COAST WATER WORKS DEVELOPMENT AGENCY

REPUBLIC OF KENYA

CONSULTANCY SERVICES FOR CONSTRUCTION SUPERVISION OF THE THREE (3) REPLACEMENT BOREHOLES AT BARICHO

CONTRACT NO. CWSB/WSPD/C/1/2018

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT

OCTOBER 2019

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CLIENT/PROPONENT: Coast Water Works Development Agency (CWWDA)

PROJECT NAME: Consultancy Services for Construction Supervision of the Three (3) Replacement Boreholes at Baricho

Contract No. CWSB/WSPD/C/1/2018

REPORT TITLE: Environmental and Social Impact Assessment (ESIA) Report.

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Acronyms and Abbreviations

CWWDA	Coast Water Works Development Authority
ACC	Assistant County Commissioner
AIDS	Acquired Immunodeficiency Syndrome
CBO	Community Based Organization
CH_4	Methane
CO_2	Carbon Dioxide
CWSB	Coast Water Services Board
EMCA	Environment Management and Coordination Act
EMC	Environment Management and Coordination
ESMMP	Environmental and Social Mitigation and Management Plan
ESMP	Environmental and Social Monitoring Plan
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
CPP	Consultations and Public Participation
GoK	Government of Kenya
GHG	Greenhouse Gases
HIV	Human Immunodeficiency Virus
IC	Individual Service Connection
ID No.	Identity Card Number
KAPP	Kenya Agricultural Productivity
K.Shs.	Kenya Shillings
KFS	Kenya Forestry Service
KWS	Kenya Wildlife Service
m^3	cubic metres
Mbgl	metres below ground level
MDG	Millennium Development Goals
PPE	Personal Protective Equipment
STD	Sexually Transmitted Diseases
UFW	Unaccounted for Water
VOCs	Volatile Organic Compounds

WRMA	Water Resources Management Authority
WSB	Water Services Board
WSP	Water Services Provider
WSS	Water Supply and Sanitation Services
WSSD	World Summit for the Social Development

Executive Summary

Background

The development proponent; the Government of the Republic of Kenya (GoK) through its implementing agency; Coast Water Works Development Agency(CWWDA) formerly Coast Water Services Board engaged the services of Wanjohi Mutonyi Consult Ltd (WMCL) hereinafter referred to as " Consultant"; a firm of EIA/EA Experts, to undertake an update of the environmental and social impact assessment report. During implementation of a previous contract, severe flooding occurred at the Baricho well fields where the site is situated. This flooding damaged existing wells herein referred to as BH1, BH3 and BH4. This necessitated the extension of scope of work on the existing site to include replacement of the damaged wells.

An ESIA had already been completed by Zamconsult Consulting Engineers and approved by NEMA for the work being executed and has been widely referenced in this report.

The process is closely guided by the requirements addressed to CWWDA by NEMA via letter ref NEMA/CDE/KLF/34/Vol.1 dated 19th August 2019. Further, the exercise has been undertaken in accordance with the provisions of Environmental Management and Coordination Act (EMCA, 1999)/EMCA (amendment) act 2015 and Environmental (Impact Assessment and Audit) (amendment) Regulations 2016.

In accordance with the second schedule of EMCA 1999, legal notice 50, Kenya Gazette Supplement No. 137, the project is categorized as a "medium risk project-category 3(a)" and hence, is subject to environmental impact assessment.

The Coast Water Works Development Agency (CWWDA), formerly Coast Water Services Board (CWSB) is a Parastatal (Government Owned and Autonomous) created under Water Act, 2002 and established through a Gazette Notice No. 1328 of 27th February 2004.

CWWDA (or the Board) is the agency charged with the responsibility for the effective and efficient provision of water and sanitation services within the Coast region. The Board undertakes this by contracting Water Service Providers.

CWWDA, as part of its mandate to provide bulk water to the population under its jurisdiction has augmented water supply to Mombasa, Malindi, Kilifi and Gongoni areas by drilling 11 No. boreholes at the Sabaki well fields in Baricho. Due to a flooding incidence in 2018, damage to most of the boreholes was reported necessitating replacement of the damaged boreholes in phases.

The three boreholes (BH1, BH2, BH3) anticipated for replacement under this project are amongst the 11 boreholes at Sabaki well fields. After occurrence of the April 2018 floods, the entire Baricho plant was shut down for two (2) weeks to allow for the flood levels to subside. CWWDA has since repaired BHs 5, 6, 7 and brought into operation BHs 9, 10, and 11. Borehole BH2 is currently under reinstatement and the repairs are almost complete.

It is anticipated that with replacement of the three damaged boreholes and secondary protection of the boreholes, they will be reinstated to their original production capacity of 11,000 m^3/day each (totalling to 33,000 m^3/day).

The Project is situated at the Baricho water works, 40 km west of Malindi Town in Lango Baya Location, Malindi Sub-county in Kilifi County. The well fields are positioned in the alluvial flood plain of the Sabaki River, the borehole head works will be located in land belonging to CWWDA and therefore, no land acquisition is anticipated.

The table bearing the coordinates of the proposed boreholes is shown below:

Table 0-1: Coordinates of the proposed Replacement Boreholes

Borehole	Latitude	Longitude
Borehole BH1	N 9654812.461	E 585865.5410
Borehole BH3	N 9654835.582	E 586040.236
Borehole BH4	N 9655486.258	E 587374.639

A detailed baseline inventory of the project area's environmental and socio-economic aspects is presented under chapter three of this report.

A generally location map of the project area is presented below.

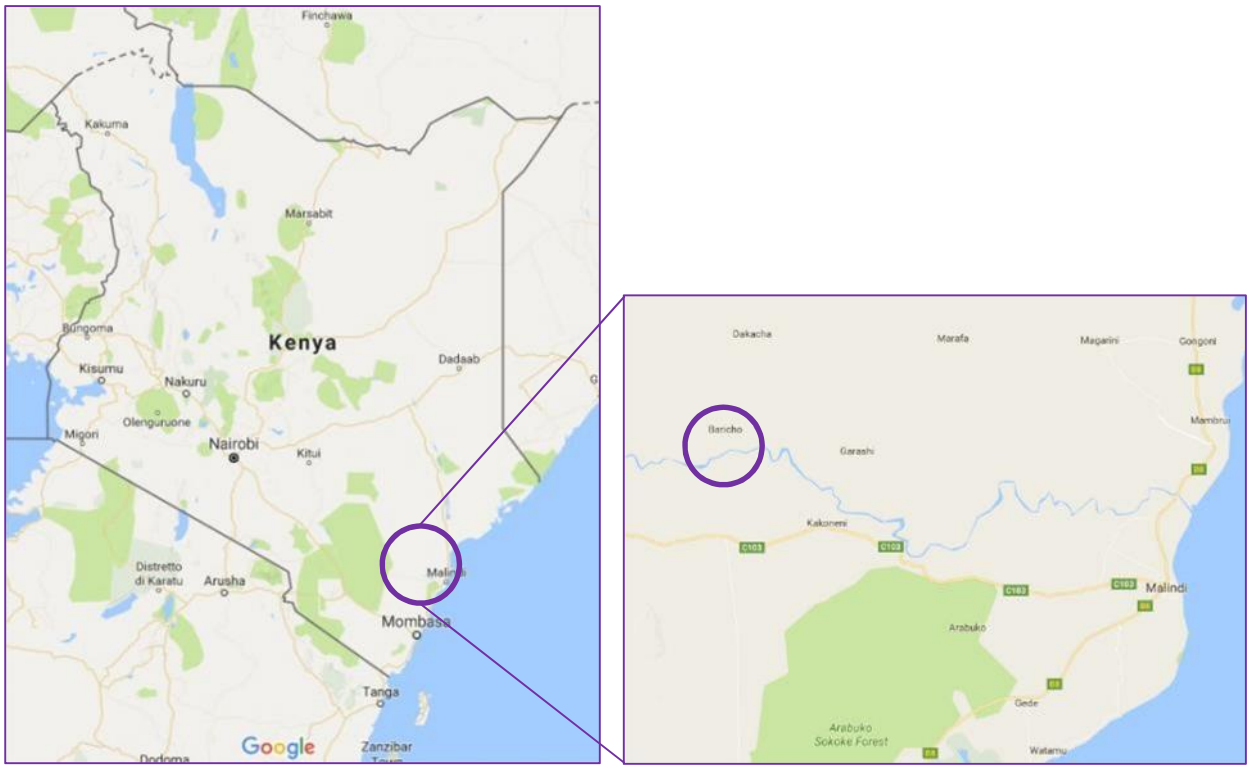


Figure 0-1: Map Showing the Location of the Project Area

A summary of the scope of works under the contract includes but not limited to the following:-

- Drilling of three (3) new replacement boreholes in the Sabaki Well field near Baricho.
- Borehole equipping /mechanical and electrical equipment installation.
- Borehole head-works and connection to the existing DN 500 well collector pipeline.
- Construction of an Earth embankment of selected excavated material.
- Gabion protection works.
- Finished land installation and landscaping.

Study Methods

The study approach and methodology adopted included screening and scoping to determine the extent of the project and desktop data search and analysis for the baseline bio-physical and social environmental parameters of the project area. In addition, the Consultant worked with the project design group and was briefed and obtained design

approaches to be used which informed the requirements of the environmental reporting process and for which excerpts have been obtained on salient design information.

The Consultant engaged on multi-faceted public consultation process which included interpersonal consultations/direct interviews with the project stakeholders and use of structured questionnaires. Based on these findings and expert judgment , the Consultant has compiled the projected social and environmental impacts (positive and negative) likely to emanate from proposed project activities and also the Environmental and Social Mitigation/ Management and Monitoring Plan (ESMMP) which details how adverse impacts will be reduced or eliminated and by whom.

Legislative Framework for this Study

The principal National legislation governing issues of environmental concern in Kenya is the Environmental Management & Coordination (Amended) Act typically referred to as EMCA. EMCA calls for Environmental Impact assessment (EIA) (under Section 58) to guide the implementation of environmentally sound decisions and empowers stakeholders to participate in sustainable management of the natural resources. Projects likely to cause environmental impacts require that an environmental impact assessment to be carried out. It is under this provision that the current process has been undertaken.

Other legislation adhered to during this process are the regulations borne of EMCA namely the Environmental Impact Assessment and Audit(amended) Regulations 2016; The EMC (Waste Management) Regulations 2006; the EMC (Water Quality) Regulations 2006; and the EMC (Noise and Excessive vibration pollution Control) Regulations 2009 (Legal Notice 61), Air quality Regulations 2009 among others.

Sectoral legislation applicable to this Project include; The Lands Act (2012), the National Land Commission (2012), The Public Health Act (CAP. 242), and the Physical Planning Act (Cap 286) among others.

In addition to the local legislation, the Consultant identified the various World Bank operational policies relevant to the project. These are highlighted under chapter two (2) of this report.

A detailed review of the legislature, legal and policy framework is presented under chapter two of this report.

Expected impacts

The expected impacts emanate from the Construction Phase, the Operation phase and the De-commissioning Phase of the project.

In general, successful implementation of the project will have high socioeconomic benefits to the people and will contribute to their health and well-being. Overall, negative expected impacts are related to the boreholes and associated infrastructure such as, electro-mechanical works and borehole head works. These impacts are localized and not considered significant and long-lasting and can be mitigated through appropriate mitigation measures. The severity and duration of these impacts can be minimized by ensuring that the drilling, excavation and construction works are limited to short working sections, and that works are carried out rapidly and efficiently.

Construction Phase impacts are generally significant in magnitude and socially and environmentally adverse but are also reversible, short-term largely manageable and confined to the well field. Construction camp impacts include generation and inappropriate disposal of solid and liquid wastes, haphazard exploitation of natural resources in the surrounding areas e.g. trees for firewood, increased spread of Sexually Transmitted Diseases (STD) and HIV/AIDs and change of cultural norms from migrant workers.

Construction work impacts include noise, dust and loss of flora and fauna. Positive construction phase impacts include economic boost from injected construction money which is spent in the local environment for purchasing food and other supplies, rental accommodation and local travel. Also, there will be opportunity for skills transfer and skills acquisition.

Operation phase impacts will largely be positive benefits accruing from operation of improved water supply. These include less water-borne disease, improved access to water, improved comfort and regional prosperity. There will be overall improved quality of life due

to multiplier benefits of improved service delivery. However, significant adverse impacts from operations include solid waste disposal from the facilities, bursts and leaks from poor maintenance.

De-commissioning of the Project is not envisaged. Project components however will be rehabilitated over time having served their useful life.

Environmental and Social Mitigation and Management Plan (ESMMP)

This was prepared to reduce, minimize or altogether eliminate the adverse negative impacts. Positive impacts are project enhancements and do not require mitigation.

