERVISION OF WATER DISTRIBUTION PIPELINES IN MOMBASA & SANITATION FACILITIES IN MOMBASA SOUTH MAINLAND

STAKEHOLDER ENGAGEMENT FOR THE PROPOSED FAECAL SLUDGE TREATMENT FACILITY

ATTENDANCE LIST

TOPIC: KEY STAKEHOLDERS MEETING

VENUE: NYALI SUN AFRICA HOTEL **DATE:** 8/8/2023 **TIME:** 10:00am

S/NO	NAME	Designation	CONTACTS (Email/Mobile)	SIGNATURE
1.	SIDNEY CHIHANGA	HYDROGEOLOGIST	0718-587626 [illegible]	[signature]
2.	Hope Makalo	Env & Safeguards	0720714708 hopemakalo@gmail.com	[signature]
3.	Sophie Majhola Maghanga	Intern	0700566050 sophiemaghanga79@gmail.com	[signature]
4.	IVONNE A AYOYI	GIS	0711388820 ayayianne@gmail.com	[signature]
5.	ALI. M. SIGABU	ASST-CHIEF	0711520445 ali.mohammed5819@yahoo.com	[signature]
6.	T. N KINYUA	SRM – WRA	0727503031 [illegible]	[signature]
7	MATHEW WAMBUGU	D.CC-LIKONI	0721348799 mmwambugu@yahoo.com	[signature]
8.	LUCY NDEMO	DCC MATUGA	0721439706 [illegible]@gmail	[signature]
9.	Anne Rita Koki	Sociologist-INGEROP	0716475765 annerita.koki@howardhumphreys.com	[signature]
10.	ABDULRAHIM KHEIR.	Engineer-CWWDA	0722710031 [illegible]@gmail.com	[signature]
11	CRISTON K. MWALIMU	Env. Safeguards Sp (MOWASSCO)	0724862583 [illegible]@gmail.com	[signature]
12.	JAMES MUTINDA	ENV. OFFICER-NEMA	0726218537 jmutinda@nema.go.ke	[signature]
13.	Marian Mapenzi	Chief Officer – CGM	0713767011 marianmapenzi@gmail.com	[signature]
14.	Dorothy Mose	Marine Officer	0724039374 dmose@kma.go.ke	[signature]
15.	ALI CHALALA	CWD - KWALE	0722659149	[signature]
16.	Nelson Munyiri	INGEROP	0704788047 nmunyiri@ingerop.ke	NMM 08/08
17	Robert Ngunyini	INGEROP	0760050773 robert.[illegible]@howardhumphreys.co.ke.	[signature]

Meeting Notes

Project:	The Construction of Water Distribution Pipelines in Mombasa and Sanitation Facilities in Mombasa South Mainland (Likoni)
Subject:	Public Participation Meeting -Ng'ombeni Location
Meeting place:	Ng'ombeni Social Hall-Chief's office
Date and time:	9th August 2023 10:46am
Minutes by:	Anne Rita Koki - INGEROP

Attendees

Name	Organization	Designation
1. Hope Makalo	CWWDA	Environmental Safeguards
2. Nelson Munyiri	INGEROP	Engineer
3. Robert Ngunjiri	INGEROP	Environmentalist
4. Anne Rita Koki	INGEROP	Sociologist
5. Athman H. Macheso	Ng'ombeni Location	Chief
6. Mohamed S. Nyavuh	Ng'ombeni Sub Location	Senior Assistant Chief
7. Ali M. Sibabu	Pungu Sub-Location	Assistant Chief
8. Mejumaa Omar Mbungo	Ng'ombeni Location	Village Administrator
9. Ayub Rama Madzunga	Mnazi Youth Group	Chairman
10. 40 No. Ng'ombeni Location residents		

Agenda -

1. Welcoming and Opening remarks
2. Project Brief by Consultant
3. Q & A
4. Closing remarks
5. Adjournment

1-1. Welcome and Opening Remarks

The meeting was called to order at 10:45am by the area chief and a word of prayer was said.

Chief Athman introduced the other leaders present and issues the apologies of the assistant chief of Kiteje sublocation who was away on official assignment. The chief indicated that there are several project developments that have targeted Ng'ombeni location. He urged the local leaders to take charge and ensure there is proper project awareness. Also, the residents should consider the benefits of the many projects in the area and take advantage as much as possible. He encouraged the youth who are educated to seek employment opportunities in the upcoming projects. Thereafter, he welcomed the Coast Water Works Development Agency (CWWDA) representative to address the meeting.

Hope Makalo thanked the members present for attending the meeting. She said that CWWDA has been mandated to develop and oversee the management of water resources. Currently, they have sought the

services of INGEROP Consultancy to design a Faecal Sludge Treatment Plant that is aimed at serving Kwale and Mombasa residents. She then welcomed the Consultant to introduce themselves and give a brief description of the project.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1-2	Project Brief Anne Rita Koki indicated that the project implementation is divided into the design, construction, and operation phase. Currently the project is at the design phase. The project entails treatment of the effluent collected from the households to develop clean water for irrigation and manure. The targeted land set for implementation of the project is located at Ng'ombeni Maweni settlement scheme and is privately owned. The Consultant is in the process of identifying the registered landowners for purposes of engagement on the acquisition process. The proposed project has several benefits for the local community. They include increased job and business opportunities, provision of irrigation water and manure for farming, improved sanitation among many others. There are also negative impacts that are anticipated that include degradation of air quality, loss of livelihood and displacement. She therefore urged the community to share their views and concerns regarding the proposed project as it helps in the development of the Environmental and Social Impact Assessment report. Eng. Nelson informed the members that the need for a sanitation facility arose from previous studies undertaken that showed a high prevalence of water borne diseases in the area. He indicated that exhausters would be collecting the effluent from the households and delivering it at the Faecal Sludge Treatment Plant (FSTP) for treatment. He however emphasized the need for residents to safely dispose the wastewater at the facility because its performance rely on how much effluent is deposited. Robert Ngunjiri indicated that the project would promote skill transfer particularly during the construction phase. Based on his environmental assessment, he had identified sensitive receptors such as the proximity of the FSTP to the ocean, Kaya Similani and he wanted to engage with the elder to understand how they can preserve the cultural heritage. The abandoned quarry sites will be rehabilitated and assist in addressing the safety hazard in the area.		All to note.
1-3	Q&A The Consultant welcomed the members present to discuss on the benefits and challenges of the proposed project. The engagement would help in mitigating/reducing the negative impacts that will be identified while enhancing the positive impacts.		All to note
1-3-1	Mejumaa Omar Mbungo She welcomed the CWWDA and INGEROP team to the area and appreciated that public participation meetings have been undertaken from the initial phase of the project. She urged the client to ensure that the meetings continue throughout the project period.		All to note
1-3-2	Omar Will gas be emanating from the FSTP? The Consultant informed the members that gas will be emanating from the effluent hence causing the odour that undermines the air		All to note.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	quality. This is why there is a provision for a buffer zone where trees will be planted as a mitigation strategy. CWWDA had promised to implement a water supply project where water from the ocean is treated and supplied to the community for domestic use. What happened to the project? The Client indicated that the project was proposed by Mombasa Water and Sewerage Company (MOWASCO) not CWWDA.		
1-3-3	Hamisi Mwarashidi At the quarry sites, the landowner has entered into an agreement with the tenant who pays for rock mining. He asked the Consultant to consider the loss of livelihood that the landowner will experience due to the land acquisition.		All to note
1-3-4	Masai Ali Kumala He enquired about the exact location targeted for the construction of the proposed FSTP. The Chief asked one of the village elders present during the field investigations to explain to the members present of the exact location of the proposed treatment plant. Hamisi Mwarashidi illustrated the exact affected plots as those near the Kaya Similani and neighbouring the Italian quarry sites.		All to note
1-3-5	Mwinyi M. Ussi Viiri He appreciated CWWDA for the proposed project. He also wanted to know if the irrigation water will only benefit the landowners around the facility or it will be supplied to all the residents in Ng'ombeni location using pipes? The Consultant indicated that there is no provision for a piped water system. The irrigation water will mainly be accessible by the nearby farmers. Has the MCA, MP been involved in the project? The Consultant explained that they had been informed of the project through a telephone conversation and they were planning to have future engagements.		All to note All to note
1-3-6	Halima Mwagombe She enquired about the exact acreage set for acquisition for the implementation of the proposed project. The Consultant informed the members that the proposed treatment plant will acquire 40 acres of the land. The land will be used for setting up the facility and serve as a buffer zone for mitigating the anticipated impacts and risks.		All to note
1-3-7	Chiyama Salim How will the youth benefit during construction? The Consultant indicated that they would benefit from the increased job and business opportunities. There will also be opportunities for skill transfer through internship opportunities.		All to note
1-3-8	Omar B. Mwamtenda He requested that if any sub-contracts are available, they should be offered to the community especially during site clearance or provision of raw materials such as sand		All to note
1-3-9	Mohammed Sheria How did you decide to locate the facility near a cultural heritage like Kaya Similani? During construction, they will be dealing with different people, and they fear that all the opinions they are sharing won't be considered.		All to note
1-3-10	Alfan Abdalla During operation, will the effluent be delivered to the facility using a pipeline network, exhausters etc? Will the manure be in liquid form or powder form?		All to note

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	The Consultant indicated that the effluent will be delivered to the facility using exhausters. The manure will be in powder form.		
1-3-11	Mohamed A. Sibabu He was really concerned of the facility proximity to the Kaya. He stated that as the elders they might embrace the project, but the traditional living beings might reject the project.		All to note
1-3-12	Rashid Munjambale Those who dig stones will suffer from loss of employment. Are they likely to get an allowance during valuation? The Consultant indicated that they have noted the worker's request for consideration. Have beacons been put to mark the targeted project area? No beacons have been erected. How are the nearby institutions set to benefit from the project? The Consultant will be visiting the nearby institutions to determine if they have any requests regarding the project.		All to note
1-4	Closing remarks The Consultant appreciated the members present for the interactive session and urged them to share the right information regarding the information. The Client also appreciated the residents for attending the meeting and assured them that all their opinions and views will be considered during the next phase of the project. The area chief thanked the Consultant and the Client for visiting and for considering the public participation during the design phase. He assured the members that they would remain supportive of the project.		All to Note
1-5	Adjournment There being no other business, the meeting ended with a word of prayer at 12:45pm.		