Table 0-2: ESMMP

Environmental / Social Impact	Mitigation Action Plan	Responsibility
Loss of flora and fauna	• Site clearance should be limited to the minimum area required for the execution of the works. • Records of the number and tree species cut to be kept. • Replanting of indigenous trees after the project is completed. • Top soil removed from the boreholes should be stockpiled and spread about after completion of work to facilitate regrowth of existing vegetation so as to rehabilitate the ecosystem	Contractor Contractor Supervisor – project Engineer to consult KFS on appropriate replanting seedlings Sub-County Environmental officer
Air pollution	• Vehicles and other equipment emissions should be kept to a minimum by servicing and maintaining the equipment to manufacturer's specification. In, addition, the contractor should be encouraged to use unleaded and low sulphur content petrol and diesel respectively for all equipment and vehicles	Contractor Supervising Engineer

Environmental / Social Impact	Mitigation Action Plan	Responsibility
Noise and Dust	• Use protective clothing like helmets and dust masks on construction crew. • Avoid night time construction when noise is loudest. • Avoid night-time construction using heavy machinery, from 22:00 to 6:00 near residential areas; • No discretionary use of noisy machinery within 50m of residential areas and other sensitive institutions; • Good maintenance and proper operation of construction machinery to minimize noise generation; • Installation of temporary sound barriers if necessary.	Contractor Supervising Engineer
Generation of solid and liquid waste	• Provide adequate waste disposal facilities. Ensure collection of all solid waste from generation points, safe transportation to a central point where they are sorted out and safely disposed according to type to protect the environmental resources. • Put in place adequate and efficient sanitary facilities for handling liquid waste especially waste water to protect the ground water from pollution. • Wastewater from residential quarters and offices to be directed to constructed septic tanks for safe handling. • Pit latrines can be used in areas where the other services are not available or feasible	Contractor Supervising Engineer
Pollution of water resources	• Ensure proper solid and liquid wastes disposal mainly from the construction camps and offices. • Ensure proper measures are in place for collection and disposal of spilled oils and lubricants.	Contractor, Supervising Engineer Engineer in charge

Environmental / Social Impact	Mitigation Action Plan	Responsibility
		of Baricho
Health and safety	• Provision of Personal Protective Equipment (ear muffs, gloves and helmets) for the construction crew • Provide First aid kit and appropriate procedures and safety measures • Provide condom dispensers at appropriate locations coupled with awareness campaigns to workers and surrounding communities on HIV/AIDS throughout the construction period	Contractor Supervising Engineer CWWDA - Environmental Department

Detailed analysis of the expected impacts, their mitigation, management and monitoring is presented under chapters seven (7), eight (8) and nine (9) of this report.

Conclusions and recommendations

Conclusions

From an environmental and social point of view, the drilling and operation of the three replacement boreholes at Baricho will not have adverse levels of negative environmental and socio-economic impacts. An Environmental and Social Mitigation/Management and Monitoring Plan has been devised to aid the project implementers with a clear guideline into ensuring that all potential negative impacts are mitigated at the earliest time possible. An ESMMP budget totaling to Kes 5.8 Million has been devised to aid in the implementation of the ESMMP.

In view of the conclusions and recommendations outlined under chapter ten of this report, NEMA should consider issuing an EIA license to the project proponent to facilitate commencement of the project which is eagerly awaited by the beneficiaries.

Recommendations

This report recommends the following;

1. The proponent, supervising Consultant and the contractor must adhere and implement in full the proposed Environmental and Social Mitigation/Management and Monitoring Plan. Its implementation must be monitored continuously by the representatives of the engineer and contractor to ensure total compliance.
2. The proponent must observe strict adherence to the legislations discussed under chapter two (2) of this report.
3. The contractor should prepare site specific ESMP for the camp site and submit the same to NEMA for issuance of EIA license. The ESMP should address the management action plans discussed under chapter eight of this report.
4. The proponent must adhere to the conditions that will be attached to the EIA license and must confirm adherence in writing to the Director General-NEMA.
5. The Contractor is advised to engage an environmentalist/social expert to monitor the implementation of the ESMMP by carrying out self-audits on a pre-agreed schedule.
6. The proponent and the supervising Consultant through their representatives should carry out control audits to ensure that the ESMMP is being implemented fully.
7. Good relations, between the contractor, the local community and other stakeholders, will need to be established and sustained throughout the construction period.

1.0 INTRODUCTION

1.1 General

The development proponent; the Government of the Republic of Kenya (GoK) through its implementing agency; Coast Water Works Development Agency(CWWDA) formerly Coast Water Services Board engaged the services of Wanjohi Mutonyi Consult Ltd (WMCL) hereinafter referred to as " Consultant"; a firm of EIA/EA Experts, to undertake an update of the environmental and social impact assessment report.

The Coast Water Works Development Agency (CWWDA) formerly Coast Water Services Board(CWSB) is a Parastatal (Government Owned and Autonomous) created under Water Act, 2002 and established through a Gazette Notice No. 1328 of 27th February 2004.

CWWDA (or the Board) is the agency charged with the responsibility for the effective and efficient provision of water and sanitation services within the Coast region. The Board undertakes this by contracting Water Service Providers.

Seven Water Services Providers (WSPs) whose areas of jurisdiction correspond with the seven initial districts of Coast Province, namely, Mombasa, Malindi, Kilifi, Kwale, Taita and Taveta, Lamu and Tana River have been appointed by the Board to provide water and sanitation services in their respective jurisdictions. The WSPs are Mombasa Water and Sanitation Company (MOWASCO), Malindi Water and Sanitation Company (MAWASCO), Kilifi Water and Sanitation Company (KIMAWASCO), Kwale Water and Sanitation Company (KWAWASCO), Taita and Taveta Water and Sanitation Company (TAVEVO), Lamu Water and Sanitation Company (LAWASCO) and Tana River respectively.

Unlike in other parts of the country, CWWDA is also the water undertaker for the Coastal Bulk Water Supply System. Additionally, the Board is the asset holder of all public water and sanitation facilities within its area of jurisdiction.

The Sabaki Well fields provide bulk water to Mombasa, Malindi, Watamu and Kilifi.

The three boreholes (BH1, BH3, BH4) anticipated for replacement under this project are amongst the 11 boreholes at Sabaki well fields. After occurrence of the April 2018 floods, the entire Baricho plant was shut down for two (2) weeks to allow for the flood levels to subside. CWWDA has since repaired BHs 5, 6, 7 and brought into operation BHs 9, 10, and 11. Borehole BH2 is currently under reinstatement and the repairs are almost complete.

1.2 Methodology of Work

The ESIA was undertaken at a level that was considered to be commensurate with the scale, complexity and sensitivity of the project. The key stages in the process included proposal definition, screening, scoping, key informant and stakeholder consultations, impact assessment, mitigation, review, decision-making and monitoring. For this ESIA to be good, recommendations have been integrated into the project development process. This should not be seen as a barrier to development or as an unnecessary cost. As well as being a stepping-stone to consent from environmental regulators and financial backers, it is a management tool for use during project planning and execution and will help avoid unnecessary impacts, delays and unexpected costs.

The Consultant used a holistic approach to obtain the necessary baseline data and information on the below-listed aspects of the ESIA. An in-depth desk study, field observation, and wide consultation with stakeholders, key informant and stakeholder direct interviews and administration of structured questionnaires were carried out so as to obtain the requisite data and information on the following themes:

- Human Environment including; Socio-economic, Socio-cultural and Socio-legal.
- Natural Environment including Flora, Fauna, Soil, Water, Air, Climate and Landscape.
- Built environment including Material Assets, Historical/Archaeological Sites and Monuments.
- Aesthetic Environment and,
- Archaeological Environment.

The Consultant used the available information to derive or predict or assess impacts and classify them under human, natural and built environment at pre-construction stage, Construction Stage and Operation stage of each project sub-component.

Any negative impact was widely assessed and the most suitable mitigation measure apportioned as a solution to the problem. Positive impacts were noted as such and further reinforced by statements of actions that enhance their productivity and sustainability in the development process during and after the implementation of the project.

ESIA was done for all the stages of the project including mobilization, site clearing and other pre-construction activities, construction, operation and maintenance and monitoring phases of the project components.

2.0 LEGISLATIVE, REGULATORY AND POLICY FRAMEWORK

2.1 General

There are many laws and regulations governing issues of environmental concern in Kenya. The principal National legislation is the Environmental Management & Coordination Amended Act of 2015 typically referred to as EMCA. EMCA empowers stakeholders to participate in sustainable management of the natural resources. It calls for Environmental and Social Impact assessment (ESIA) to guide the implementation of environmentally sound decisions. Projects likely to cause environmental impacts require that an environmental impact assessment to be carried out. It is under this provision that the current exercise is being undertaken.

The following is an outline of the legislative, policy and regulatory framework for which the Proponent and the contractor shall observe and implement in an effort to comply with Environmental Sustainability.

2.2 The Environmental Management and Coordination (Amended) Act Of 2015

This Act is an amendment of the Environmental Management and Co-ordination Act of 1999. The amended Act covers virtually all diverse environmental issues which require a holistic and coordinated approach towards its protection and preservation for the present generation without compromising on the interests of the future generation to enjoy the same. Consequently, the amended act provides for the legal regime to regulate, manage, protect and conserve biological diversity resources and access to genetic resources, wetlands, forests, marine and freshwater resources and the ozone layer to name a few.

The Environmental Management and Coordination (Amended) Act, 2015 harmonizes the various requirements of the other existing laws and regulations by stipulating that where the provisions of any existing law conflicts with itself, then the provisions of the Environmental Management and Coordination (Amended) Act, 2015 shall prevail. This way, the act is able to minimize any conflicts in enforcement of the various environmental laws and regulations as applied to the relevant sectors. The Environmental Management and Coordination

(Amended) Act, 2015 represents the culmination of a series of initiatives and activities coordinated by Government and stakeholders. It accentuates the right of every person in Kenya to live in a clean and healthy environment and obliges each and every one to safeguard and enhance the environment. It is the master plan for the environment in Kenya and contains a National Environment Policy, Framework Environmental Legislation and Environmental Strategy.

The Act gives power to the National Environment Management Authority (NEMA) which is a semi-autonomous government agency mandated to exercise general supervision and coordination over all matters relating to the environment and to be the principal instrument of the Government of Kenya in the implementation of all policies relating to the environment. NEMA is the body in charge of ensuring developments adhere to the policies and frameworks set out by the Authority.

Section 58 (1) of the Act requires all project proponents to submit a project report to the authority if the project is listed in the second schedule of the Act before they can be issued with a license to commence implementation. On analysis of the project report submitted to the Authority, recommendations will be made as to whether an EIA study of the proposed project should be undertaken, the Authority will review the report and issue a license on such terms and conditions as may be appropriate to facilitate sustainable development and sound environmental management.

The amended act highlights the need for an ESIA which is presented in this report.

The Act has several regulations that aid in its implementation the relevant regulations are highlighted in the sections below:

2.1.1 Environmental (Impact Assessment and Audit) Amended Regulations 2016

These Regulations stipulate the importance of conducting an ESIA as well as the procedure. The Regulations highlight the various reports and their contents to be submitted to NEMA for licensing. The regulations highlight the ESIA process which includes:

- Submission of an ESIA project report to NEMA for review or licensing.

- In some cases the Authority will request for a full study report for some projects for which the applicant will be required to prepare a Terms of Reference and submit a study report.

The project and study reports will be conducted before the implementation of the development in question, the reports will be subject to approval by NEMA. The regulations also calls for Environmental auditing and monitoring that will be carried out during the construction or operation of the enterprise, the regulations provide the format of the audit report which will be provided to NEMA. In 2017, NEMA, via press release, announced the scrapping of the 0.1% NEMA license fee for review of EIA report.

2.1.2 EMC (Water Quality Regulations), 2006

Water Quality Regulations apply to water used for domestic, industrial, agricultural, and recreational purposes; water used for fisheries and wildlife purposes, and water used for any other purposes. Different standards apply to different modes of usage. These regulations provide for the protection of lakes, rivers, streams, springs, wells and other water sources. The water provided by the water treatment plant should meet the requirements of these regulations. The standard of water is summarized in the table below:

Table 2-1: Water Quality Standards

Parameter	Guide Value (Max Available)
pH	6.5 – 8.5
Suspended solids	30 (mg/L)
Nitrate-NO_3	10 (mg/L)
Ammonia –NH_3	0.5 (mg/L)
Nitrite –NO_2	3 (mg/L)
Total Dissolved Solids	1200 (mg/L)
Scientific name (E.coli)	Nil/100 ml
Fluoride	1.5 (mg/L)
Phenols	Nil (mg/L)
Arsenic	0.01 (mg/L)
Cadmium	0.01 (mg/L)

Parameter	Guide Value (Max Available)
Lead	0.05 (mg/L)
Selenium	0.01 (mg/L)
Parameter	**Guide Value (Max Available)**
Copper	0.05 (mg/L)
Zinc	1.5 (mg/L)
Alkyl benzyl sulphonates	0.5 (mg/L)
Permanganate value (PV)	1.0 (mg/L)

The water from the wells will have to meet these standards within the treatment works before distribution. The treatment works at Baricho have been designed to meet these standards.

2.1.3 EMC (Waste Management) Regulation, 2006

The Waste Management Regulations are meant to streamline the handling, transportation and disposal of various types of waste. The aim of the Waste Management Regulations is to protect human health and the environment. The regulations place emphasis on waste minimization, cleaner production and segregation of waste at source.

These regulations will be of great importance particularly during the construction phase of the project. During the Construction, the Contractor will have to meet the requirements of the regulations, by providing solid and liquid waste sorting, disposal and transportation using a licensed transporter who will dispose of the solid waste to the designated receptacle.

2.1.4 EMC (Noise and Excessive Vibration Pollution Control) Regulations, 2009

These Regulations determine the level of noise that will permissible in particular during the construction of pipelines and associated structures, the following factors will be considered:

- Time of the day;
- Proximity to residential area;
- Whether the noise is recurrent, intermittent or constant;
- The level and intensity of the noise;

- Whether the noise has been enhanced in level or range by any type of electronic or mechanical means; and,
- Whether the noise is subject to be controlled without unreasonable effort or expense to the person making the noise.

The Contractor will have to meet the requirements of these regulations particularly during the construction process, where some of the construction activities are bound to make some level of noise. These regulations are summarized in the table below:

Table 2-2: Table showing Permissible Noise Level for a Construction Site

Facility		**Local Maximum Noise Level Permitted in Decibels**	
		Day	**Night**
1.	Health facilities, educational institutions, homes for disabled etc.	60	35
2.	Residential areas	60	35
3.	Areas other than 1 and 2 above	75	65

In addition the IFC regulations for permissible noise levels are summarized in the table below:

Table 2-3: IFC regulations for permissible noise levels

Facility		**Maximum Noise Level Permitted in Decibels**	
		Day	**Night**
1.	Residential; institutional; educational	55	45
2.	Industrial; commercial	70	70

Comparatively both regulations are relatively similar, as such the local regulations will be used.