Signed on Behalf of Local Administration

Name ATHUMANI MACHESO

Designation CHIEF

Signature AMacheso

Date 23-10-2023

CHIEF NGOMBENI LOC
DATE 23/10/2023
P.O BOX 96113 LIKONI

Signed on Behalf of INGEROP

Name Robert Maungiri

Designation Environmental Expert

Signature

Date 19/10/2023.

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WATER FOR GENERATIONS

DETAILED DESIGN REVIEW & ADOPTION & CONSTRUCTION SUPERVISION OF WATER DISTRIBUTION PIPELINES IN MOMBASA & SANITATION FACILITIES IN MOMBASA SOUTH MAINLAND

STAKEHOLDER ENGAGEMENT FOR THE PROPOSED FAECAL SLUDGE TREATMENT FACILITY

ATTENDANCE LIST

CHIEF NGOMBENI LOC. P.O BOX 96113 LIKONI — 9/8/2023

TOPIC: PUBLIC PARTICIPATION MEETING - NG'OMBENI LOCATION

VENUE: CHIEF'S OFFICE HALL **DATE:** 9/8/2023 **TIME:** 10:45am

S/NO	NAME	Designation	CONTACTS (Email/Mobile)	SIGNATURE
1.	Nelson Mungiri	INGEROP	nmungiri@ingerop.ke / 0704788047	NMM.
2	Hope Makalo	CWWDA	hopemakalo@gmail.com 0742011478	[signature]
3	Robert Ngunjiri	INGEROP / CWWDA	Robert.Ngunjiri@howardhumphreys.co.ke	[signature]
4.	Anne Rita Koki	INGEROP	0736012054	ARK
5	ALFAN NUMANGANI		0716947522	[signature]
6	MKINTI M. USSI VIZRI	S.H.G	0723955185	[signature]
7	OMARI BAKARI MCAULA	INGEROP/C	0712593625	[signature]
8.	MUSA SHENI		0799847744	[signature]
9.	ALI M. SIBABU	ASST/CHIEF	0711520445 alimohammed561@yahoo.com	[signature]
10.	MOHAMED A. SIBABU	MZEE WA KAYA	0710675863	[signature]
11	SABITI NASSIR	V. Chairman	0716777991	SABITI
12	SAID SALIM CHIYAMA	V.C	0736588948	[signature]
13	ABDALLA RASHID CHACHE	V. Chairman	0778799063	[signature]
14	SEFU MWASIILU	" " "	0710667659	[signature]
15	BAKARI A. MWAJANGAA	"	0795816870	[signature]
16	RASHIDI SALIMU RAMTU	"	0702130596	[signature]
17	HAMISI NASSORO	"	0719570801	[signature]

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STAKEHOLDER ENGAGEMENT FOR THE PROPOSED FAECAL SLUDGE TREATMENT FACILITY

ATTENDANCE LIST

CHIEF NGOMBENI LOC. P.O BOX 96113 LIKONI 9/8/2023

TOPIC: ______

VENUE: ______ DATE: ______ TIME: ______

S/NO	NAME	Designation	CONTACTS (Email/Mobile)	SIGNATURE
18	SALIM HUSSEIN	MZEE WA KAYA	0768262171	
19	MWALIMU A. MWIRIHI	V. ELDER	0718043444	
20	OMAR B MWAMTENDA	V ELDER	0724922932	
21	BAKARI SUDI	V. ELDER	0745996342	
22	RASHID J MWAMAMBOLE	MZEE	0723949706	
23	HALIMA S MWAGOMBA	WOMEN	0722891753	
24	Mosaudi Nasir	Women	0796082778	
25	Kimwana Hassan	Women BALOZI	0712064240	
26	BAKARI HAMIS	BALOZI	0711769788	
27	Omar Shaban M	C/L.	0724019991	
28	SHADAN HAMAD RAHISI		0799217091	
29	Mwanyihaji Hamisi	V. Elder	0718827089	
30	SIKUKUU MBWANA MBAVU		0741746679	
31	MOHAMED M. MWAZIMBU	Businessman	N/A	
32	MASAI ALI KUMALA	MEMBER OF COMMUNITY	0721687729	
33	ELLY NYANJE MWANIA	LOCAL MWANCHI	0742216952	
34	MOHAMED S. NYOKA	V/elder	0723988316	

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COAST WATER WORKS DEVELOPMENT AGENCY
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DETAILED DESIGN REVIEW & ADOPTION & CONSTRUCTION SUPERVISION OF WATER DISTRIBUTION PIPELINES IN MOMBASA & SANITATION FACILITIES IN MOMBASA SOUTH MAINLAND

CHIEF NGOMBENI LOC. 9/8/2023 PO BOX 96113 LIKONI

STAKEHOLDER ENGAGEMENT FOR THE PROPOSED FAECAL SLUDGE TREATMENT FACILITY
ATTENDANCE LIST

TOPIC: _____

VENUE: _____ **DATE:** _____ **TIME:** _____

S/NO	NAME	Designation	CONTACTS (Email/Mobile)	SIGNATURE
35	Hamisi Omari Mwamshala	C/H	0716095157	
36	Hamis Rashid Kuagota	C/H	0743395970	
37	Abdalla R. Chacha	V/chairman	0718799063	
38	MEJUMAA OMAR MBUNGO	V/ADMIN	0707463483	
39	AYUB RAMA MADZUNGA	MNAZI YOUTH GROUP CHAIRMAN	0700895525	
40	SAID SALIMU MWATUKU	CHAIRMAN	0798358088	
41	Rahimu H. Mwamsena	Member	0114964042	
42	MOHAMED S. MANUA	SUBASI CHIEF	0115075518	
43	ATHUMAN H. MACHEJO	CHIEF	0724240855	
44	HAMISI ADD JEZA		0724495304	
45	Musa Nasi Kirumu		—	
46	Rama Hamisi Mwaunga		0115923183	
47	MATANO ALI SHAMBI		0726 047 881	
48	SWALEH M. DZILALA	V/SECRETARY	0723525687	

Meeting Notes

Project:	The Construction of Water Distribution Pipelines in Mombasa and Sanitation Facilities in Mombasa South Mainland (Likoni)
Subject:	Public Participation Meeting -Shika Adabu Location
Meeting place:	Shika Adabu Location-Chief's Office
Date and time:	9th August 2023 2:45pm
Minutes by:	Anne Rita Koki - INGEROP

Attendees

Name	Organization	Designation
1. Hope Makalo	CWWDA	Environmental Safeguards
2. Nelson Munyiri	INGEROP	Engineer
3. Robert Ngunjiri	INGEROP	Environmentalist
4. Anne Rita Koki	INGEROP	Sociologist
5. Yusuf Ali Yessi	Shika Adabu Location	Chief
6. Mgupu Mohamed Mwinyi	Vijiweni Sub-Location	Assistant Chief
7. Abel Mulama Peter	Shika Adabu Ward	MCA representative
8. Agostine Akisa	PLWD	PLWD representative
9. 49 No. Shika Adabu Location residents		

Agenda -

1. Welcoming and Opening remarks
2. Project Brief by Consultant
3. Q & A
4. Closing remarks
5. Adjournment

1-1. Welcome and Opening Remarks

The meeting was called to order at 2:45pm by the assistant chief and a word of prayer was said.

Ass. Chief Mohamed informed the members present that Coast Water Works Development Agency (CWWDA) and INGEROP had requested for a public participation meeting to create awareness about a sanitation project that is set to address the needs of the Shika Adabu residents. He then welcomed Hope Makalo to give her opening remarks and introduce the Consultant.

Hope Makalo stated that CWWDA has engaged INGEROP Consultants to design a Faecal Sludge Treatment Plant (FSTP) that will help in addressing the sanitation needs within the coastal region. She appreciated the members present for honouring the invitation to the meeting and urged the members present to share their views.

Before the Consultant introduced themselves, Abel Mulama Peter thanked the Client and the Consultant for organizing the public participation meeting. He informed the meeting that the local leaders are in support of projects that address the needs of their residents.