2.1.5 Draft EMC (Air Quality) Regulations, 2009

The objective of the Regulations is to provide for prevention, control and abatement of air pollution to ensure clean and healthy ambient air. It provides for the establishment of emission standards for various sources such as mobile sources (e.g. motor vehicles, drills) and stationary sources such as the improvements made to the storm water outlets. The Contractor will have to ensure all his machinery do not exceed the emissions made in the regulations (presented in the first schedule of the regulations). The Contractor's plant must meet the requirements of these regulations.

2.3 Water Act 2016

This Act is an update of the Water Act of 2002. It makes provision for the provision of clean and safe water in adequate quantities and to reasonable standards of sanitation for all citizens.

The Act gives power to Water Works Development Agencies which are charged with:

a. Undertaking the development, maintenance and management of the national public water works within its area of jurisdiction.
b. Operating the waterworks and providing water services as a water service provider, until such time as responsibility for the operation and management of the waterworks are handed over to a county government, joint committee, authority of county governments or water services provider within whose area of jurisdiction or supply the waterworks is located.
c. Providing a reserve capacity for purposes of providing water services where pursuant to section 103, the Regulatory Board orders the transfer of water services functions from a defaulting water services provider to another licensee.
d. Providing technical services and capacity building to such county governments and water services providers within its area as may be requested; and
e. Providing to the cabinet secretary technical support in the discharge of his/her functions under the constitution of this Act.

2.4 The Public Health Act (Cap. 242)

Part IX Section 8 & 9 of the Act states that no person/institution shall cause nuisance or condition liable to be injurious or dangerous to human health. Any noxious matter or waste water flowing or discharged into a water course is deemed as a nuisance. Part Xll Section 136 states that all collections of water, sewage, rubbish, refuse and other fluids which permits or facilitates the breeding or multiplication of pests shall be deemed nuisances The Act addresses matters of sanitation, hygiene and general environmental health and safety.

2.5 The Land Act, No. 6 Of 2012

Under section 19. (1) The Commission shall make rules and regulations for the sustainable conservation of land based natural resources.

(2) Without limiting what the Commission may prescribe under subsection (1), the rules and regulations may contain;

a. Measures to protect critical ecosystems and habitats;
b. Incentives for communities and individuals to invest in income generating natural resource conservation programmes;
c. Measures to facilitate the access, use and co- management of forests, water and other resources by communities who have customary rights to these recourses;
d. Procedures for the registration of natural resources in an appropriate register;
e. Procedures on the involvement of stakeholders in the management and utilization of land- based natural resources; and
f. Measures to ensure benefit sharing to the affected communities.

2.6 Land Registration under Land Act, 2012

Under section 5 (1) of the land act, 2012 there shall be the following forms of land tenure-

a. Freehold;
b. Leasehold;

c. Such forms of partial interest as may be defined under this Act and other law, including but not limited to easements; and
d. Customary land rights, where consistent with the Constitution.

(2) There shall be equal recognition and enforcement of land rights arising under all tenure systems and non-discrimination in ownership of, and access to land under all tenure systems. Title to land may be acquired through;

a. Allocation;
b. Land adjudication process;
c. Compulsory acquisition;
d. Prescription;
e. Settlement programs;
f. Transmissions;
g. Transfers;
h. Long term leases exceeding twenty one years created out of private land; or
i. Any other manner prescribed in an Act of Parliament.

Under section 8 (a), the Land Commission shall identify public land, prepare and keep a database of all public land, which shall be geo-referenced and authenticated by the statutory body responsible for survey;

(d) May require the land to be used for specified purposes and subject to such conditions, covenants, encumbrances or reservations as are specified in the relevant order or other instrument.

Section 9 (1) states that any land may be converted from one category to another in accordance with the provisions of this Act or any other written law.

(2) Without prejudice to the generality of subsection (1);

a. Public land may be converted to private land by alienation;
b. Subject to public needs or in the interest of defense, public safety, public order, public morality, public health, or land use planning, public land may be converted to community land;

c. Private land may be converted to public land by;
   (i) Compulsory acquisition;
   (ii) Reversion of leasehold interest to Government after the expiry of a lease; and
   (iii) Transfers; or
   (iv) Surrender.
d. Community land may be converted to either private or public land in accordance with the law relating to community land enacted pursuant to Article 63(5) of the Constitution.

(3) Any substantial transaction involving the conversion of public land to private land shall require approval by the National Assembly or county assembly as the case may be.

2.7 Way Leaves under Land Act, 2012

Subject to and in accordance with section 143 (1) and section 146, the Commission may, create a right of way which shall be known as public right of way.

144.(1) Unless the Commission is proposing on its own motion to create a way leave, an application, for the creation of a way leave , shall be made by any State department, or the county government, or public authority or corporate body, to the Commission.

(2) An application shall be made in the prescribed form and shall be accompanied by any prescribed information or other information that the Commission may, in writing require the applicant to supply and the Commission shall not begin the process of creating a way leave until all prescribed or required information has been submitted to it.
(3) In order to enable a proposed way leave to be created by the Commission of its own motion to comply with the provisions of this section, the Commission shall complete an application form as if it were applying to create a way leave and references to "the applicant" in this Subpart in relation to an application to create a way leave shall be taken to apply as well to the Commission.

(4) The applicant shall serve a notice on: - (a) all persons occupying land over which the proposed way leave is to be created, including persons occupying land in accordance with customary pastoral rights;

(b) The county government in whose area of jurisdiction land over which the proposed way leave is to be created is located;

(c) All persons in actual occupation of land in an urban and per-urban area over which the proposed way leave is to be created; and

(d) Any other interested person.

(5) The Commission shall publish the application along the route of the proposed way leave calculated to bring the application clearly and in a comprehensible manner to the notice of all persons using land over which the proposed way leave is likely to be created.

A county government, an association, or any group of persons may make an application to the commission for a communal right of way on accordance to section 145 (1).

2.8 Land Acquisition under Land Acts 2012

Under section 110 (1) of Land Acts 2012, Land may be acquired compulsorily under this Part if the Commission certifies, in writing, that the land is required for public purposes or in the public interest as related to and necessary for fulfillment of the stated public purpose.

Part 2 of this section states that if, after land has been compulsorily acquired the public purpose or interest justifying the compulsory acquisition fails or ceases, the Commission may offer the original owners or their successors in title pre-emptive rights to re-acquire the land, upon restitution to the acquiring authority the full amount paid as compensation.

Section 111 (1) states that if land is acquired compulsorily under this Act, just compensation shall be paid promptly in full to all persons whose interests in the land have been determined. The commission shall make rules to regulate the assessment of just compensation.

Likewise where land is acquired compulsorily, full compensation shall be paid promptly to all persons affected in accordance to section 113 (1) and (2). Subject to Article 40 (2) of the Constitution and section 122 and 128 of this Act, an award-

(a) Shall be final and conclusive evidence of-

- The size of the land to be acquired;
- The value, in the opinion of the Commission, of the land;
- The amount of the compensation payable, whether the persons interested in the land have or have not appeared at the inquiry; and

(b) Shall not be invalidated by reason only of a discrepancy which may thereafter be found to exist between the area specified in the award and the actual area of the land.

Section 124 of the Act allows for the temporary acquisition of land for public purpose or public interest; or for, the possession of the land is necessary in the interests of defense, public safety, public order, public morality, public health, urban planning, or the development or utilization of any property in such manner as to promote the public benefit; for utilization in promotion of the public good for periods not exceeding 5 years. At the expiry of the period, the Commissioner of Land shall vacate the land and undertake to restore the land to the conditions it was before as per section 125.

The compensation to be paid under section 120 shall be limited to the damage done to trees, plants, growing crops and permanent improvements on the land, together with a periodical sum for diminution in the profits of the land and of adjoining land by reason of that use.

148. (1) Subject to the provisions of this section, compensation shall be payable to any person for the use of land, of which the person is in lawful or actual occupation, as a communal right of way and, with respect to a way leave, in addition to any compensation for the use of land for any damage suffered in respect of trees crops and buildings as shall, in cases of private land, be based on the value of the land as determined by a qualified valuer.

(2) Compensation relating to a way leave or communal right of way shall not be paid to a public body unless there is a demonstrable interference of the use of the land by that public body.

(3) Damage caused as a result of the creation of a way leave shall include any preliminary work undertaken in connection with surveying or determining the route of that way leave, and whether the trees, crops or buildings so damaged were included in the route of the way leave as delineated in the order of the Cabinet Secretary.

(4) The duty to pay compensation payable under this section shall lie with the State Department, county government, public authority or corporate body that applied for the public right of way and that duty shall be complied with promptly.

(5) If the person entitled to compensation under this section and the body under a duty to pay that compensation are unable to agree on the amount or method of payment of that compensation or if the person entitled to compensation is dissatisfied with the time taken to pay compensation, to make, negotiate or process an offer of compensation, that person may apply to the Court to determine the amount and method of payment of compensation and the Court in making any award may, make any additional costs and inconvenience incurred by the person entitled to compensation .

(6) The Commission shall make Regulations prescribing the criteria to be applied in the payment of compensation under this section and to give effect to this section.

2.9 Constitution of Kenya 2010

1. Environmental obligations and rights

Article 42 states that every person has the right to a clean and healthy environment, which includes the right; (a) to have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and

(b) To have obligations relating to the environment fulfilled under Article 70.

Section 43 (d) every person has the right to clean and safe water in adequate quantities;

Under Article 69 (1) The State shall — (a) ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;

(b) Work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya;

(c) Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities;

(d) Encourage public participation in the management, protection and conservation of the environment;

(e) Protect genetic resources and biological diversity;

(f) Establish systems of environmental impact assessment, environmental audit and monitoring of the environment;

(g) Eliminate processes and activities that are likely to endanger the environment; and

(h) Utilize the environment and natural resources for the benefit of the people of Kenya.

(2) Every person has a duty to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.

70. (1) If a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter.

(2) On application under clause (1), the court may make any order, or give any directions, it considers appropriate — (a) to prevent, stop or discontinue any act or omission that is harmful to the environment;

(b) To compel any public officer to take measures to prevent or discontinue any act or omission that is harmful to the environment; or

(c) To provide compensation for any victim of a violation of the right to a clean and healthy environment.

(3) For the purposes of this Article, an applicant does not have to demonstrate that any person has incurred loss or suffered injury.

2. Classification of land

Under Article 61 (1) all land in Kenya belongs to the people of Kenya collectively as a nation, as communities and as individuals.

(2) Land in Kenya is classified as public, community or private.

62. (1) Public land is (a) land which at the effective date was un-alienated government land as defined by an Act of Parliament in force at the effective date;

(b) Land lawfully held, used or occupied by any State organ, except any such land that is occupied by the State organ as lessee under a private lease;
(c) Land transferred to the State by way of sale, reversion or surrender;
(d) Land in respect of which no individual or community ownership can be established by any legal process;
(e) Land in respect of which no heir can be identified by any legal process
(f) All minerals and mineral oils as defined by law;
(g) government forests other than forests to which Article 63 (2)(d) (i) applies, government game reserves, water catchment areas, national parks, government animal sanctuaries, and specially protected areas;
(h) All roads and thoroughfares provided for by an Act of Parliament;
(i) All rivers, lakes and other water bodies as defined by an act of parliament;
(j) The territorial sea, the exclusive economic zone and the sea bed;
(k) The continental shelf;
(l) All land between the high and low water marks;
(m) Any land not classified as private or community land under this Constitution; and
(n) Any other land declared to be public land by an Act of Parliament; (i) in force at the effective date; or (ii) enacted after the effective date.

(4) Public land shall not be disposed of or otherwise used except in terms of an Act of Parliament specifying the nature and terms of that disposal or use.

Section 63 (1) Community land shall vest in and be held by communities identified on the basis of ethnicity, culture or similar community of interest.

(3) Any unregistered community land shall be held in trust by county governments on behalf of the communities for which it is held.

(4) Community land shall not be disposed of or otherwise used except in terms of legislation specifying the nature and extent of the rights of members of each community individually and collectively.

64. Private land consists of; (a) registered land held by any person under any freehold tenure;

(b) Land held by any person under leasehold tenure; and

(c) Any other land declared private land under an Act of Parliament.

2.10 Legal Framework of the GoK in Regard to Land Ownership and Transactions

2.10.1 Land Ownership in Kenya

Kenyan law recognizes three categories of land in Kenya subsequent to which, basic or radical title vests either in the Government for Government land, registered owners in the case of titles granted by the Government; and in the County councils for both Trust land and registered titles derived from Trust land.

1) Government Owned Land

Land that previously vested in the Regions was relocated to the Government of Kenya in 1964 and this situation continues to this date. Government land includes all un-alienated government land held and occupied by government agencies, territorial sea, and sea bed, all public roads whether gazetted or not and land that remained un-adjudicated under the Land Titles Act (Cap.282).

2) Trust Lands

The Kenya Independence Order Council in 1963 provided that all land that was vested in Her Majesty or in the Governor shall be deemed to have vested in the Regions or the Government of Kenya on 12th December 1963. All trust lands are vested in County councils, to hold such land for the benefit of the persons ordinarily resident on that land.

Under section 117 of the Constitution, an Act of Parliament may empower a County Council to set apart an area of trust land vested in it for public use and occupation. Thus Local Government Act (Cap. 265) provides for the establishment of local authorities and defines their functions. Local Authorities exist for the purposes of planning for and providing basic social amenities and services including education, health care, roads, sanitation, housing, markets, open spaces, parks etc. The local Authorities as such are vested with authority over trust land for the benefit of their residents. Such land can thus be allocated for occupation as follows:

- For the purposes of prospecting for or the extraction of minerals or mineral oils; or
- By any person or persons who in the opinion of the County council will benefit area residents.

This latter clause is important because it provides for access to land by schemes meant to benefit the public. Transfer of such land either to individuals, institutions or other groups is through letters of allotment which must cite the minutes of a full Council meeting which approved the transaction.

3) Private land

Private land is all land with registered title in accordance with any registration statute. Under the National Constitution, all land is vested with the Government and occupants of private land only enjoy usage rights either under lease or freehold arrangements. Section 70 of the Constitution of Kenya recognizes and protects the right to private property including land.

2.10.2 Legal Provision Governing Voluntary Land Transactions in Kenya

Towards safeguarding this unalienable constitutional right, legal provisions on land registration and ownership have been put in place as follows:

1) State-owned land

State-owned land is governed by diverse laws depending on the purpose for reservation.

2) The Government Lands Act (Cap.280)

The Act governs the allocation and administration of all Government land both urban and agricultural. State-owned land may be allocated free or sold on a commercial basis to individuals or communities by the Minister responsible for land administration. For cases where the state-owned land is being used by the public (for instance as settlements, for farming, for grazing or any other productive activity) the individual or the community would be expected to pay compensation.

3) Forests Act 2005

All state forests in Kenya were gazetted under Cap 383 but are now protected under the Forest Act 2005. The Forest Act allows for several avenues towards accessing and use of forestland:

- Under the Forest Act, a piece of forest land can be de-gazetted and converted to other uses. Forest Act, however, requires all de-Gazettement of forest land to be discussed and approved by Parliament. All de-gazetted land then reverts to the Commissioner of Lands who then proceeds to allocate in line with the Land Control Act.
- Under the Forest Act 2005, forestland can also be leased for use for other purposes provided that such use does not contradict the purpose for land reservation.
- The same Act also allows for Participatory Management of Forests and thus guarantees communities (under auspices of Community Forest Associations) rights to access and utilize certain forest goods and services including siting of water supply intake works in forest areas. These intake works require that small infrastructure be placed in watercourses to allow for abstraction.

4) Wildlife Act Cap 376:

Nature Reserves and National Parks are controlled by the Kenya Wildlife Service under the Wildlife Management and Co-ordination Act of 1976. The common feature with all land

reserved for use by wildlife is that its conversion to any other form must be approved by parliament.

5) Museums and National Monuments:

Quite often, sites of historical and cultural importance are gazetted and reserved under the Museums and National Monuments Act. Such land is never available for alternative uses.

6) Riparian Reserves and Water Courses:

All riparian reserves in Kenya governed by the Water Act of 2002 which empowers the Water Resources Management Authority (WRMA) to define, conserve and regulate activity in riparian areas.

7) Road reserves

All road reserves are public land reserved under the Physical Planning Act Cap 286. Road Reserves are unique as public utility lands where all infrastructure lines such as for water supply, power and telecommunication will be found.

8) Trust Lands

Trust land is defined as land held in trust in Part IX of the Constitution and the Trust Land Act (Cap.288). The Trust Lands Act (Cap.285) governs the administration of land as described in section 114 of the Constitution.

9) Private Land

Transactions in private land in Kenya are regulated under diverse laws namely:

1. Registration of Titles Act (R.T.A):
2. The Land Titles Act (L.T.A): Private land is all land with registered title in accordance with the Land Titles Act (Cap.282).
3. The Registered Land Act (R.L.A) governs registration of title to land, and for regulation of dealings in such land. It provides for private ownership of land by individuals. It should be noted that both individual and corporate persons can hold title under the RLA.

4. The Land Control Act Cap 406: This statute allows for all private land to be adjudicated and registered following which, a title deed is issued to the registered owner. Acquisition of private land is through transfer of the Title Deed either on account of inheritance, purchase or free gift but in all cases, transfers must be registered with the Sub-County Land Registrars following approval by the Land Control Boards

2.10.3 Legal Provision for Involuntary Land Acquisition in Kenya

The Kenyan law has an explicit provision for expropriation of land under any of three categories.

In Kenya, expropriation is provided for in the Constitution under section 75 for private land and sections 117 and 118 for unregistered Trust Land. Section 75(1) provides that the Government can take possession of private land if this is necessary in the interest of town planning among other public interests, or if the development and utilization of the said land is to promote public benefit:

a) The development and utilization of the property will promote public benefit among other things.
b) The necessity for expropriation is great enough to justify any hardship caused to any persons
c) Law for prompt payment of full compensation makes the provision

2.11 HIV and Aids Prevention and Control Act

This Act commenced in March of 2009. It is an Act of Parliament that creates public awareness on causes, modes of transmission, consequences and means of prevention and control of HIV and AIDS. It protects the rights of the infected and affected and outlaws discrimination in all its forms against persons living with HIV and AIDS or those perceived or suspected to have HIV and AIDS.

2.12 National legal provisions on gender

Gender issues in the country are institutionalized through;

1. The current newly enacted Constitution.
2. Vision 2030 Flagship projects.
3. The Presidential Directive of 2006 on 30% women's' appointments to all positions of leadership employment and promotions.
4. MTPs handbook has gender outcome indicators.
5. The National Gender Policy 2000.
6. Sessional Paper No.2 of 2006.
7. Gender Department in the Ministry for Gender Children and Social Development.
8. The National Commission on Gender and Development enacted through an Act of Parliament in 2003 is mandated to Monitor Government Implementation of its Commitments to Women's Rights and Gender issues.
9. Employment Act, No. 11 of 2007: the Act prohibits discrimination in access to employment and in employment security on the basis of sex, among others.
10. A National Framework on Gender-based Violence. The government through the National Commission on Gender and Development has developed a National Framework on Gender Based Violence (February 2009) to form that basis of investigation of instances of sexual violence and strengthen coordination of responses to stem the vice.
11. Launch of same on 09.11.2009 by Minister for Gender, children and social development.
12. The Sexual Offences Bill.
13. FGM Policy being developed.

2.12.1 National Gender and Development Policy (2000)

The National Gender and Development Policy provide a framework for advancement of women and an approach that would lead to greater efficiency in resource allocation and utilization to ensure empowerment of women.

The National Policy on Gender and Development is consistent with the Government's efforts of spurring economic growth and thereby reducing poverty and unemployment, by considering the needs and aspirations of all Kenyan men, women, boys and girls across economic, social and cultural lines. The policy is also consistent with the Government's commitment to implementing the National Plan of Action based on the Beijing Platform for Action (PFA).

The overall objective of the Gender and Development Policy is to facilitate the mainstreaming of the needs and concerns of men and women in all areas in the development process in the country.

The Policy's concerns cover the following critical areas

i) The Economy;-To enable men and women to have equal access to economic and employment opportunities.

ii) Poverty and Sustainable Livelihoods; - To remove obstacles to women's access to and control over productive assets, wealth and economic opportunities, shelter, safe drinking water, and promote measures for conserving the environment.

iii) Law; - To guarantee Kenyan men and women equality before the law, as provided for in the Constitution and under the obligations of the Kenyan State in international law.

iv) Political Participation and Decision- Making; - To enhance gender parity in political participation and decision-making.

v) Education and Training; to enhance and sustain measures to eliminate gender disparities in access, retention, transition and performance in education for both boys and girls.

vi) Health and Population; - To achieve the highest attainable standard of health for both men and women through addressing gender inequalities pertaining to access and use of basic health services and facilities at an affordable cost.

vii) The Media; - To increase the participation of women in the media and communications sector and promote gender sensitive portrayal of both men and women in the media

viii) Policy Implementation Framework and Resource Mobilization- empowering both men and women to be equal partners in development- It focuses on the elimination of existing disparities between the two genders. It also advocates for an affirmative action to address gender disparities.

2.12.2 The New Constitution of August 2010 on Gender

In the New Constitution, Chapter Four—The Bill of Rights;
Section 21 (3) All State organs and all public officers have the duty to address the needs of vulnerable groups within society, including women, older members of society, persons with disabilities, children, youth, members of minority or marginalized communities, and members of particular ethnic, religious or cultural communities

Section 27 (3) Women and men have the right to equal treatment, including the right to equal opportunities in political, economic, cultural and social spheres.
Part 2 on the Composition and Membership of Parliament,

Section 97 (1) The National Assembly consists of, a) two hundred and ninety members, each elected by the registered voters of single member constituencies; (b) forty-seven women, each elected by the registered voters of the counties, each county constituting a single member constituency;

Section 98. (1) The Senate consists of— (a) forty-seven members each elected by the registered voters of the counties, each county constituting a single member constituency; (b) sixteen women members who shall be nominated by political parties according to their proportion of members of the Senate elected under clause (a) in accordance with Article 90; (c) two members, being one man and one woman, representing the youth; (d) two members, being one man and one woman, representing persons with disabilities.

2.12.3 The Sexual Offences Act (NO 3 of 2006)

Relevant Sections include:-
24- Sexual offences relating to position of authority and persons in position of trust.
25- Sexual relationship which pre-date position of authority or trust.
26- Deliberate transmission of HIV or any other life threatening sexually transmitted disease.

2.13 The Occupational Health and Safety Act, 2007

This is an Act of Parliament to provide for the safety, health and welfare of workers and all persons lawfully present at workplaces, to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes. The Act has the following functions among others:

- Secures safety and health for people legally in all workplaces by minimization of exposure of workers to hazards (gases, fumes and vapors, energies, dangerous machinery/equipment, temperatures, and biological agents) at their workplaces.
- Prevents employment of children in workplaces where their safety and health is at risk.
- Encourages entrepreneurs to set achievable safety targets for their enterprises.
- Promotes reporting of work-place accidents, dangerous occurrences and ill health with a view to finding out their causes and preventing of similar occurrences in future.
- Promotes creation of a safety culture at workplaces through education and training in occupational safety and health.
- Failure to comply with the OSHA, 2007 attracts penalties of up to KES 300,000 or 3 months jail term or both or penalties of KES 1,000,000 or 12 months jail term or both for cases where death occurs and is in consequence of the employer.

2.14 The County Governments Act, 2012

This is 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.

According to section 103, the objectives of county planning shall be to;

(a) Protect the historical and cultural heritage, artefacts and sites within the county; and

(b) Make reservations for public security and other critical national infrastructure and other utilities and services;

(c) work towards the achievement and maintenance of a tree cover of at least ten per cent of the land area of Kenya as provided in Article 69 of the Constitution; and (j) Develop the human resource capacity of the county.

Under section 104, (1) a county government shall plan for the county and no public funds shall be appropriated outside a planning framework developed by the county executive committee and approved by the county assembly.

(2) The county planning framework shall integrate economic, physical, social, environmental and spatial planning.

(3) The county government shall designate county departments, cities and urban areas, sub counties and Wards as planning authorities of the county.

(4) To promote public participation, non-state actors shall be incorporated in the planning processes by all authorities.

Under section 111, (1) for each city and municipality there shall be; the

(a) City or municipal land use plans;

(b) City or municipal building and zoning plans;

(c) City or urban area building and zoning plans;

(d) Location of recreational areas and public facilities.

(2) A city or municipal plans shall be the instrument for development facilitation and development control within the respective city or municipality.

(3) A city or municipal plan shall, within a particular city or municipality, provide for;

(a) Functions and principles of land use and building plans;

(b) Location of various types of infrastructure within the city or municipality;

(c) Development control in the city or municipality within the national housing and building code framework.

(4) City or municipal land use and building plans shall be binding on all public entities and private citizens operating within the particular city or municipality.

(5) City or municipal land use and building plans shall be the regulatory instruments for guiding and facilitating development within the particular city or municipality.

(6) Each city or municipal land use and building plan shall be reviewed every five years and the revisions approved by the respective county assemblies.

Under section 115, (1) Public participation in the county planning processes shall be mandatory and be facilitated through;

(a) Provision to the public of clear and unambiguous information on any matter under consideration in the planning process, including;

(i) clear strategic environmental assessments;

(ii) Clear environmental impact assessment reports;

(iii) Expected development outcomes; and

(iv) Development options and their cost implications.

(2) Each county assembly shall develop laws and regulations giving effect to the requirement for effective citizen participation in development planning and performance management within the county and such laws and guidelines shall adhere to minimum national requirements.

This Act identifies the importance on the county government of Kilifi of this project.

2.15 The Physical Planning Act (Cap 286) 2010

Under the Physical Planning Act, physical development activities are supposed to be carried out according to the physical plans. The Act provides for the preparation and implementation of physical development plans and for related purposes. It gives provisions for the development of local physical development plan for guiding and coordinating development of infrastructure facilities and services within the area of authority of County, municipal and town council and for specific control of the use and development of land.

Accordingly the processes of physical planning involve two stages; the plan making stage and the development control stage. The former involves drawing up the actual plan to indicate the various activities and zones whereas the latter involves the process of determining applications by developers to carry out specific development activities.

Section 36 states “if in connection with a development application a local authority is of the opinion that proposals for industrial location, dumping site, sewerage treatment, quarries or any other development activity will have injurious impact on the environment, the applicant

shall be required to submit together with the application an environment impact assessment report".

2.16 The Public Health Act (Cap. 242)

Part IX Section 8 & 9 of the Act states that no person/ institution shall cause nuisance or condition liable to be injurious or dangerous to human health. Any noxious matter or waste water flowing or discharged into a water course is deemed as a nuisance. Part Xll Section 136 states that all collections of water, sewage, rubbish, refuse and other fluids which permits or facilitates the breeding or multiplication of pests shall be deemed nuisances.

The Act addresses matters of sanitation, hygiene and general environmental health and safety.

The Act places responsibility for protection of water supplies from any pollution dangerous to health on the local authorities.

The Act empowers the Minister for Health to make rules and impose on local authorities and others, the duty of enforcing such rules.