The Consultants team then introduced themselves and proceeded to give a brief of the proposed project.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1-2	Project Brief Anne Rita Koki indicated that the project implementation is divided into the design, construction, and operation phase. Currently the project is at the design phase. The project entails treatment of the effluent collected from the households to develop clean water for irrigation and manure. The targeted land set for implementation of the project is located at Ng'ombeni-Maweni settlement scheme and is privately owned. The Consultant is in the process of identifying the registered landowners for purposes of engagement on the acquisition process. The proposed project has several benefits for the local community. They include increased job and business opportunities, improved sanitation, affordable exhauster services, and safe disposal of wastewater. Shika Adabu Location will highly benefit from the sanitation services. The consultant therefore urged the community to share their views and concerns regarding the proposed project as it helps in the development of the Environmental and Social Impact Assessment report. Eng. Nelson informed the members that the need for a sanitation facility arose from previous studies undertaken that showed a high prevalence of water borne diseases in the area. He indicated that exhausters would be collecting the effluent from the households and delivering it at the FSTP for treatment. He however emphasized the need for residents to safely dispose the wastewater at the facility because its performance rely on how much effluent is deposited. Several factors had influenced the site selection such land that is away from human settlements and a flat area that can easily be accessed by exhausters to dispose the effluent. Robert Ngunjiri reiterated that the meeting seeks the opinions and views of the public with the aim of promoting project acceptance. Due to the proximity of the facility to the Indian Ocean and other sensitive areas such as Kaya Similani, the consultant has provided for a buffer zone to protect them and help in addressing some of the anticipated negative impacts like degradation of the air quality.		All to note.
1-3	Q&A The Consultant welcomed the members present to discuss their views and opinions. The engagement would help in mitigating/reducing the negative impacts that will be identified while enhancing the positive impacts.		All to note
1-3-1	Mwinyi Mwadibo He stated that the community is in full support of the project. The FSTP needs to be constructed as they will be the largest beneficiaries once the project is implemented.		All to note
1-3-2	Idi Ibrahim Shika Adabu is more densely populated and will provide more wastewater that will benefit the Ng'ombeni residents. Why can't the facility be constructed at Shika Adabu location?		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	The Consultant reported that availability of land that is away from the human settlements has been the main challenge that has delayed the implementation of the proposed project.		All to note.
1-3-3	Wachira How will the youth benefit during construction of the project? The youth will be offered job opportunities during construction. There will be business opportunities that will arise that they can explore such as selling food to the construction workers. They can invest in an exhauster track and offer private services of transporting the effluent to the facility from the households at a fee.		All to note
1-3-4	Ann Wambui Will the residents pay for the sanitation services, or will they be offered at no cost? What will happen to the manure that will be manufactured at the plant? Yes, the residents will pay for the sanitation service to ensure project sustainability. The water service provider responsible for managing the facility can decide to sell the manure as part of generating revenue.		All to note
1-3-5	Agostine Akisa He highlighted that during engagement meetings, there is usually minimal representation from persons living with disability. How will they be represented during construction? The Consultant urged the Chief to ensure that the Community Development Committee has representation from Persons with Living with Disability so that during construction their needs are known and addressed.		All to note
1-3-6	Francis Kariuki He sought clarification of the wastewater that will be treated at the facility. Will it include the stormwater that causes havoc in the area during the rainy season? Will the chemicals used to treat the effluent be harmful to human beings? The wastewater that will be treated at the facility will be all the wastewater from the households that is usually collected in a septic tank or cess pool. The chemicals used at the facility are well regulated such that the final water for irrigation is not harmful to human beings.		All to note
1-3-7	Salim Juma He requested the Consultant to highlight the anticipated negative impacts of the project. The Consultant indicated that some of the anticipated negative impacts are displacement of landowners, degradation of air quality, noise pollution during construction among others. Mitigation measures have been suggested and provided for in the Environmental and Social Impact Assessment (ESIA) report.		All to note
1-3-8	Mohamed Nasoro He wanted the project to be well explained especially if the financiers have already set funds for the implementation for the project. He was also interested in finding out if the Ng'ombeni residents had been engaged and if so, what are their views? The Consultant informed the members that funds for the implementation have already been set aside, but the project can only be implemented once a suitable site is obtained, and the affected/interested persons are engaged.		All to note
1-3-9	Salim Bakari		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	He sought to understand if it will be any different to transport the effluent to Kipevu water treatment plant as compared to the proposed facility? The Consultant stated that the difference will arise from the distance and cost charged whereby transporting the effluent to Kipevu will be far and more expensive as compared to transporting the waste to the proposed facility.		All to note
1-3-10	Mwajuma He asked if the leaders could help in addressing garbage disposal challenge that is being witnessed in the area. The Assistant chief said he will investigate the matter.		Local leaders to note
1-3-11	Hassan Bakari He requested if the Water Service Provider and the exhauster service providers can offer reduced prices as compared to what they are charged currently. The Consultant noted the request.		Consultant to note
1-3-12	Mwinyi Mwadibo He requested the residents to view the project as one that serves both the Mombasa and Kwale residents as they are dependent on each other, and they should coexist as neighbours.		All to note
1-3-13	Juma Mwajebe Will the targeted land be acquired from the private landowners? Yes, the targeted land will be acquired, and the landowners compensated.		All to note
1-4	Closing remarks Anne Rita Koki thanked the members present for the interactive session and informed them that engagement is an ongoing process that will take place throughout the project period. Abel Mulama urged the people to support the project as they live as one community with Ng'ombeni residents. He recommended that during construction phase, the committee from Ng'ombeni should be combined with the Shika Adabu committee and introduced to the Resident Engineer for the project. Chief Yusuf informed the members that a community development committee for Shika Adabu location is in place and it oversees any projects that are ongoing in the area. The committee will be utilized during the project implementation. He thanked the members present for the sensible and wonderful engagement.		All to Note
1-5	Adjournment There being no other business, the meeting ended with a word of prayer at 4:10pm.		

Signed on Behalf of Local Administration

Name MGURY MOH'D MKIRUMI

Designation ASSISTANT CHIEF

Signature [signature]

Date 24/10/2023

ASSISTANT CHIEF
VIJIWENI SUB - LOCATION
LIKONI SUB - COUNTY

Signed on Behalf of INGEROP

Name Robert Ngunjiri

Designation Environmental Expert.

Signature [signature]

Date 9/2/2023.

HOWARD HUMPHREYS (EAST AFRICA) LTD.

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COAST WATER WORKS DEVELOPMENT AGENCY
WATER FOR GENERATIONS

DETAILED DESIGN REVIEW & ADOPTION & CONSTRUCTION SUPERVISION OF WATER DISTRIBUTION PIPELINES IN MOMBASA & SANITATION FACILITIES IN MOMBASA SOUTH MAINLAND

STAKEHOLDER ENGAGEMENT FOR THE PROPOSED FAECAL SLUDGE TREATMENT FACILITY

ATTENDANCE LIST

TOPIC: PUBLIC PARTICIPATION MEETING

VENUE: SHIKA ADABU SOCIAL HALL **DATE:** 9/8/2023 **TIME:** 2.45pm.

S/NO	NAME	Designation	CONTACTS (Email/Mobile)	SIGNATURE
1	Juma Mwinyi Mwamvoye	Shikaadabu	—	—
2	IAI IBRAHIM	V/ELDER VIJIWENI B'	0729002200	
3	ALI M. ABAKALLA	V/ELDER VIJIWANI	0708052240	
4	FRANCIS KARIUKI	V/BLOZA) UTAMAA	0717422227	
5	HASAN ALI	V/BLOZA) UTAMAA	0707557146	
6	MOHAMED ALI MWAKITO	V/ELDER VYENYANI	0702381997	
7	MOHAMED HAMIS MWADZAYUYA	BALOZI VYEMANI	0725607020	
8	KHALID HAMISI MWANYENZA	V/L MWAWECHE	0718807385	
9	MWAKUZA MCHINYAMA	SHIKADARU RESIDENI	0711442884	
10	MOHAMED BAKARI	BALOZI VYEMANI	0114272296	
11	ATHUMANI ONGARI	VYEMANI RESIDENT	0705792179	
12	AGOSTINO AKASA PATRICK	PLWD	0724735884	
13	SHAKOMBO SALIM	SHIKAADABU	0711263400	
14	Anne Rita Koki	INGEROP	0716475765	
15	MGUPU MOHAMED MWINYI	ASSISTANT CHIEF	0726344695	
16	Nelson Mungai	INGEROP	0704788047	NMM.
17	Robert Ngugi	INGEROP/COWDA	0716005973	

SHIKAADABU LOCATION
CHIEF
08 AUG 2023
LIKONI SUB COUNTY

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COAST WATER WORKS DEVELOPMENT AGENCY

DETAILED DESIGN REVIEW & ADOPTION & CONSTRUCTION SUPERVISION OF WATER DISTRIBUTION PIPELINES IN MOMBASA & SANITATION FACILITIES IN MOMBASA SOUTH MAINLAND

STAKEHOLDER ENGAGEMENT FOR THE PROPOSED FAECAL SLUDGE TREATMENT FACILITY

ATTENDANCE LIST

TOPIC: PUBLIC PARTICIPATION MEETING

VENUE: SHIKA ADABU SOCIAL HALL **DATE:** 9/8/2023 **TIME:** 2·45pm

S/NO	NAME	Designation	CONTACTS (Email/Mobile)	SIGNATURE
18	Hope Makalo	CWWDA	hopemakalo@gmail.com 0720714708	Makalo
19	ABEL MULAMA PETER	WARD MANAGER & MCA OFFICE SHIKAMBARA	Petermulama88@gmail.com	
20	YUSUFU ANT YESSI	CHIEF	yessiyusuf@gmail.com	
21	CHRISTINE M. MUSILA	Mjumbe Ikuu		
22	HALIMA TENGEZA	V/E		
23	MWINYI MWABIBO	VLE		
24	ZAINABU R. KUREMWA	VIJANA (A)		
25	MWAKAME HAMAD	MWAWECHE		
26	Ann Wambui Nyabunya	Balozi		
27	Fatuma Hamisi	Balozi		
28	SIKUKUU Salim	MWAWECHE		
29	Mischida Mwinyi	Balozi	0743143057	
30	REHEMA OMARI	BALOZI	0113478590	
31	MWANAID MGUMI	BALOZI	0702025167	
32	ASHA ABDALLA	"		
33	BHMWAMZOA	Mzee	0712700061	
34	SHABAN MWACHILIKO	BALOZI	0796470067	

SHIKA ADABU LOCATION CHIEF 08 AUG 2023 LIKONI SUB-COUNTY

S/NO	NAME	Designation	CONTACTS (Email/Mobile)	SIGNATURE
35	JUMA SEFU MWAHIMA	MWAWECHE	0741260269	
36	RIZIKI SAHIMSHEDZEKE	KINAJOHO	0708687854	
37	MWANAMWINYI IDI	SHIKA-ADABU	0728347605	
38	MWANAMKASI ALI MWINYI	MWAWECHE	0795070402	MKASI
39	RACHEL M. MATHEKA	MWAWECHE	0721284367	GITHUKU
40	MWANAMTOTO ALI	MWAWECHE	0727 305251	M
41	FATUMA RAWECHE	KIBUNDANI V/E	0710978918	
42	RASHID MOHAMED MKATUNZA	V/ELDER	0799530432	
43	MUKUNGKOMBO ABDILLAH	SHIKA ADABU	0791254669	
44	JUMA SALIM MWANDANO	SHIKADABU KATA	0728 047 910	
45	ALI KASSIM MOHAMED	SHIKADABU KATA	0741660945	
46	RUKIA ALI JUMA	YEMANI	0791254664	
47	MUSTAFA BWANGAU	ASST VILLAGE ELDER	0798 541 436	
48	James M Mugo	Barozi	0722816435	
49	SALIMU CHAMA	SHIKADADU	0742807346	
50	SAUL KAMABI	BALOZI	0703632300	
51	JUMA MWAJEMBE	SHIKA ADABU	0748 196 383	
52	ALI HAMISI GAKURIA	SITONIA	0714345214	
53	Mohamed NASSORO	V/E	0723564347	
54	SAIDI ABDALL MUGRAMZI	BOLOZI	0792853459	
55	ABDALLAH SALIM BAKARI	BALOZI	0707725739	
56	JUMA S MWAMAKA	VELDER	0706594446	
57	Mohamed Bwanamina	Vijiweni	0720789083	