2.17 National Policy with District Development Linkages

The consultant takes full cognizance of the various policy papers that have relevance to development in the national space and give them relevance to this particular water infrastructure development activity. Examples of such policy derivations are:

i) National Poverty Eradication Plan 1999-2015
ii) Vision 2030
iii) Private sector development strategy 2006-2010

2.18 National Poverty Eradication Plan (NPEP) 1999-2015

The NPEP has the objective of reducing the incidence of poverty in both rural and urban areas by 50% by the year 2015, as well as strengthening the capabilities of the poor and

vulnerable groups to earn income. It also aims to narrow gender and geographical disparities and create a healthy, better-educated and more productive population. This plan has been prepared in line with the goals and commitments of the World Summit for the Social Development (WSSD) of 1995.

The plan focuses on the four WSSD themes of the poverty eradication; reduction of unemployment; social integration of the disadvantaged people and the creation of an enabling economic, political, and cultural environment. This plan is to be implemented by the Poverty Eradication Commission (PEC) formed in collaboration with Government Ministries, community based organizations and private sector.

2.19 Kenya Vision 2030

Kenya Vision 2030 is a Government development strategy that is aimed at steering Kenya to a middle income country by the year 2030. It is based on the 3 pillars of political, social and economic advancement and it aims to transform the economy to newly industrialized status by 2030 and achieve sustainable growth. Environmental considerations of development are contained within the social and economic pillar. On poverty reduction, the vision aims at creating opportunities for the poor by making institutions stronger.

2.20 Private Sector Development Strategy 2006-2010

The strategy focuses on improving Kenya's business environment, institutional transformation, trade expansion, improved productivity and support to entrepreneurship and indigenous enterprise development. One of the key factors for the improvement of productivity is the adoption of modern, appropriate technologies.

2.21 Kenya National HIV/AIDS Strategic Plan, KNASP 2005/06-2009/10

The plan is linked with the National Development Plan and the National Poverty Eradication Plan 1999 – 2015. The overarching theme is Social Change to reduce HIV/AIDS and Poverty. The goal of the KNASP 2005/06-2009/10 is to reduce the spread of HIV, improve the quality of life of those infected and affected and mitigate the socio-economic impact of

the epidemic at individual, community, sector and national levels. The priority areas for KNASP 2005/062009/10 are three-fold:

Priority Area 1: Prevention of new infections

The objective of this priority area is to reduce the number of new HIV infections among both vulnerable groups and the general population

Priority Area 2: Improve the quality of life of people infected and affected by HIV/AIDS

The objective of this priority area is to improve the treatment and care, protection of rights and access to effective services for infected and affected people by HIV/AIDS in Kenya.

Priority Area 3: Mitigation of socio-economic impact

The objective of this priority area is to adapt existing programs and develop innovative responses to reduce the impact of the epidemic on communities, social services and economic productivity.

2.22 World Bank Safeguard Policies

2.22.1 Operational Policy (OP) 4.01: Environmental Assessment, 2001

Environmental Assessment is used in the World Bank to identify, avoid, and mitigate the potential negative environmental impacts associated with Bank lending operations. The purpose of Environmental Assessment is to improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted.

2.22.2 Operational Policy 4.04: Natural Habitats, 2001

The policy seeks to ensure that World Bank-supported infrastructure and other development projects take into account the conservation of biodiversity, as well as the numerous environmental services and products which natural habitats provide to human society. The policy strictly limits the circumstances under which any Bank-supported project can damage natural habitats (land and water areas where most of the native plant and animal species are still present).

2.22.3 The Bank's Operational Policy 4.12: Involuntary Resettlement

This is triggered in situations involving involuntary taking of land and involuntary restrictions of access to legally designated parks and protected areas. The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts.

It promotes participation of displaced people in resettlement planning and implementation, and its key economic objective is to assist displaced persons in their efforts to improve or at least restore their incomes and standards of living after displacement.

The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to Bank appraisal of proposed projects.

2.22.4 Operational Policy (OP) 4.10 - Indigenous Peoples

This policy contributes to the Bank's mission of poverty reduction and sustainable development by ensuring that the development process fully respects the dignity, human rights, economies, and cultures of Indigenous Peoples. For all projects that are proposed for Bank financing and affect Indigenous peoples the Bank requires the borrower to engage in a process of free, prior, and informed consultation.

They provide financing only where free, prior, and informed consultation results in broad community support to the project by the affected Indigenous Peoples. Such Bank-financed projects include measures to (a) avoid potentially adverse effects on the Indigenous Peoples' communities; or (b) when avoidance is not feasible, minimize, mitigate, or compensate for such effects. Bank-financed projects are also designed to ensure that the Indigenous Peoples receive social and economic benefits that are culturally appropriate and gender and inter-generationally inclusive.

2.22.5 Operational Policy (OP/BP) 4.11: Physical Cultural Resources

The objective of this policy is to assist countries in preserving physical cultural resources and avoiding their destruction or damage. PCR are defined as movable or immovable

objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious (including graveyards and burial sites), aesthetic, or other cultural significance. PCR may be located in urban or rural settings, and may be above ground, underground, or under water. The cultural interest may be at the local, provincial or national level, or within the international community.

This policy applies to all projects requiring a category A or B environmental assessment, project located in, or in the vicinity of recognized cultural heritage sites. Physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices.

Some materials may be discovered during project implementation for which the use of "chance find" procedures will be employed as presented in the ESMMP.

2.22.6 Operational Policy (Op)/Bank Procedure (Bp) 7.50: Projects International Waterways

Waterways may affect the relations between the World Bank and its borrowers, and between riparian states. Therefore, the Bank attaches great importance to the riparian making appropriate agreements or arrangements for the entire waterway, or parts thereof, and stands ready to assist in this regard.

In the absence of such agreements or arrangements, the Bank requires, as a general rule, that the prospective borrower notifies the other riparian of the project. The Policy lays down detailed procedures for the notification requirement, including the role of the Bank in affecting the notification, period of reply and the procedures in case there is an objection by one of the riparian to the project.

2.22.7 World Bank Policy on Access to Information, 2010

The World Bank policy on access to information sets out the policy of the World Bank on public access to information in its possession. This Policy supersedes the World Bank Policy on Disclosure of Information, and took effect on July 1, 2010.

This Policy is based on five principles:

- Maximizing access to information.
- Setting out a clear list of exceptions.
- Safeguarding the deliberative process.
- Providing clear procedures for making information available.
- Recognizing requesters' right to an appeals process.

In disclosing information related to member countries/borrower in the case of documents prepared or commissioned by a member country/borrower (in this instance, safeguards assessments and plans related to environment, resettlement, and indigenous peoples, OP/BP 4.01, Environmental Assessments, OP/BP 4.10, Indigenous Peoples, and OP/BP 4.12 Involuntary Resettlement); the bank takes the approach that the country/borrower provides such documents to the Bank with the understanding that the Bank will make them available to the public.

3.0 PROJECT ENVIRONMENTAL AND SOCIO-ECONOMIC BASELINE INVENTORY

3.1 Environmental and Socio-Economic Survey

The socio-economic situation of the area was captured based on findings of a household survey carried out using a structured questionnaire by Zamconsult Consulting Engineers. A total of 570 questionnaires were administered within the proposed supply areas in Kilifi, Gongoni, Malindi, Mombasa and Baricho.

3.2 Population Dynamics and Household Characteristics

The general trend shows that most of the people fall in the 5-18 and 19-35 age groups. Figure 3-1 shows the population age brackets.

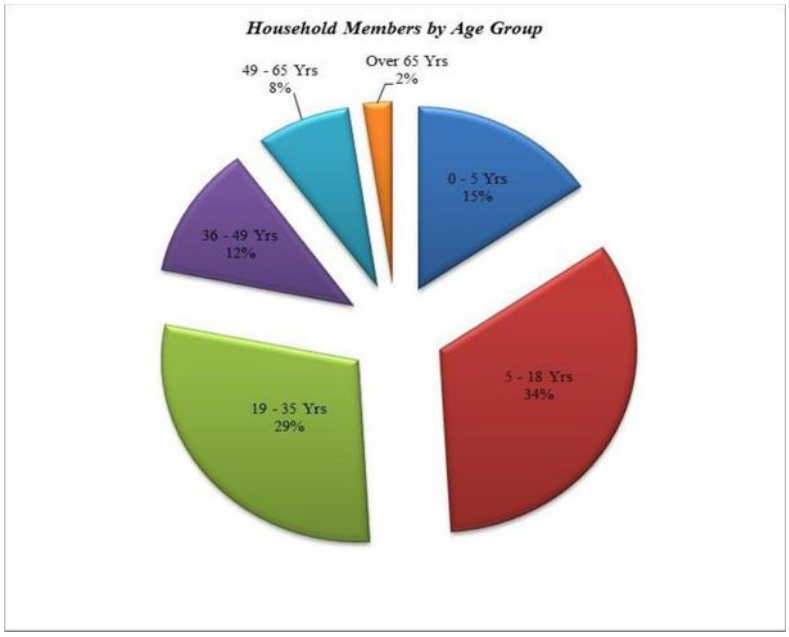


Figure 3-1: Age Distribution of the Population

Source: Survey data-Zamconsult Consulting engineers.

The Literacy level in the area is high with 76% of the population being able to read and write. The literacy levels were as follows; No education at all 24%, primary level 54%, secondary level 17%, and college/university 5%. Thus the Consultant foresees an understanding of the project and its impacts to majority of the population.

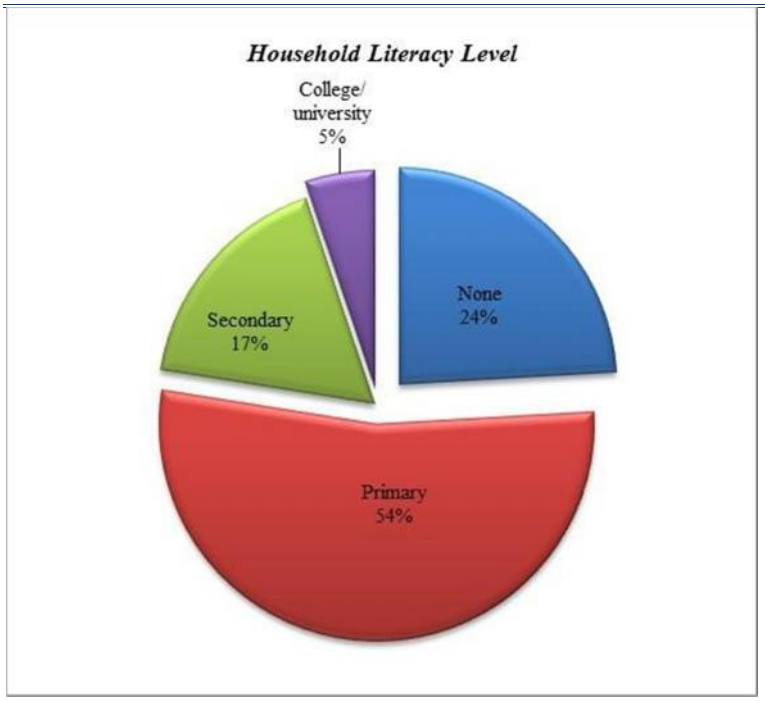


Figure 3-2: Household Literacy Level

Source: Survey data-Zamconsult Consulting engineers.

The dominant religion is Christianity with 77% of the population professing the faith, the other religions are Islam and Traditionalism.

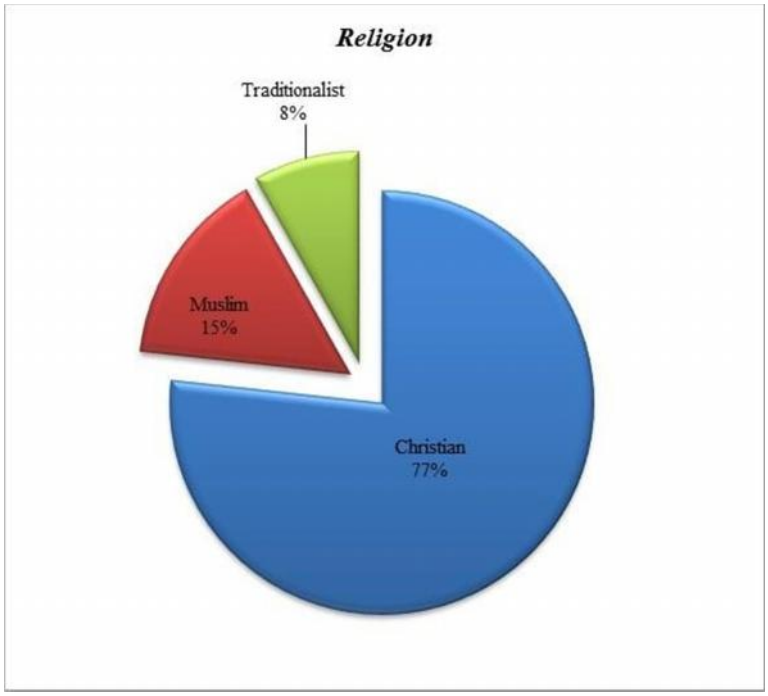


Figure 3-3: Religion of the Population

Source: Survey data-Zamconsult Consulting engineers.

Firewood is the main source of energy for the community (74%). 19% of the population use charcoal, 4% of the population use kerosene, 3% use LPG gas. The high rate of wood and charcoal as a fuel may lead to the depletion of the mangrove and coastal forests in the project area.

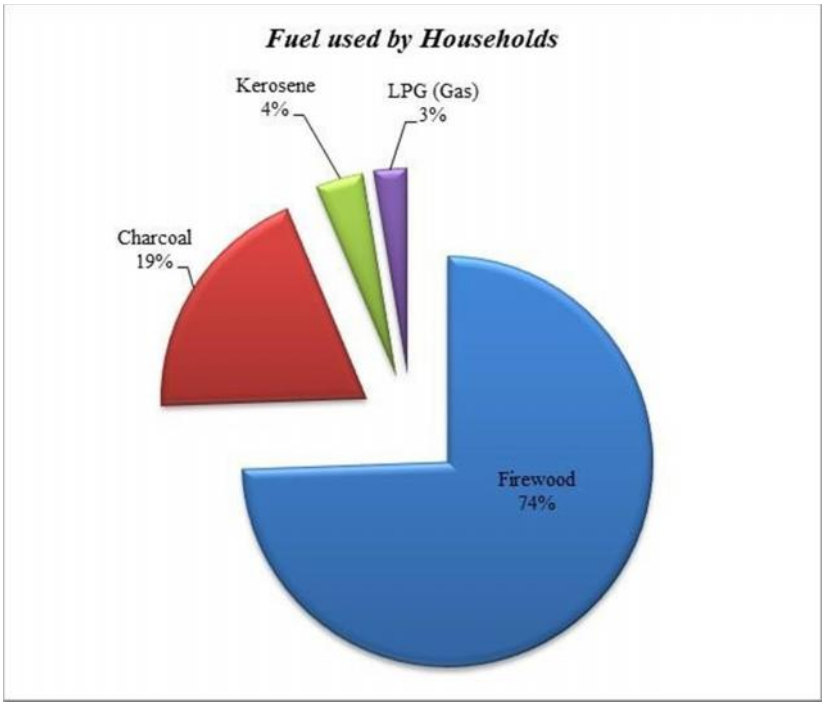


Figure 3-4: Sources of Energy

Source: Survey data-Zamconsult Consulting engineers.

The main socio-economic activities are crop farming for which 45% of the population are engaged in. Other activities include, livestock farming, business formal employment and fishing. A summary of the economic activities is highlighted in the chart below:

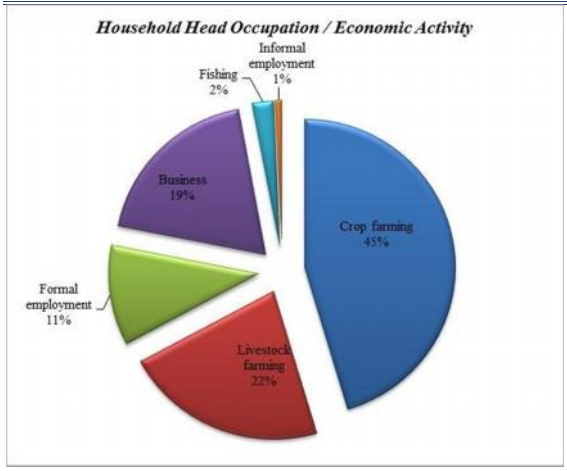


Figure 3-5: Household Socio-Economic Activities

Source: Survey data-Zamconsult Consulting engineers.

Households that carry out business as the economic activities constitute 19% of the sample population. The major businesses carried out in the project areas include: shops, boda-bodas, and the jua kali sector as shown in the chart below:

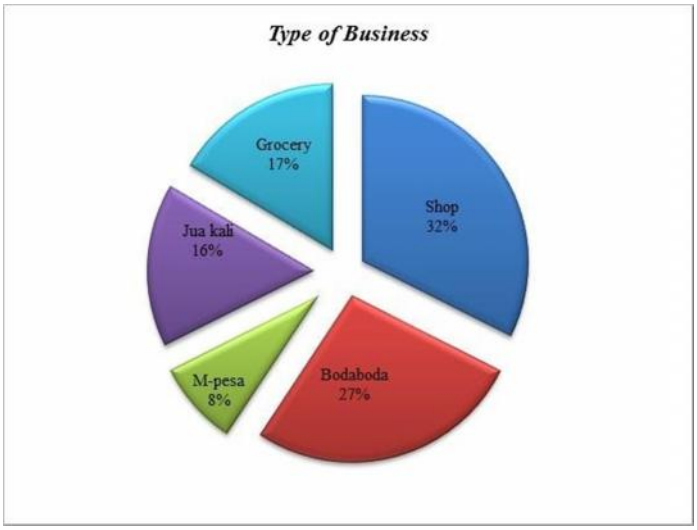


Figure 3-6: Type of Business

Source: Survey data-Zamconsult Consulting engineers.

22% of the households own livestock. The main livestock reared are goats with 67% of the households own goats, cattle, sheep and poultry are also reared as shown in the figure below.

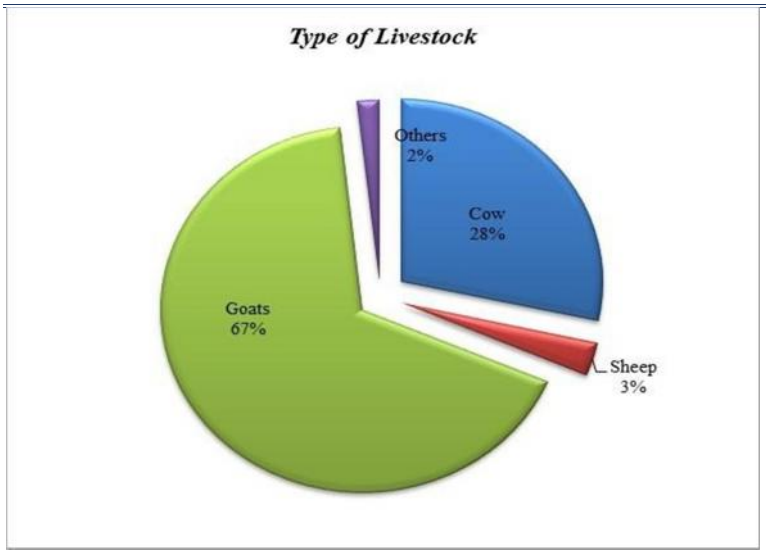


Figure 3-7: Type of Livestock

Source: Survey data-Zamconsult Consulting engineers.

The project area is mainly agricultural, with majority of the population growing corps. The crops grown in the area are shown in the chart below:

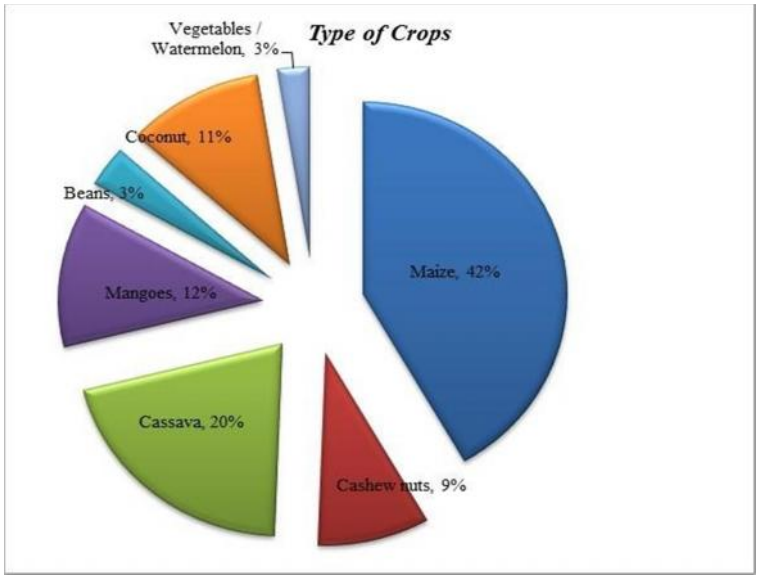


Figure 3-8: Crops grown in the area

Source: Survey data-Zamconsult Consulting engineers.

55% of the population earns less than K.Shs. 15,000, 30% earn K.Shs. 15,000-30,000, 10% earn K.Shs. 30,000-50,000, while just 5% earns above K.Shs. 50,000.

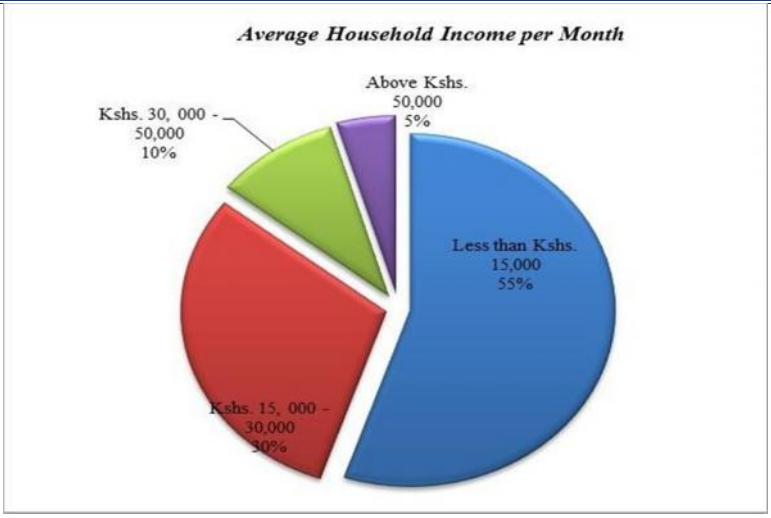


Figure 3-9: Household Income per Month Source:

Source: Survey data-Zamconsult Consulting engineers.

3.3 Water Supply

Majority of the population, particularly in Kilifi, Malindi and Mombasa rely on piped water either in public or private taps. However the population particularly towards Gongoni use shallow wells and boreholes as a source of their water. In addition to that, the towns receive water from the existing Baricho wells. The major sources of water are highlighted in the chart below:

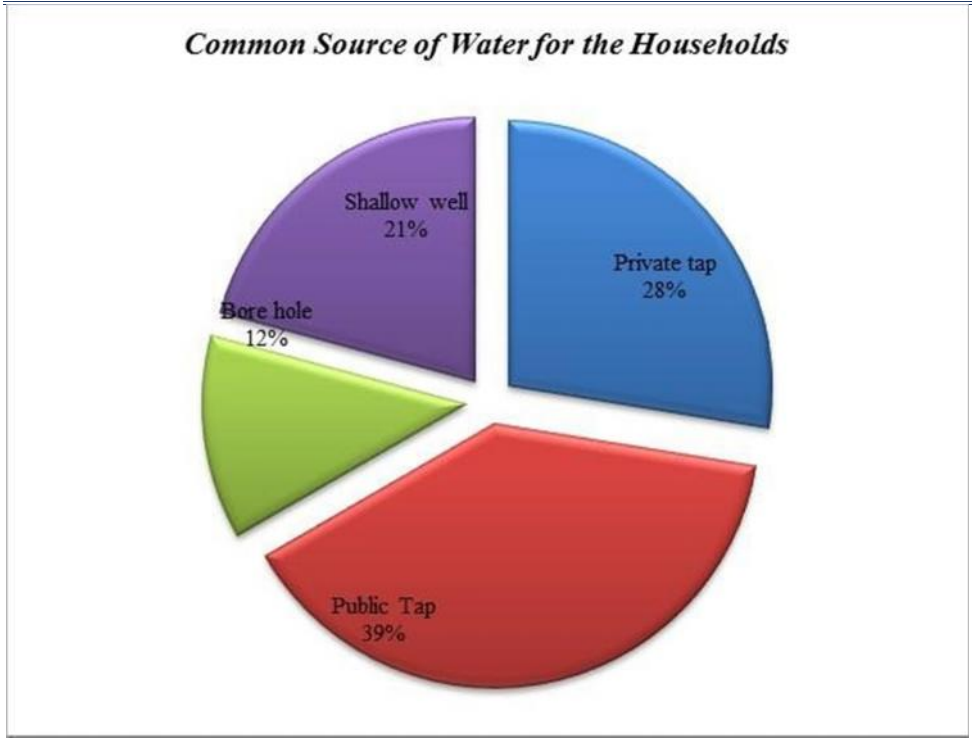


Figure 3-10: Main Sources of Water for the Community

Source: Survey data-Zamconsult Consulting engineers.

Most of the water sources are either publically or privately owned, with 56% of the water sources owned by public institutions, 34% owned by private, 5% by NGOS, and 5% by faith based institutions.

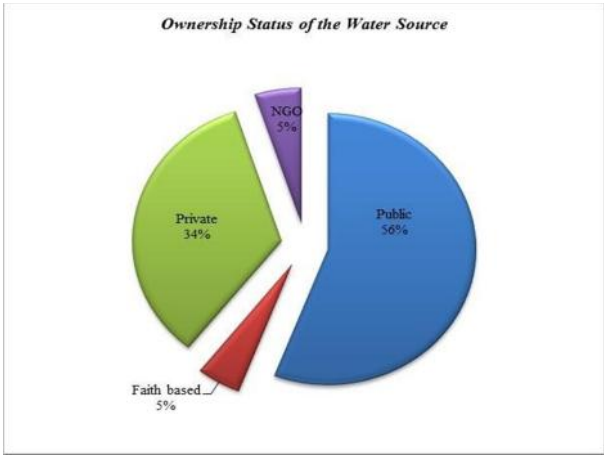


Figure 3-11: Ownership Status of Water Sources Source:

Source: Survey data-Zamconsult Consulting engineers.

74% of the population pay for water while 26% don't pay for water.

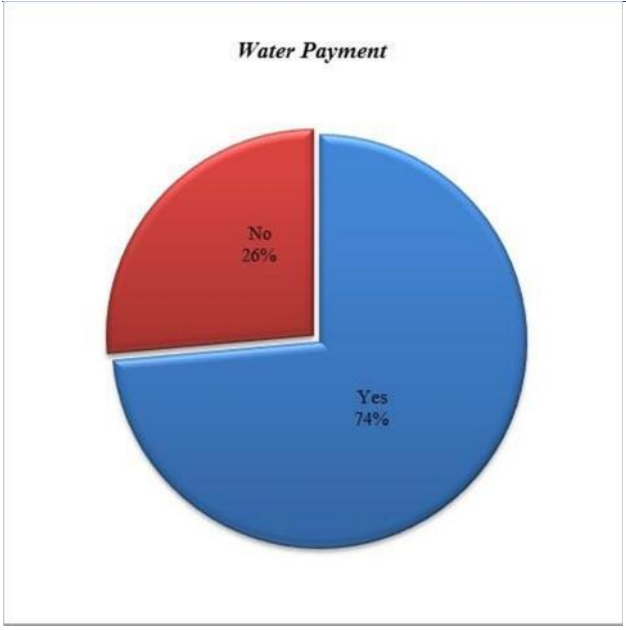


Figure 3-12: Percentage Population Paying for Water

Source: Survey data-Zamconsult Consulting engineers.