Meeting Notes

Project:	The Construction of Water Distribution Pipelines in Mombasa and Sanitation Facilities in Mombasa South Mainland (Likoni)
Subject:	Consultation meeting with Kaya Elders
Meeting place:	Ng'ombeni Social Hall-Chief's office
Date and time:	11th August 2023 10:50am
Minutes by:	Anne Rita Koki - INGEROP

Attendees

Name	Organization	Designation
1. Nelson Munyiri	INGEROP	Engineer
2. Robert Ngunjiri	INGEROP	Environmentalist
3. Anne Rita Koki	INGEROP	Sociologist
4. Mohamed A. Sibabu	KAYA SIMILANI	Chairman
5. Mohamed Saidi Nyoka	KAYA SIMILANI	Kaya Member
6. Hamisi Mwinyi Nassoro	KAYA SIMILANI	Kaya Village Chairman
7. Abdalla Rashid Chache	KAYA SIMILANI	Village elder
8. Sabiti Nassir Salim	KAYA SIMILANI	Vice Chairman

Agenda -

1. Introductions
2. Discussions
3. Way Forward
4. Closing remarks
5. Adjournment

1-1. Introduction

The meeting commenced at 10:50am with a word of prayer from Mohamed Sibabu. The elders apologized for the late arrival to the meeting as they were attending to other official duties.

The Consultant accepted the apology and stated that following the public consultation meeting held on 9th August 2023 at Ng'ombeni location, it was agreed that the Consultant would meet with the Kaya elders separately to allow them to express their views and concerns regarding the proposed FSTP. In this regard, the Consultant had convened the meeting to discuss on the Kaya Similani operations and how the proposed project is likely to affect them so that proper mitigation measures can be put in place before construction.

Mohamed Sibabu appreciated the Consultant for keeping their word and planning the meeting. He stated that the elders were really concerned about the FSTP proximity to the proposed project site.

Anne Rita Koki invited the elders to discuss on the Kaya Similani operations and share their concerns or opinions regarding the proposed project.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1-2	Discussions Hamisi Mwinyi Nassoro stated that the Kaya Similani is a sacred place where spiritual beings reside. The Kaya elders consult with the living beings both on land and the ocean. He suggested that since the Consultant had shared the proposed development, it is important for the Kaya Elders to have their own separate meeting to discuss the proposed development. Abdalla Rashid Chache informed the members that the Kaya elders are in support of the project. However, there are guidelines that the project implementers need to follow to enable a smooth co-existence of the proposed project and the Kaya Similani. He stated a few of the items that would be needed as traditional dressing, certain types of food, goat etc. The items would have to be delivered before project commencement to allow the elders perform the religious rites. Mohamed Said proposed a joint site visit with the Consultant and the exact coordinates of the location of the facility, the buffer zone, and the Kayas will be taken and shared amongst the team. He also indicated that there are other existing small kayas within the project area that also need rehabilitation. There is a risk of losing the kays to private investors who grab the kaya land and obtain title deeds from the land's office. Mohamed Sibabu indicated that land ownership is quite a sensitive issue within the proposed project area. The Kaya Similani has an ongoing case of land grabbing where the elders have sought the assistance of the area Member of Parliament to assist with getting title deed for the Kayas. He also added that they fully support the project, but urged the Consultant to ensure their opinions are taken into consideration. Nelson Munyiri added that the elders can request for fencing of the Kaya Similani land under the project to protect it from grabbing and keep away the intruders. Anne Rita Koki enquired whether the elders work with other Non-Governmental Organizations or Community Based Organizations especially towards conservation of the Kaya Ecosystem. The elders reported that they have worked with other organizations for other Kayas, but not in the Kaya's near the project area.		All to note.
1-3	Way Forward It was agreed that the Consultant will communicate a date for the joint site visit with the Kaya elders. The elders recommended to the Consultant to conduct a land search of the affected land parcels targeted for the project implementation as land is a sensitive matter in the area. The proposal of fencing the Kayas will be presented as a Corporate Social Responsibility (CSR) activity for the project by the Consultant. The elders requested for provision of tree seedlings from the project to help with conservation of the Kayas. The specific items needed for conducting the rituals before project implementation will be shared by the elders after the site visit.		All to note

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1-4	Closing remarks Sabiti Nassir Salim stated that as leaders they will continue to support the project. He urged the Consultant to ensure that the proper guidelines are followed to prevent interruptions during the project implementation period. Robert Ngunjiri informed the members that the Consultant is committed to ensuring that the proper environmental and social standards are maintained throughout the project period. Mohamed Sibabu thanked the members present for the interactive session and assured the Consultant of their support.		All to Note
1-5	Adjournment There being no other business, the meeting ended at 12:15pm.		

Signed on Behalf of Kaya Similani

Name MOHAMED ALI SIBABU

Designation MZEE WA KAYA SIMILANI

Signature

Date 24/10/023

Signed on Behalf of INGEROP

Name Robert Ngunjiri

Designation Environmental Expert

Signature

Date 9/10/2023.

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DETAILED DESIGN REVIEW & ADOPTION & CONSTRUCTION SUPERVISION OF WATER DISTRIBUTION PIPELINES IN MOMBASA & SANITATION FACILITIES IN MOMBASA SOUTH MAINLAND

STAKEHOLDER ENGAGEMENT FOR THE PROPOSED FAECAL SLUDGE TREATMENT FACILITY
ATTENDANCE LIST

TOPIC: CONSULTATION WITH KAYA SIMILANI ELDERS

VENUE: NG'OMBENI LOCATION SOCIAL HALL **DATE:** 11/8/2023 **TIME:** 10.50am.

S/NO	NAME	Designation	CONTACTS (Email/Mobile)	SIGNATURE
1.	Anne Rita Koki	Sociologist	0736012054	
2.	NELSON MUNYIRI MIRICHO	ENGINEER - INGEROP	0704788047	NMM.
3.	MOHAMEDI SAIDI NYOKA	MEMBER KAYA	0723988316	
4.	MOHAMED A. SIRAJU	CHAIRMAN KAYA	0710675863	MS
5.	HAMISI MWANYI MGESORO	CHAIRMAN VILLAGE	0105291595	
6	ABDALLA RASHID CHACHE	VILLAG ELDER	0718799063	
7	Robert Ngunjiri	Environmentalist	0716005973	
8	SABITI. NASSIR SALIM	V. Chairman	0716777991	SABITI

Meeting Notes

Project:	Design Review and Construction of Faecal Sludge Management Facility in South Mainland
Subject:	Kwale County Key Stakeholders Engagement Meeting
Meeting place:	Pride Inn Diani
Date and time:	11th September 2023 09:30am
Minutes by:	Anne Rita Koki - INGEROP

Attendees

Name	Organization	Designation
1. Haji Massa	CWWDA	MECM
2. Robert Ojwang	CWWDA	PCE
3. Edwin M. Lenga	CWWDA	Principal Engineer
4. Joyce F. Nguru	CWWDA	Principal Chemist
5. Ali Chalala	CGK	CWD
6. Chris Vundi	CGK	Senior Physical Planner
7. Salim Ngari Kassim	CGK	CPHO
8. Maithya Mangi	CGK	DCS
9. Swaleh Kidzuga	KWAWASCO	Technical Manager
10. Duncan Okoth	NEMA	Environment Officer
11. Susan Mwanzawa	Ministry of Lands	Land Registrar
12. Dennis K. Mutungi	NLC	County Co-ordinator
13. Nicholas K.Sanya	Land Adjudication & Settlement	Land Surveyor
14. Winstone Mulaku	INGEROP	TL/PM
15. Nelson Munyiri	INGEROP	Engineer
16. Joseph Kanyugi	INGEROP	Engineer
17. Anthony Kiluku	INGEROP	Engineer
18. Lawrence Njue	INGEROP	EHS Expert
19. Anne Rita Koki	INGEROP	Sociologist
Absent with Apology		
1. Eng. Martin Tsuma	CWWDA	Chief Executive Officer
2. Hon. Hemedi Mwabudzo	CGK	CECM Department of Water Services

Agenda -

1. Introduction and Opening Remarks
2. Project Presentation by Consultant
3. Q & A
4. Next Steps
5. Closing remarks
6. Adjournment

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1-1	Introduction and Opening Remarks The meeting was called to order at 10:30am. Haji Massa welcomed the members present to the meeting and invited Joyce Nguru to say a word of prayer. The members present then introduced themselves. Haji Massa read out the agenda of the meeting which was adopted without any alteration. Opening Remarks ▪ **CWWDA** Haji Massa issued the apologies on behalf of the CEO - CWWDA who had to attend to other official engagements. He indicated that the meeting was convened following a request by representatives of Kwale County during a previous stakeholder meeting held on 8th August 2023 in Mombasa where it was deemed important to engage all the relevant departments from Kwale County as well as representatives of the National Government within the County. He reported that the proposed Faecal Sludge Management Facility (FSMF) was part of the project components that are meant to be implemented under the Mwache Dam Program. Water from Mwache dam is to be treated and distributed to the South, West and North Mainland's which would also result in increased wastewater. Currently, only the Mombasa West Mainland has a wastewater treatment facility at Kipevu, though it could not serve the whole County resulting in the need for a sanitation facility in South Mainland. He further stated that Coast Water Works Development Agency (CWWDA) has secured funding from the French Development Agency (AFD) and has consequently engaged Ingerop International Consultant (Pty) Ltd to prepare Designs, undertake Environmental and Social Impact Assessment (ESIA) Studies and prepare the Resettlement Action Plan (RAP) for the proposed FSMF. Therefore, the main objective of the meeting is to obtain the input of the participants on the proposed FSMF design which would enhance the success of the proposed project. ▪ **INGEROP** Eng. Winstone Mulaku informed the members that INGEROP was engaged in 2021 and was required to prepare the design for the FSMF based on the 2017 Wastewater Masterplan for the Coast Region and the specific requirements of AFD (French Development Agency-financier). The proposed site had been identified following a rigorous site selection process and had also been screened by the financier who gave a go ahead for the detailed assessments to proceed.		
1-2	Project Presentation Eng. Nelson Munyiri presented the project information on the proposed FSMF. Some of the salient points made in the presentation include: **i. Project Background** The 2017 Coast Region Wastewater Masterplan considered a 25year design horizon up to 2040 for the strategic development of sewerage services in Mombasa and selected towns in the six coastal counties. Immediate measures urgently required included the ablution blocks and a sludge handling facility for South Mainland The proposed site for the WWTP was to be prioritized for the development of the sludge handling facility. **ii. Project Justification**		Info

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	From previous studies, approx. 93% of the faecal and septage sludge is not safely managed. Therefore, critical areas for attention in the FSM service chain included ✓ **Installation and sustained management** of effective faecal sludge treatment facilities ✓ **Stronger enforcement** of discharge regulations on emptier and transporters. ✓ **Upgrading of manual emptier** to improve their technical performance and business practices. ✓ **Legal recognition and regulation** of manual emptier. ✓ **Introduction of subsidies** for emptying for low-income customers. **iii. Site selection** A multi-criteria approach was adopted for the selection of the project site. The selection parameters include, current land use, alignment with masterplan design, topography of the site, accessibility, availability of buffer zone, Environmental and Social Impact, and geological conditions. The site selection process began with screening of 10 no. areas out of which only 3 no. within the Ngomeni- Maweni Settlement scheme was selected for further review. The rigorous assessment was then done based on cadastral maps acquired from the Lands adjudication office in Kwale. Out of the 8 no. parcels/ blocks that were assessed a block of 40 acres bounded by access roads on all sides was selected as the most appropriate. **iv. Population Projections** The population and faecal sludge projections have considered the service area that traverses both within both Mombasa and Kwale Counties. Based on these projections, the design capacity of the FSMF was determined to be 106m^3/day. **v. Treatment Process** Upon discharge from the delivery trucks at the discharge station, the septage goes through a thickening and equalization tank from which the liquid and solid fractions will be separated. The liquid fraction will be treated using the stabilisation ponds and the effluent therefrom is targeted to be used for irrigation while the solid fraction will be dewatered, dried and resource recovery will potentially be done through composting or briquetting. **vi. Site layout** The Consultant shared a layout illustrating where the treatment facility was shown to be located within the 40-acre block. The site has a 75m buffer zone and space provision for future sanitation management developments within the site. **vii. Benefits of the Project** The consultant highlighted the following as some of the benefits of development of the proposed FSMF: ▪ Improved public health & sanitation. ▪ Environmental protection ▪ Odour and nuisance mitigation ▪ Resource recovery ▪ Economic growth ▪ Compliance of international and constitutional standards ▪ Community engagement and empowerment.		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	viii. Next Steps Eng. Winstone Mulaku informed the members present that the next steps for the consultant are: ▪ Completion of detailed design & draft tender documents ▪ Completion of preparation of the safeguards documents; specifically conclusion of the stakeholder engagement for the current design phase.		
1-3	Q&A Haji Massa invited the members present to the Q&A session. The members agreed to give their comments/questions and then CWWDA and the Consultant would response thereafter. <u>Stakeholder's questions and comments</u> Ali Chalala (County Government of Kwale) He stated that following the stakeholder's meeting held on 8th August 2023, in which he was in attendance alongside the DCC-Matuga Sub County and the Assistant Chief-Pungu Sub location, a Kwale Stakeholder's meeting was requested to ensure full participation of the relevant departments in the proposed project. He informed the members that the Water department is in full support of the project, however he had the following questions / clarifications: ▪ At the time of the previous meeting, 44.5 acres had been identified and the only economic activity in the area reported as rock mining. He sought an update from the Consultant on the progress made regarding landowners' identification that had been reported as ongoing in the previous meeting. ▪ During the 8th of August 2023 meeting, the Consultant was advised to engage the Governor, relevant Kwale County departments and the political class. ▪ Is the utilization of the treated effluent water for irrigation a viable option? What other options have been considered? ▪ KWAWASCO was not represented in the previous meeting and should be engaged as a key stakeholder since they are the Water Service Provider licensed to undertake water and sanitation services in Kwale County. Nicholas Sanya (Land Adjudication & Settlement at Ministry of Lands) He informed the members present that Ng'ombeni is a registered section where the landowners possess title deeds. He enquired on the plan for acquisition of the plots as they are privately owned? Dennis Mutungi (National Land Commission) The Government of Kenya (GoK) has put up procedures for acquiring land meant for the public good. He stated that the willing buyer-willing seller approach would be problematic if one of the landowners doesn't cooperate and therefore recommended compulsory acquisition as the better approach. He also urged CWWDA to secure the land before tendering to avoid project delays. He further gave a summary of the land acquisition process where CWWDA should share the affected individual plot numbers with the affected sizes and names of the registered landowners with National Land Commission who are mandated to acquire private land on behalf of the GoK. He also enquired whether the buffer zone is included in the targeted 40 acres. He also asked the area of coverage targeted to be served by the proposed FSMF, and more specifically, whether Kwale town will benefit from the proposed FSMF.		Info

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	Maithya Mangi (County Government of Kwale) Emphasized on the need for political involvement especially if compulsory acquisition of land will be done. The municipality have strategic plans that should be in line with the proposed developments within their area of jurisdiction. They need to be engaged. Kwale County has a system for stakeholder engagement that promotes project ownership and ensures flow of information from the bottom to the top management. This approach could be exploited for the benefit of the project. Swaleh Kidzuga (Kwale Water a& Sewerage Company) He informed the members that a DTF50 sanitation facility had been constructed under WSTF and it currently serves mainly Kwale town. Additionally, there was also another FSMF whose design was complete, and funding was being sourced for the construction. He confirmed the importance of locating the facility well so that it can be easily accessed by the intended beneficiaries. Salim Kassim (County Government of Kwale) He urged the consultant to identify any graveyards within the affected plots and develop an exhumation plan for relocating the graveyards. The treated water should be taken to the government chemist for testing to ensure it meets the acceptable standards before re-use during irrigation. He also indicated that the necessary approvals must be obtained from Kwale County Government before project implementation. Duncan Okoth (National Environment Management Authority-NEMA) He appreciated the presentation by the Consultant on the proposed project. He asked the Consultant to have at least three project alternatives when justifying the selected site in the ESIA report. Consideration should be made on the location of the site and how it would impact sensitive receptors area such as schools, hospitals, and religious institutions within the project area. He also highlighted the challenges of illegal discharge of effluent waste into storm drains and urged the project to consider aspects that will encourage the residents to use the facility once it is completed. He also requested the design of the facility discharge point to be "user friendly" to avoid spillage during discharge. He also advised that the consultant engages Kenya Forest Service (KFS) to determine if there will be any impact on biodiversity due to the wetlands. Also urged CWWDA to consider expanding the Mabokoni sludge facility and alternative public lands to avoid compulsory land acquisition. He proposed that in future, the stakeholders should be visiting the proposed site before the round table discussion to help in giving informed feedback. Robert Ojwang (CWWDA) He stated that the Consultant had given a detailed background on site selection and the multi-criteria approach that was adopted. He urged the stakeholders to consider the most significant parameters for the project implementation as it is evident that a sanitation facility for South Mainland is critical.		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	Chris Vundi (County Government of Kwale) He informed the meeting that a sanitation facility is urgently needed in Kwale County. While it may not be possible to get an ideal site that only has positive effects and satisfies all requirements, he believed the site selected is currently best option based on the multi-criteria used and the project information he has interacted with. He urged the stakeholders to support the project implementation. Ali Chalala (County Government of Kwale) He informed the members that the Kwale County sludge facility at Mabokoni is a bit further away from the targeted beneficiaries/ service area. The accessibility of the site and considering the catchment for the waste are key parameters which was necessary and good consideration for the proposed FSMF project site. He also mentioned that the "Sheep and Goat" area has public land that could be used. Consultant's response ▪ **Alternative sites** – Different alternative sites were assessed based on the multi-criteria parameters that had already been presented. The alternative site options that had been considered, including Mabokoni and "Sheep and Goat", could not be selected as they were found not to meet the screening threshold for parameters such as alignment with the masterplan design and economical distance to target beneficiaries among others. ▪ **Viability of the irrigation option**-The consultant stated that due to the resultant volume of effluent generated and the possible option of rehabilitation of the land within the buffer zone, irrigation was currently considered as a viable option. The consultant had also considered having an outfall for discharging the effluent to the ocean which would require constructing a 3km pipeline from the ocean front. The ecological impact on the coral reefs and biodiversity would then have to be considered in this case. ▪ **Constructed wetlands**-The Consultant confirmed that there will be no interference with the natural wetlands. The wetlands referred to in the design are constructed wetlands for final treatment and polishing of the effluent, which are different from natural wetlands. ▪ **Buffer Zone**-The 40 acres of land is inclusive of the buffer zone area. ▪ **Population projections**-The Consultant used data and maps from the 2019 Kenya National Bureau of Statistics census to confirm the targeted project service areas. ▪ **Land acquisition**- The Consultant obtained an updated map of the proposed site. The area affected is 40 acres which is registered to 38 landowners. The searches have been completed and the list shared with the area chief. A RAP awareness meeting will be convened later to create awareness about the project and the engage with the PAPs on the intended acquisition. The RAP socio-economic census and asset inventory will identify any graves, identify list right owners and include implementation and monitoring requirements.		
1-4	Closing remarks **INGEROP** Eng. Winstone Mulaku stated that the proposed project site has both interested and affected parties. Engagement is an ongoing process, and all the stakeholder engagement will be continuous until successful implementation of the project. He assured the members that all		Info

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	necessary approvals will be obtained from the relevant authority. He also emphasized the need to complete the technical documents and the safeguard documents (ESIA and RAP) that will be used to apply for subsequent project stages including the necessary approvals and required licenses and permits. Lawrence Njue reported that stakeholders have been mapped into various categories and are being engaged at their different levels. Consultations will continue throughout the project period, and all cultural aspects will be included during the census and asset inventory exercises. **CWWDA** Haji Massa thanked all participants for their constructive contribution and stated that the financier and GoK have requirements and timelines that need to be met when implementing the project. The Consultant should therefore proceed and conclude the studies in a timely fashion and produce the necessary factual reports. Further, the interests of the stakeholders will be considered with the guiding principle of avoiding or minimizing the negative impacts. He also thanked the members present for attending the meeting and the interactive session.		
1-5	Adjournment There being no other business, the meeting ended at 12:50pm with a word of prayer from Anne Rita Koki.		