The cost of water varies from K.Shs. 10 and above to K.Shs. 2 depending on the ownership status of the water source. Majority of the population pays between K.Shs. 2 and K.Shs. 5 for a 20 litre jerry can of water. Only 12% and 9% pay K.Shs. 10 and above respectively as shown in the figure below:

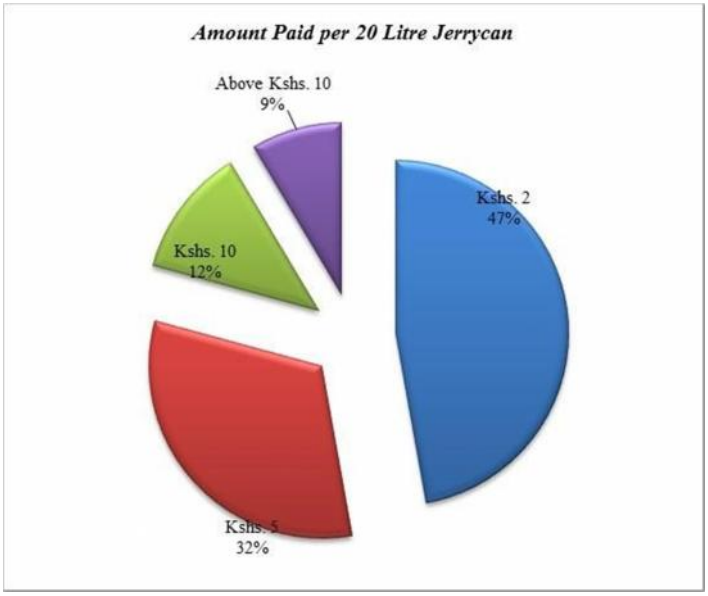


Figure 3-13: Cost of a 20 litre jerry can of Water

Source: Survey data-Zamconsult Consulting engineers.

The water quality is generally good. 56% of the residents view the water quality as good, 36% as fair and 9% as bad.

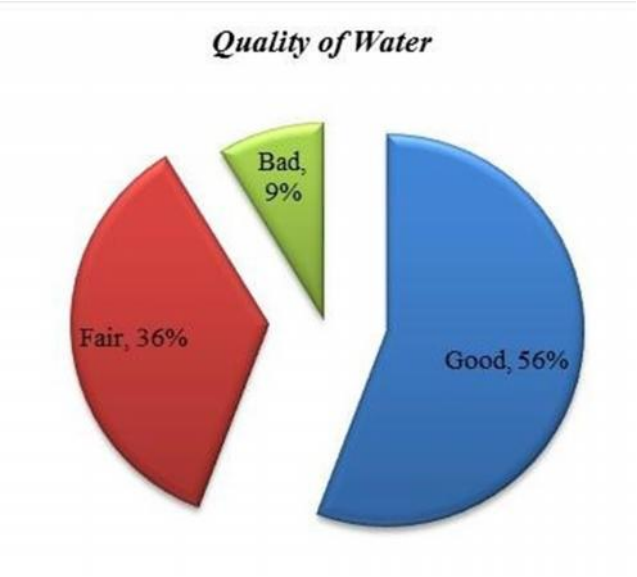


Figure 3-14: General Status of the Water Quality

Source: Survey data-Zamconsult Consulting engineers.

The opinion of the adequacy of the water supply is almost evenly split between the sample population. With slightly more people stating that the water is inadequate, particularly further away from the centres as shown in the Chart below:

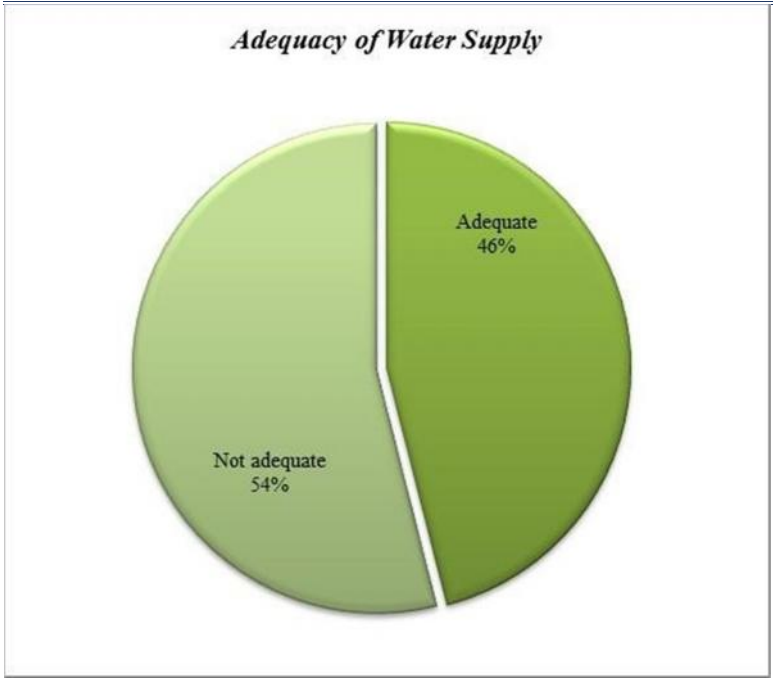


Figure 3-15: Adequacy of the Water Source

Source: Survey data-Zamconsult Consulting engineers.

The majority of the residents in the area, 84% fetch water every day, 10% of the population fetch water every alternate day of the week and only 6% fetch water weekly.

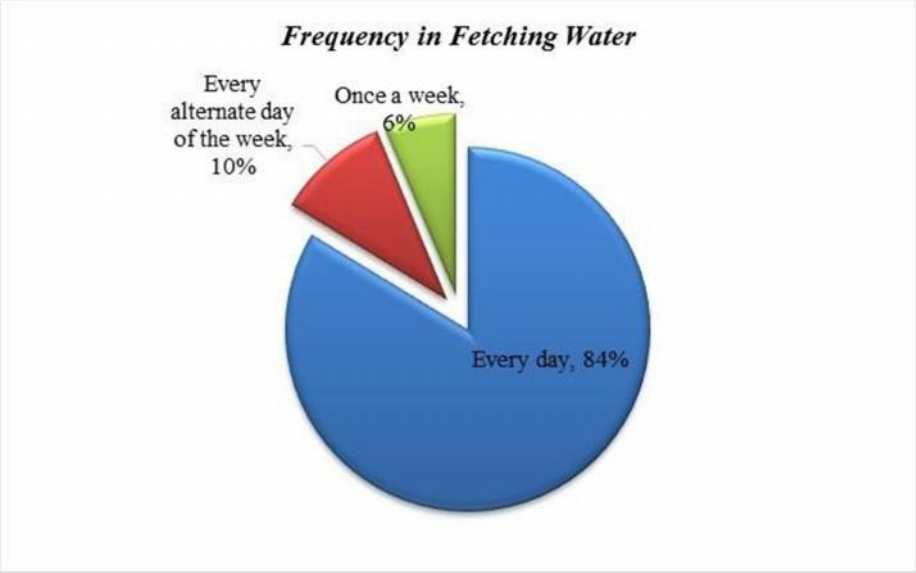


Figure 3-16: Fetching Water Frequency

Source: Survey data-Zamconsult Consulting engineers.

36% of the population walks for less than 0.2 km to the water sources; 41% walks for 0.2-1 km, 14% walks for 1-2km while 9% walk for more than 2 km to the water source as shown in the figure below.

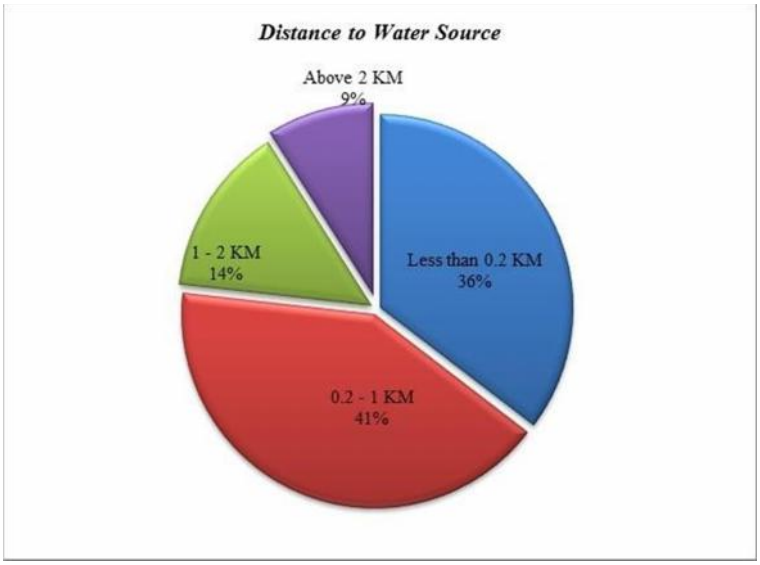


Figure 3-17: Distance to Water Source

Source: Survey data-Zamconsult Consulting engineers.

The common mode of transporting water is by carrying on the head 68%, use of hand driven carts/wheelbarrow 11%, use of pack animals (donkeys,) 3%, use of boda-boda (bicycle, motorbike) 13% and use of animal drawn carts 6%.

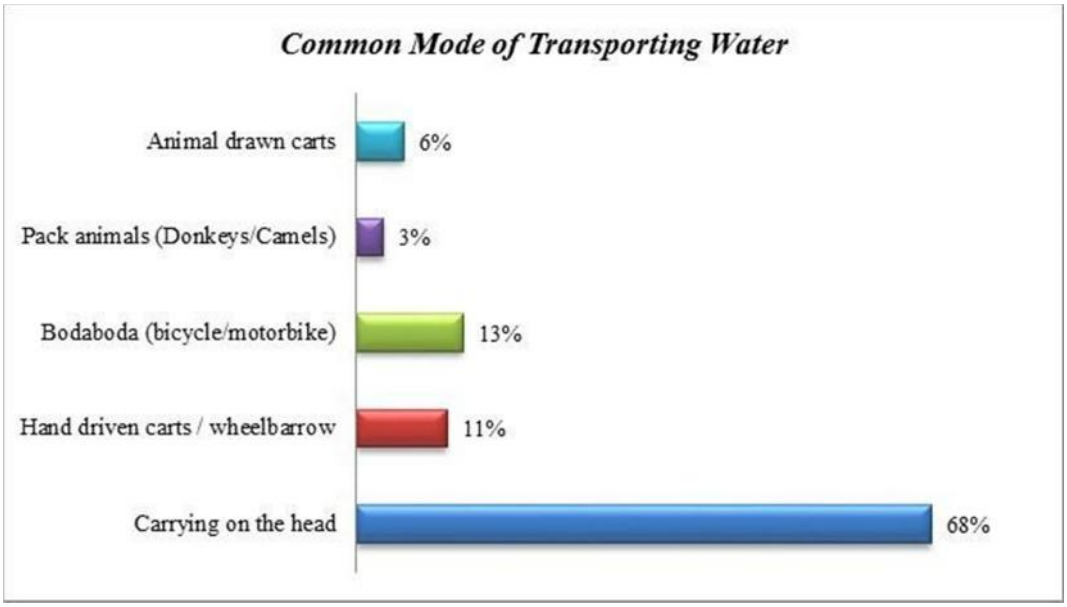


Figure 3-18: Common Modes of Transporting Water

Source: Survey data-Zamconsult Consulting engineers.

The common challenges faced in transporting water include loss of time 61%, physical fatigue due to long distances travelled to get to the water sources 35% as shown in the figure below.

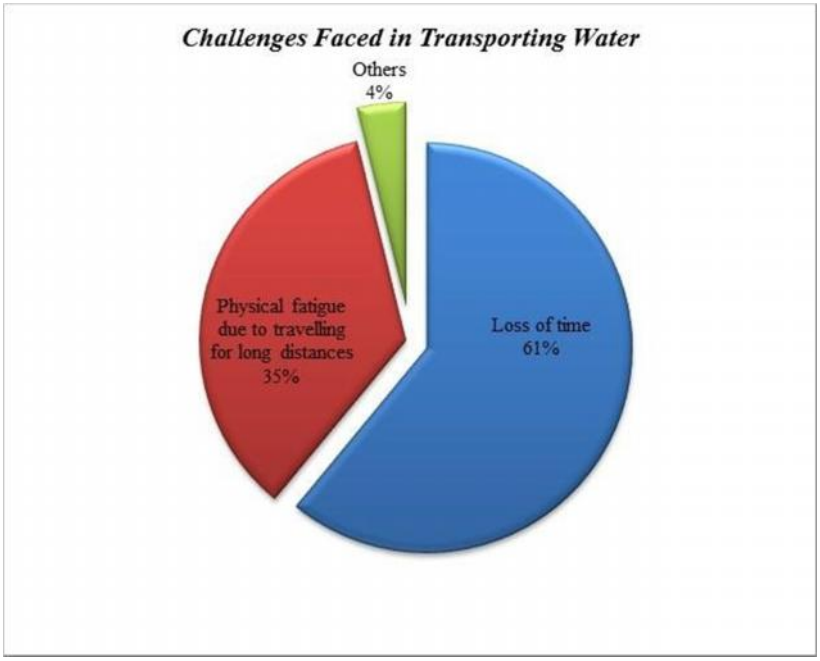


Figure 3-19: Common Modes of Transporting Water Source:
Source: Survey data-Zamconsult Consulting engineers.