Signed on Behalf of CWWDA

Name ... Haji MASSA .....

Designation ... MECM .....

Signature ... .

Date ... 15/09/2023 .....

Signed on Behalf of INGEROP

Name ... ENG. NELSON M. MIRICHO .....

Designation ... ENGINEER. .....

Signature ... .

Date ... 14/09/2023 .....

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STAKEHOLDER ENGAGEMENT FOR THE PROPOSED FAECAL SLUDGE MANAGEMENT FACILITY

ATTENDANCE LIST

TOPIC: STAKEHOLDER ENGAGEMENT FOR THE PROPOSED FSMF FOR KWALE COUNTY

VENUE: PRIDEINN DIANI **DATE:** 11/09/2023 **TIME:** 10:15 am.

S/NO	NAME	ORGANIZATION	DESIGNATION	CONTACTS (EMAIL/MOBILE)	SIGNATURE
1	HAJI MASSA	CIWSDA	MECM	hajimassad7@gmail.com	
2	Joseph Kanyugi	Ingerop	Engineer	Joseph.Kanyugi@howardhumphreys.co.ke	
3	Swaleh Kidzuga	KWANAICO	Technical Manager	kidzuga1966@gmail.com	
4	Martha Mengi	CGK	DES	mailtty9@hotmail.com	
5.	SALIM NUARY KASSIM	CGKCHEROTH	CPLTD	Salimkassim@gmail.com	
6	ALI CHALALA	CGK	CWO	achalala@gmail.com 0722659149	
7	ROBERT OJWANG	CWSDA	PCE	ROBERTOUKO15@GMAIL.COM	
8	EDWIN M. LENGA	CWWDA	PRINCIPAL ENGINEER	EDWINLENGA@GMAIL.COM	
9	JOYCE F. NGURU	CWWDA	PRINCIPAL CHEMIST	joyce.nguru@cwsda.go.ke	
10	DUNCAN OKOTH	NEMA	Environment Officer	dunkoma2002@gmail.com	
11	SUSSAN MWANZAIA	MINISTRY OF LANDS	LAND REGISTRAR	Sussanmwi@gmail.com	

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S/NO	NAME	ORGANIZATION	DESIGNATION	CONTACTS (EMAIL/MOBILE)	SIGNATURE
12	Dennis K. Mutangi	NLC	C. Coordinator	0724233163 Mutangidenis@gmail	[signature]
13	Nicholas K. Sanga	Land Adj. & Settlement	L. Surveyor	0722810468 sanganik@yahoo.com	[signature]
14	CHRIS VUNDI	CTY GOV'T	Snr. P. Planner	MWANZIACHRIS @GMAIL.COM	[signature]
15	ANTHONY KILUKU	INGEROP	ENGINEER	akiluku@ingerop.ke	[signature]
16	Lawrence Njue	INGEROP	EHS Expert	lawrence.njue@howard-humphreys.co.ke	[signature]
17.	Anne Rita Koki	INGEROP	Sociologist	annerita.koki@howardhumphreys.co.ke 0736012054	[signature]
18	MULAKU WINSTONE	INGEROP	TL/PM.	0722759267	[signature]
19.	NELSON MUNYIRI	INGEROP	ENGINEER.	nmunyiri@ingerop.ke	NMM

Meeting Notes

Project:	The Construction of Water Distribution Pipelines in Mombasa and Sanitation Facilities in Mombasa South Mainland
Subject:	RAP Awareness Meeting
Meeting place:	Ng'ombeni Social Hall-Chief's office
Date and time:	23rd October 2023 11:00am
Minutes by:	Nelson Munyiri-INGEROP

Attendees

	Organization	Designation
1. Hope Makalo	CWWDA	Environmental Safeguards
2. Lucy Ndemo	Interior-Matuga Sub County	Deputy County Commissioner
3. George Mwanyae	NLC	C.O
4. Ali Chalala	CGK	Ag County Water Director
5. Hussein Mwarachi	KWAWASCO	CM
6. Hon. Tandaza Sawa	Matuga Constituency	Member of Parliament
7. Hamisi M. Matimbo	Waa Ngombeni Ward	Ward Administrator
8. Athman Macheso	Ng'ombeni Location	Chief
9. Mejumaa Omar Mbungo	CGK	Village Administrator
10. Salama Musa Suleiman	Kiteje Sub Location	Assistant Chief
11. Yussuf A. Shuguli	Kwale Sub-County Hospital	Chairman-Board
12. Ali Khamis	MP's Office	Personal Assistant
13. Nelson Munyiri	INGEROP	Engineer
14. Anne Rita Koki	INGEROP	Sociologist
15. Norah Mukhwana	INGEROP	Valuer
16. Ngare Said Kamran		Landowner
17. Hamisi Omari Mwarashidi		Landowner
18. Dr. Barak Suleiman		Landowner
19. Bakari Nassoro		Landowner
20. Hassan Juma		Landowner
21. Suleiman Mwanyere		Landowner
22. Mohamed A. Sibabu		Kaya Elder
23. Hamaisi Smisi		Landowner
24. Sikukuu Mwatsuma		Landowner
25. Juma Ali Tellah		Landowner
26. Sabiti Nassir		Landowner
27. Fridaus Kombo		Landowner
28. Ali Said Ngare		Landowner
29. Juma Kida		Landowner
30. Ali Mwangoma		Landowner
31. Said Abdi Mlingo		Landowner
32. Mwanaisha Tengeza		Landowner

33. Mejumaa Abdalla Vunga		Landowner
34. Adnah Swaleh Athman		Landowner
35. Rashidi Salimu Ramtu		Landowner
36. Seif Ali Marembo		Landowner
37. Mohamed S. Nyoka		Kaya Elder
38. Kibibi M. Mwatsuluka		Landowner
39. Mwanajuma Omar		Landowner
40. Nkabi Majibu		Landowner

Agenda -

1. Welcoming and Opening remarks
2. Project Brief by Consultant
3. Q & A
4. Way Forward
5. Closing remarks
6. Adjournment

1-1. Welcome and Opening Remarks

Chief Macheso called the meeting to order at 11:00am and Hassan Mwarashidi said a word of prayer.

The Chief informed the members present that the attendees are people who own the identified plots of land that are targeted for acquisition for purposes of implementing the proposed Faecal Sludge Management Facility as per the list of landowners that had been provided by the Consultant.

He then welcomed all the members present to introduce themselves and welcomed the Consultant to proceed with the program.

Anne Rita Koki thanked the landowners for honouring the invitation and informed the members that the meeting was aimed at creating awareness about the project, explaining the process of land acquisition, and obtaining their views and concerns about the project. She then proceeded to provide a project brief.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
1-2	Project Brief • Key project players and scope The Consultant indicated that the Government of Kenya has obtained financing from the French Development Agency (AFD) for Detailed Design Review & Adoption & Construction Supervision of Water Distribution Pipelines in Mombasa & Sanitation Facilities in Mombasa South Mainland. The project is being implemented through Coast Water Works Development Agency who have contracted Ingerop International Consultant Ltd to prepare Detailed Designs for a sanitation facility in Mombasa South Mainland, undertake Environmental and Social Impact Assessment and prepare a Resettlement Action Plan. The project implementation is divided into the design, construction, and operation phase. Currently the project is at the design phase. • Faecal Sludge Management Facility (FSMF) The FSMF will is a decentralized system of collecting and treating faecal sludge and septage This will be collected from the households, hotels etc. using exhauster trucks and delivered to the facility for treatment.		All to note.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	• Project Location The identified project location is within the Ng'ombeni-Maweni Settlement Scheme where a 40-acre block consisting of 38 parcels of private land has been identified for implementation of the proposed project. Selection of the proposed site was based on the following parameters inter alia: i. An area that is not currently habited by human settlements. ii. An area that is aligned to the overall wastewater masterplan design for South Mainland iii. An area that is within the recommended economic distance from the target beneficiaries and has good access. iv. Suitable topography that will allow good drainage of the site. v. An area that has minimal environmental impacts. • Land Acquisition process Preparation of the Resettlement Action Plan report involves identifying the owners of the affected land, undertaking an asset inventory of the affected property, and determining all the affected parties who rely on the land as a source of their livelihood. The affected parties will vary from landowner, tenants or persons who have leased the land for purposes of rock mining. A valuation of the affected property will then be done, and the reports submitted to CWWDA for purposes of engaging with the National Land Commission who are mandated to carry out land acquisition on behalf of the government. The Valuer indicated that she would require the landowner to be present at his/her affected parcel of land when assessing the affected property. The landowner is required to provide a copy of his/her National ID and upon assessment, she would take a photo of the landowner at the affected parcel of land. A cut-off date will then be adopted as the last day of undertaking the valuation exercise to prevent future developments on the affected parcels of land with the aim of claiming additional compensation. She also highlighted that the cost of the affected land will be based on the market rates.		
1-3	Q&A The Consultant welcomed the members present to ask questions, express their concerns, and seek clarifications on the project.		All to note
1-3-1	Ali Mwamgomba Q: Will the secondary PAPs be affected and be considered for valuation? A: Only the secondary PAPs whose source of livelihood is affected will be considered for Valuation. For instance, if there are miners who have leased land from the landowners to mine the rocks, they can be considered for valuation if at the time of acquisition, they are still mining the rocks from the affected plot. However, they would be required to provide evidence of the agreement between the landowner and the miner.		All to note
1-3-2	Dr. Bakar Suleiman Q. He asked the Consultant to repeat the site selection parameters that led to the selection of the project location and indicate whether the population projections of the identified area have been taken into consideration when selecting the site. He also requested that a committee be formed to allow the landowners to deliberate on the project issues. He also indicated that he his parcel of land was to be inherited by his children as he has a large family. A. The Consultant explained the site selection process explaining the criteria used and the different sites that were assessed. He stated		All to note.

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	that amongst other criteria, the site selection process was informed by the current land use patterns, distance from human settlements, accessibility to the site, topographical features, and environmental impacts. He highlighted that the population projections were considered and were the basis for the recommended design for the FSMF plant.		
1-3-3	Rashid Salimu Q. Is the land being acquired inclusive of the buffer zone and how big will the buffer zone be? A. The 40-acre block includes a 75m buffer zone from the treatment facility.		All to note
1-3-4	Bakari Nasssoro Q. Has social welfare for the host community and the nearby institutions been considered by the project? A. Yes, the project is looking into providing employment opportunities to the locals during construction. The material from the excavation of the ponds can be used to rehabilitate the nearby quarries that have been abandoned without being rehabilitated and pose a safety risk to the community members.		All to note
1-3-5	Mohamed Sibabu Q. He sought to understand how the project will affect/ protect the two Kaya Similani's that are near the project area. A. The Consultant stated that the facility operations do not intend to affect the Kaya Similani negatively. The odour from the raw effluent will be contained by the buffer zone. Also, discussions with the elders of the Kaya Similani's are ongoing on how to protect the cultural heritage.		All to note
1-3-6	Mwanaisha Tengeza She stated that they have been previously displaced by other projects in Bamburi and other areas and requested if an alternative project location could be identified so that they do not lose the land in Ng'ombeni as well. A.The Consultant informed the landowners that PAPs whose land is within the identified project area will be adequately compensated to allow them to buy similar sized land so that they will not incur any loss. A 15% disturbance allowance of the valuation cost will also be offered to the landowners.		All to note
1-3-7	Mohammed Sheria Q. He stated that the environmentalist had assured them that he will investigate the potential environmental impacts of the project on the Kaya Similani's that are located nearby and sought to understand if they will be displaced as well? A. The Consultant stated that the Kaya forests will not be displaced as their site is not within the 40-acre block needed for Faecal Sludge Management Facility. Appropriate measures have also been taken to ensure that there will not be any adverse environmental impacts		All to note
1-3-8	Hamisi Mwarashidi. Q. He enquired on whether the companies owning land at the project location have been identified and are in attendance of the meeting. A. Yes, the companies were identified and are in attendance.		All to note
1-3-9	Hon. Tandaza- MP Matuga Constituency The Member of Parliament apologized for having arrived late to the meeting and sought to understand the following issues regarding the project: • Have the landowners have been identified? Consultant: Yes, the landowners have been identified and the meeting is the first engagement session with them.		All to note

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	• Has the EIA report been submitted to NEMA? Consultant: The EIA report is still being prepared and once it is completed it will be submitted to NEMA for licensing. The PAP engagement was part of the process of stakeholder engagement that is required for the completion of the ESIA/RAP reports. • The existing wastewater treatment plants around the country are not working effectively. What measures have been put in place to ensure the proposed FSMF operations meet all the set standards? The design of the FSMF has provided for meeting all the required standards to ensure that the effluent quality meets the requisite standards and odour are not present, However, during the operation phase of the facility, it will be the responsibility of the facility operator to ensure that it is well operated. • How was the proposed facility selected and how will it be accessed by the exhauster trucks? He stated that it would be better to have sewer lines to make the design more environmentally friendly than using exhausters. The project is the part of the immediate sanitation interventions identified in the 2017 Masterplan that recommended a FSMF. The Masterplan envisions that Sewer lines would eventually be adopted in the long-term including a Wastewater Treatment Plant located in the same area. The proposed route to the selected site for the FSMF would be the current existing road from Ng'ombeni primary school to the site that could be improved to mitigate against dust and noise.		
1-3-10	Lucy Ndemo-DCC Matuga Sub County She read out the questions and concerns that the community had raised before the MPs arrival. She stated that there is an urgent need for a sanitation facility in South Mainland especially because of the high population growth, anticipated increase to access of piped water supply and lack of proper sanitation facilities. She urged the landowners to support the project as it will help in preventing health issues that affect the human population due to lack of or poor sanitation facilities.		All to note
1-3-11	Ali Chalala Ali Chalala stated that while the Consultant was on a timeline to complete their study, he asked the Consultant to allow the landowners to deliberate on the project information and form the committee as they had requested. Once the community is ready, they can undertake the pending field activities for valuation.		
1-4	Way Forward The landowners agreed to form a local committee to discuss any issues pertaining to the project. The committee operations will be coordinated by the chief assisted by the ward administrator and the village administrator. The chairman of the Kaya Similani will also be a member of the committee.		Chief Ng'ombeni Location and Ward Administrator
1-5	Closing Remarks Lucy Ndemo urged the members to support the project as the Consultant is only working on the design phase. Grievance redress committees will be set to assist with tackling of any issues that may arise. The current committee is essential as it has brought the landowners who have a common interest together. The Consultant appreciated the members present for the interactive session and informed them that they would be awaiting their feedback on the selected committee and when to commence the field work.		All to Note
1-6	Adjournment		

ITEM	DESCRIPTION AND ACTION	DEADLINE	RESPONSIBLE
	There being no other business, the meeting ended with a word of prayer at 1:15pm led by Mohamed Sibabu.		

Signed on Behalf of Local Administration

Name ATHMAN H. MACHESO

Designation CHIEF

Signature Macheso

Date 26-10-2023

CHIEF NGOMBENI LOC. P.O BOX 7618 LIKONI

Signed on Behalf of INGEROP

Name Anne Rita Koki

Designation Sociologist

Signature

Date 26-10-2023

HOWARD HUMPHREYS (EAST AFRICA) LTD.

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COAST WATER WORKS DEVELOPMENT AGENCY
WATER FOR GENERATIONS

STAKEHOLDER ENGAGEMENT FOR THE PROPOSED FAECAL SLUDGE MANAGEMENT FACILITY

ATTENDANCE LIST

TOPIC: RAP AWARENESS MEETING WITH LAND OWNERS.

VENUE: NG'OMBENI LOCATION - CHIEF'S OFFICE **DATE:** 23/10/23 **TIME:** 11:00 AM

S/NO	NAME	ORGANIZATION	DESIGNATION	CONTACTS (EMAIL/MOBILE)	SIGNATURE
1.	Hope Makalo	CWWDA	ENV & SAFEGUARDS	hopemakalo@gmail.com 0720714708	
2.	Norah Mukhwana	INGEROP	VALUER	norahmuchwnh@gmail.com 0720890739	
3.	Anne Rita Koki	INGEROP	Sociologist	annerita.koki@howardhumphreys.co.ke 0736012054	
4.	NELSON MUNYIRI	INGEROP	ENGINEER	nmunyiri@ingerop.ke	
5	GEORGE MWANYAE	NLC	C.O	Katanaga13@gmail.com 0712793447	
6.	LUCY NDEMO	INTERIOR	DCC	0721439706	
7	AITMAN MACIFER	INTERIOR	CHIEF	0727240855	
8	MEJUMAA. O. MBUNGO	CGK	V/ADMIN	mejumambungo@gmail.com 0707463483	
9	ALI CHALALA	CGK - WATER	Ag CWO	achalala@gmail.com	
10	SALAMA MUSA SULEIMAN	INTERIOR	ASST/CHIEF	salama2mus2001@gmail.com	

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COAST WATER WORKS DEVELOPMENT AGENCY
WATER FOR GENERATIONS

S/NO	NAME	ORGANIZATION	DESIGNATION	CONTACTS (EMAIL/MOBILE)	SIGNATURE
1	NGARE SAID KAMRAN			01048992942	
2	Hamisi Omari Mwarashidi				
3	DR BAKAR SULEIMAN			0701870028	
4	BAKARI NASSORO				
5	HASSAN JUMA			0726755193	
6.	SULEIMAN MWANYELE			0722 771831	
7	MOHAMED A. SIBABU		CHAIRMAN KAYA SIMILA	0710675863	
8	HAMISI SIMBI			0705076189	
9	SIKUKUU MWAISUMA			0712022833	
10	JUMA ALI TELLAH			0722326060	
11	SABITI NASSIR		V. CHAIRMAN	0716777991	SABITI
12	FRIDAOS KOMBO			0792581783	
13	Ali Saud Ngana		BISMAN	0724894964	
14	JUMA KIDA		BOM	0722852383	

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COAST WATER WORKS DEVELOPMENT AGENCY
WATER FOR GENERATIONS

STAKEHOLDER ENGAGEMENT FOR THE PROPOSED FAECAL SLUDGE MANAGEMENT FACILITY

ATTENDANCE LIST

TOPIC: RAP AWARENESS MEETING WITH LAND OWNERS

VENUE: NGOMBENI LOCATION CHIEF'S OFFICE **DATE:** 23/10/23 **TIME:** 11:00AM

S/NO	NAME	ORGANIZATION	DESIGNATION	CONTACTS (EMAIL/MOBILE)	SIGNATURE
1.	ALI MWAMGOMBA			0723262190	
2.	SAID ADDY MHINGO	Chairman EDC		0724031355	
3.	Mwanaisha Tengeza			0784536534	
4.	MAJUMAA ABDALLA VUNGA			0792327983	
5.	Hussein Mwavaolu	Kwamasco	CM	0733785944	
6.	ADNAN SWALEH ATHMANI	MOTAREX		0715530835	
7.	RASHIDI SALIMU RAMTU	CHAIRMAN		0702180896	
8.	SEIF ALI MAREMBO	CHAIRMAN		0113892396	
9.	MOHAMED S. NYOKA	KATA SIMILANI		0723988-316	
10.	KIBIBI M. MWATSUKA			0796948543	
11.	MWANAJUMA OMAR			0721179126	

S/NO	NAME	ORGANIZATION	DESIGNATION	CONTACTS (EMAIL/MOBILE)	SIGNATURE
1	ALI KHAMIS	MPs OFFICE	P. A	0700461444	
2	YUSUF A. SHWEKHLI	KWALE SUB-COUNTY HOSPITAL	CHAIR MAN (BOARD)	0705294865	
3.	HAMISI M. MATIMBO	W/ADM/S WATA/NGOMBENI	W/ADM	0725401921	
4.	Hon Tandaza Sora	MP. Matuga	National Assembly	0731966101	
5	NKABI MAJIBU	MEMBER	Member of COMMUNITY	0721258338	

E.2 - Questionnaires

CONSULTANCY SERVICES FOR DETAILED DESIGN REVIEW AND ADOPTION AND CONSTRUCTION SUPERVISION OF WATER DISTRIBUTION PIPELINES IN MOMBASA AND SANITATION FACILITIES IN MOMBASA SOUTH MAINLAND (LIKONI)

KEY INFORMANTS' QUESTIONNAIRE

Introduction

The Government of Kenya (GoK) through Coast Water Works Development Agency (CWWDA) has obtained funds from the French Development Agency (AFD) to implement "The Construction of Water Distribution Pipelines in Mombasa and Sanitation Facilities in Mombasa South Mainland (Likoni). Coast Water Works Development Agency (CWWDA) engaged Ingerop International Consultants in association with Howard Humphreys to provide engineering services for the project. one of the proposed components include Construction of a Faecal Sludge Management Facility in Ng'ombeni-Maweni Settlement Scheme in Mvwakani area. According to the Environmental Management and Coordination Act, 1999 and the Environmental (Impact Assessment and Audit) Regulations, 2003, the Consultant is required to prepare the Environmental and Social Impact Assessment Report and the Resettlement Action Plan. This involves undertaking stakeholder consultations to establish the views and concerns of the interested and/or affected stakeholders.

According to the Environmental Management and Coordination Act, 1999 and the Environmental (Impact Assessment and Audit) Regulations, 2003, the Consultant is required to prepare the Environmental and Social Impact Assessment Report and the Resettlement Action Plan. This involves undertaking stakeholder consultations to establish the views and concerns of the interested and/or affected stakeholders.

As an interested and/or affected stakeholder in the proposed project, you are requested to document your views, opinions and/or concerns regarding the proposed sanitation facility.

QUESTIONS

1. What are the benefits of the proposed project to the community?

- IT WILL HELP THE PROBLEM OF LIQUID WASTE MANAGEMENT IN DIANI - UKUNDA MUNICIPALITY
- IT WILL REDUCE CONFLICTS WHICH RESULTS FROM DUMPING SLUDGE IN PRIVATE LAND.

2. Do you think the proposed project will help in addressing the sanitation challenge being experienced in Likoni Sub County? YES ☐ NO ☐

If your answer to question 2 above is NO, what alternative solutions would you recommend?

3. What are the **negative** environmental and social impacts of the proposed project? Please provide possible mitigation measures to the negative impacts.

- NOISE POLLUTION DURING CONSTRUCTION - (Technical)
- AIR POLLUTION DURING OPERATION - (Technical)
- SOCIAL CONFLICT WITH KAYA - (Talk to wazee wa kaya)

During Construction phase:

Impacts	Mitigation Measures
-NOISE POLLUTION	- ENGINEER TO ADVICE.

During Operation phase:

Impacts	Mitigation Measures
-SOCIAL (INCOMPATIBLE LAND USE WITH THE KATA) - AIR POLLUTION (SMELL)	- HAVE INTENSIVE CONSULTATION WITH KATA PEOPLE - CHEMICAL ENGINEER TO ADVICE

4. Do you have any other comments regarding the proposed project?

HAVE THE BUFFER FULLY DEVELOPED BEFORE OPERATIONS BEGINS.

5. Do you support the proposed project? YES ☑ NO ☐

If your answer to question (5) above is no, please provide your reasons below

Name:	
Occupation:	SENIOR PHYSICAL PLANNER
Contact details (Email/Phone No):	0710486824
Name of Organization/Institution/~~Business~~):	KWALE COUNTY
Signature:	
Date:	16/08/2023.

The End. Thank you.

SML Likoni FSTP ESIA

Introduction

What is the date?

yyyy-mm-dd

Name of enumerator?

Victor

Sub-County

- ( ) Matuga
- (•) Likoni

Location

- (•) Shika Adabu
- ( ) Ng'ombeni

Village

Vijiweni

PERSONAL PROFILE

Name of the respondent

Juma idd

Contact of the respondent

112620348

National Identification Number

5329382

Type of respondent

- (•) Household
- ( ) Business
- ( ) Institution
- ( ) If other,

Gender

- (●) Male
- ( ) Female

Age group

- ( ) 18-30
- ( ) 31-40
- ( ) 41-50
- ( ) 51-60
- (●) 61-70
- ( ) Above 70

Education Level

- ( ) Primary
- (●) Secondary
- ( ) Tertiary/college
- ( ) University

Marital Status

- ( ) Single
- (●) Married
- ( ) Separated
- ( ) Divorced
- ( ) Widow or widower

What is your occupation?

Hustler

What is your religious affiliation?

- (●) Muslim
- ( ) Christian
- ( ) Hindu
- ( ) Other

HOUSEHOLD CHARACTERISTICS

What type of house do you reside in?

- ( ) Single room
- ( ) One bedroom
- ( ) Two bedroom
- (•) Three bedroom
- ( ) If other,

Who is the head of the household?

- (•) Father
- ( ) Mother
- ( ) Sibling
- ( ) If other,

How many persons live in the home?

8

How many are male?

5

How many are female?

3

What is the main source of income in your household?

- [ ] Salary from formal employment
- [ ] Wages from informal employment
- [x] Self employment
- [ ] Allowance/contribution from family members
- [ ] If other,

What is the average household monthly income?

- ( ) Below 10,000
- (•) 10,001-20,000
- ( ) 20,001-30,000
- ( ) Above 30,000

What is the most common disease in the family?

- ○ Cholera
- ○ Typhoid
- ◉ Malaria
- ○ If other,

What is the main mode of human waste and wastewater disposal?

- ◉ Pit Latrine
- ○ Cess pool
- ○ Sewer line
- ○ Septic tank

PROJECT CHARACTERISTICS

Are you aware about the proposed project?

- ○ Yes
- ◉ No

Do you support the project?

- ◉ Yes
- ○ No

What do you think are the environmental and social benefits of the proposed project?

- ☐ Improved Aesthetics
- ☑ Rehabilitation of abandoned quarry sites
- ☑ Improved sanitation
- ☑ Provision of water and manure for irrigation
- ☐ Increased employment opportunities
- ☐ Increased business opportunities

What do you think are the negative environmental and social impacts?

- ☐ Loss of flora and fauna
- ☐ Degradation of air quality
- ☐ Noise pollution
- ☑ Loss of livelihood and displacement
- ☑ Traffic nuisance
- ☑ Accidents/injury during construction

What would you recommend as the mitigation measures to the negative impacts mentioned above?

Create employment for the villagers

If you were to have a sewer network, would you be willing to pay for a connection?

- (●) Yes
- ( ) No

If No, give your reason

APPENDIX F – Project Cost Breakdown

Bill No.	Description		Amount (KES.)	Amount (EUR.)
1A	Preliminary and General		170,222,900	1,190,369.94
1B	Dayworks		5,302,590	37,081.05
2	Discharge Bay		1,589,093	11,112.54
3	Sludge Thickening Tank		21,154,742	147,935.26
4	Anaerobic Ponds		13,444,508	94,017.54
5	Facultative Ponds		42,984,119	300,588.25
6	Maturation Ponds		20,962,640	146,591.89
7	Constructed Wetlands		13,101,663	91,620.03
8	Sludge Drying Beds		99,068,111	692,784.00
9	Composting Facility *(Provisional)*		3,135,860	21,929.10
10	Solar Drying Facility *(Provisional)*		24,978,900	174,677.63
11	Briquetting Facility *(Provisional)*		24,593,350	171,981.47
12	Administration Block		2,926,829	20,467.34
13	Senior Staff House		4,840,240	33,847.84
14	Junior Staff House		6,098,490	42,646.79
15	Site Works and Ancillaries		97,203,572	679,745.26
Bills Total Exclusive of VAT		**(A)**	**551,607,608**	**3,857,395.87**
Add 10% of (A) for Contingencies		(B)	55,160,761	385,739.59
Bill Total Inclusive of Contingencies		**(C)**	**606,768,368**	**4,243,135.45**
Value Added Tax (VAT) – 16% of (C)		(D)	97,082,939	678,901.68
TOTAL COST			**703,851,307**	**4,922,037.12**

APPENDIX G - EIA License – Water Supply Component

nema HQ: 0015050

nema
mazingira yetu | uhai wetu | wajibu wetu

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENTAL IMPACT ASSESSMENT LICENSE

License No: **NEMA/EIA/PSL/24224**

Application Reference No: **NEMA/EIA/PSR/33512**

This is to certify that the Environmental Impact Assessment Project Report received from

Coast Water Works Development Agency (CWWDA)

P.O Box 90417 – 80100, Mombasa, Kenya

submitted to the National Environment Management Authority in accordance with the Environmental Impact Assessment & Audit Regulations, 2003 regarding the:

South Mainland Water Distribution Pipelines & Ablution Blocks.

whose objective is to carry on

To improve water distribution pipeline network and sewerage management in Mombasa South Mainland.

located at

Likoni Division of Mombasa South Mainland

has been reviewed and a license is hereby issued for the implementation of the project, subject to attached conditions.

Issue date : **23 February, 2023**

Signature

(seal)

23 FEB 2023

for :**Director-General**
The National Environment Management Authority.