3.4 Sanitation

The methods used by the population to dispose refuse are by burning, bury/use compost pit, recycling, dumping in open areas, and collection by the county council as shown in the chart below

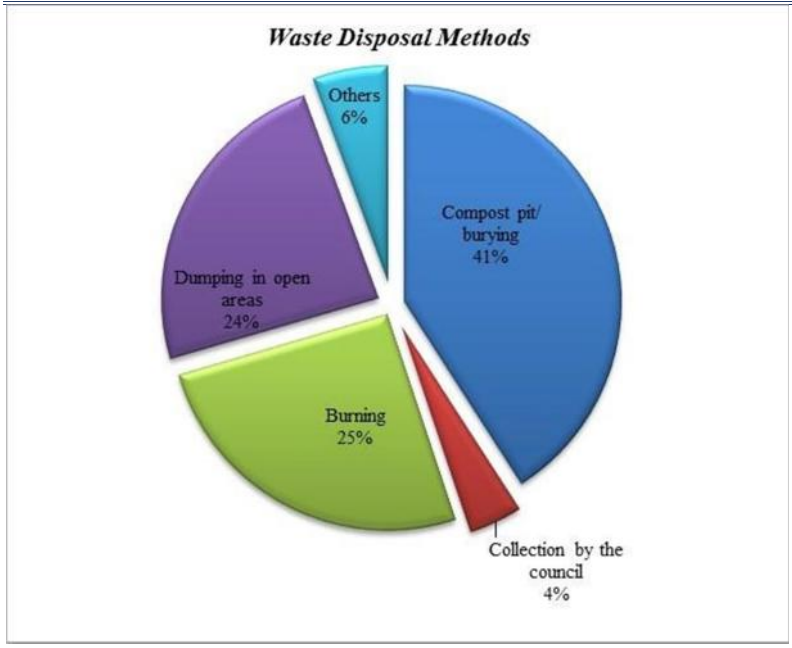


Figure 3-20: Common Waste Disposal Methods

Source: Survey data-Zamconsult Consulting engineers.

Majority of the Households in the project area (62%) have toilets, the rest of the population, particularly away from the towns and centres do not have toilets. Within the 62% of the households with toilets, majority make use of pit latrines as shown in the figures below:

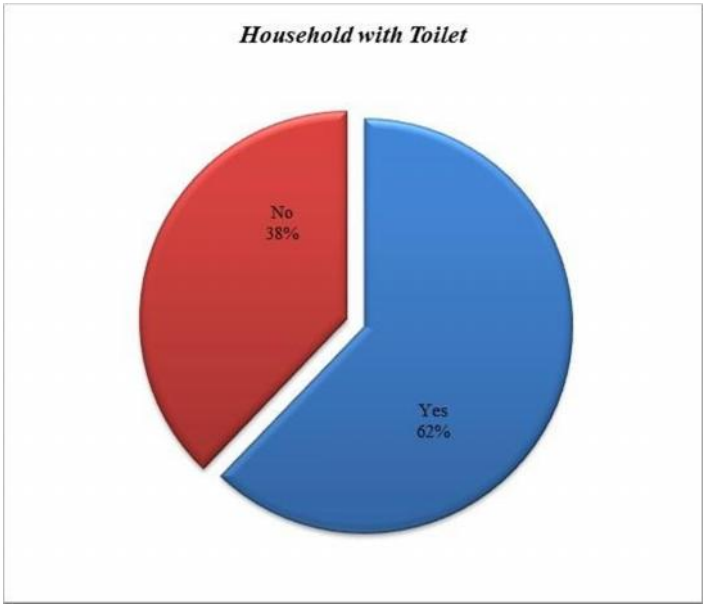


Figure 3-21: Households with Toilets

Source: Survey data-Zamconsult Consulting engineers.

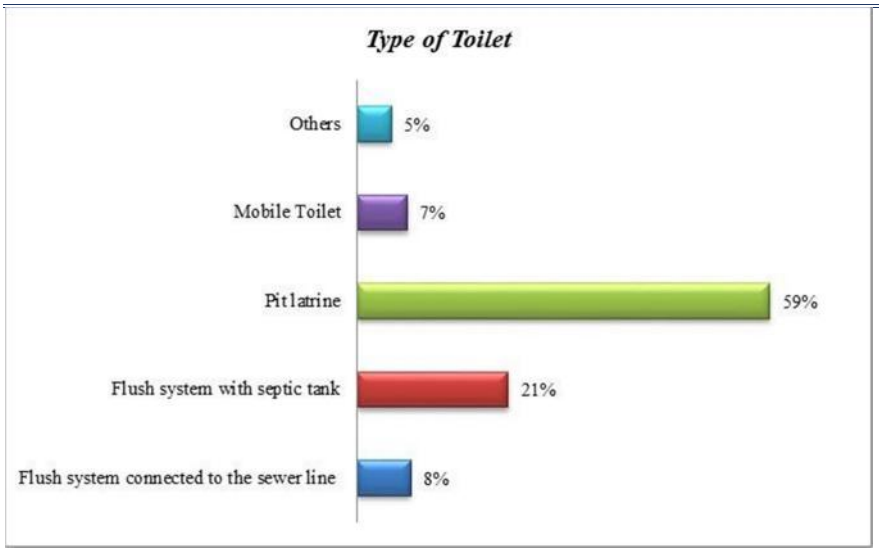


Figure 3-22: Type of Toilets used

Source: Survey data-Zamconsult Consulting engineers.

3.5 Environmental Situation

The environmental concerns in the area include water shortage, mosquitoes and malaria spread, deforestation, drought amongst others as shown in the chart below.

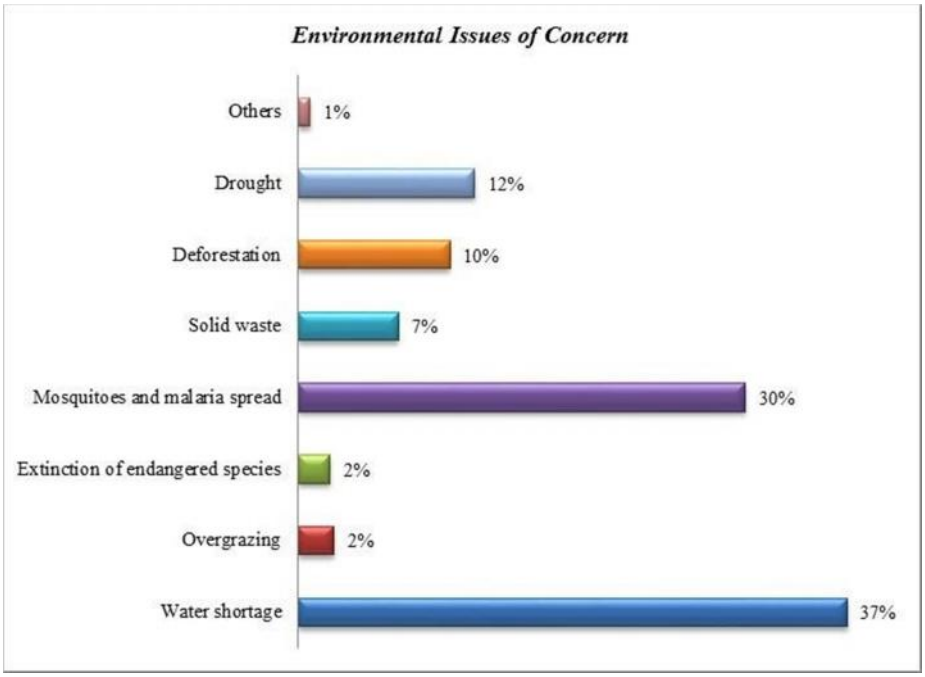


Figure 3-23: Environmental Issues of Concern

Source: Survey data-Zamconsult Consulting engineers.

There are a number of environmental conservation initiatives in the area such as tree planting, educating the public on environmental conservation, clearing of mosquito breeding sites, and collection of solid wastes, that are carried out by various institutions as shown in the figures below:

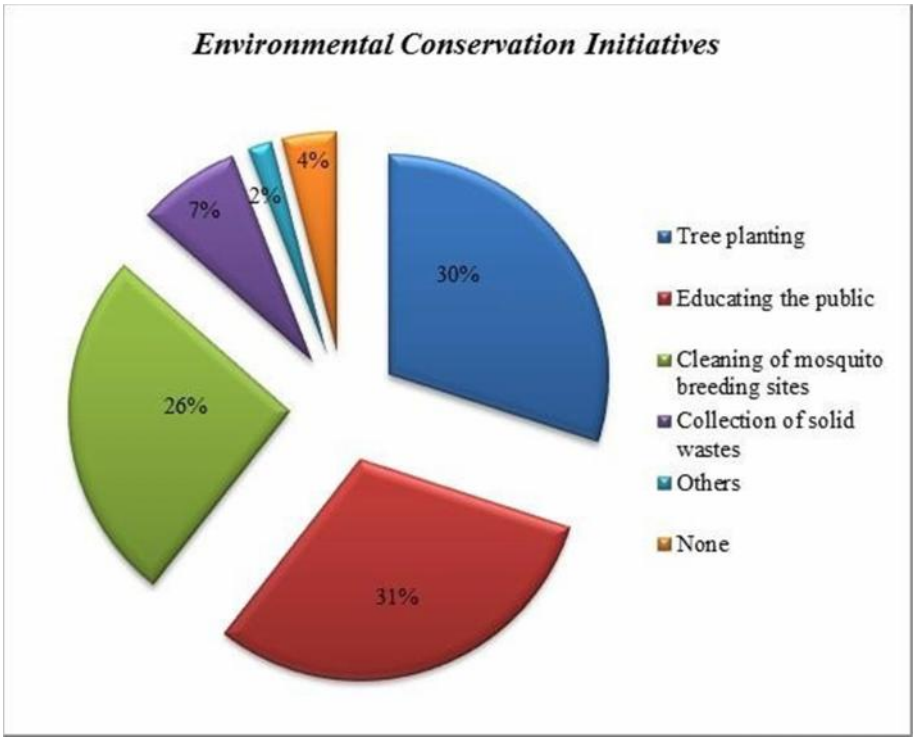


Figure 3-24: Environmental Conservation Initiatives

Source: Survey data-Zamconsult Consulting engineers.

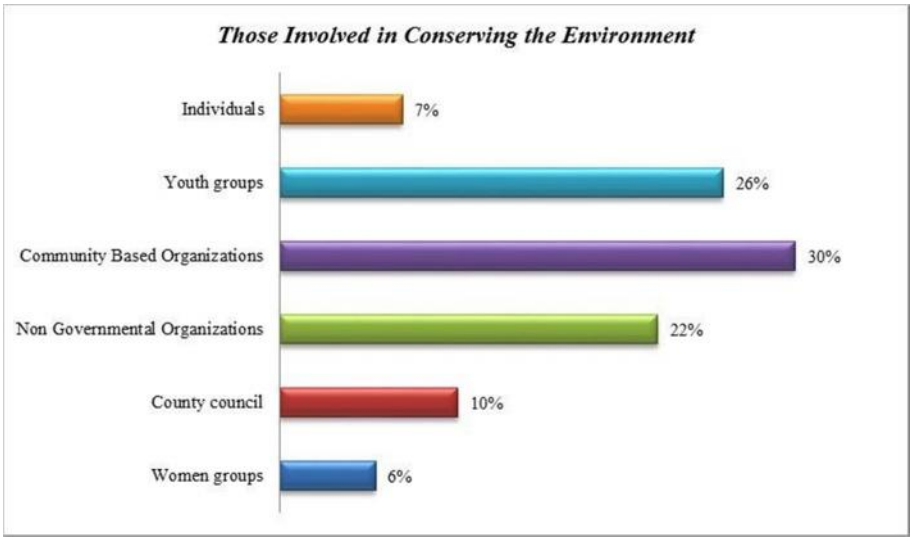


Figure 3-25: Implementers of Environmental Conservation Initiative

Source: Survey data-Zamconsult Consulting engineers.

95% of the population feels that the project will help conserve the environment through the improvement of hygiene and hence the improvement of the quality of life of the beneficiaries of the project.

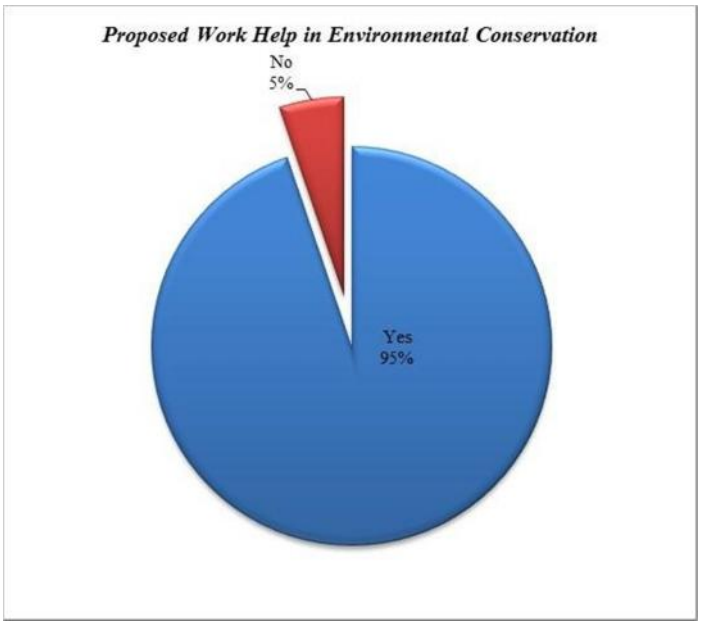


Figure 3-26: Will the Water Supply Project help in conserving the Environment

Source: Survey data-Zamconsult Consulting engineers.

3.6 Health Status

The prevalent diseases in the area are malaria, diarrhea, skin rashes and eye problems, which is an indication of the poor water and sanitation in the area. The disease prevalence is shown in the chart below:

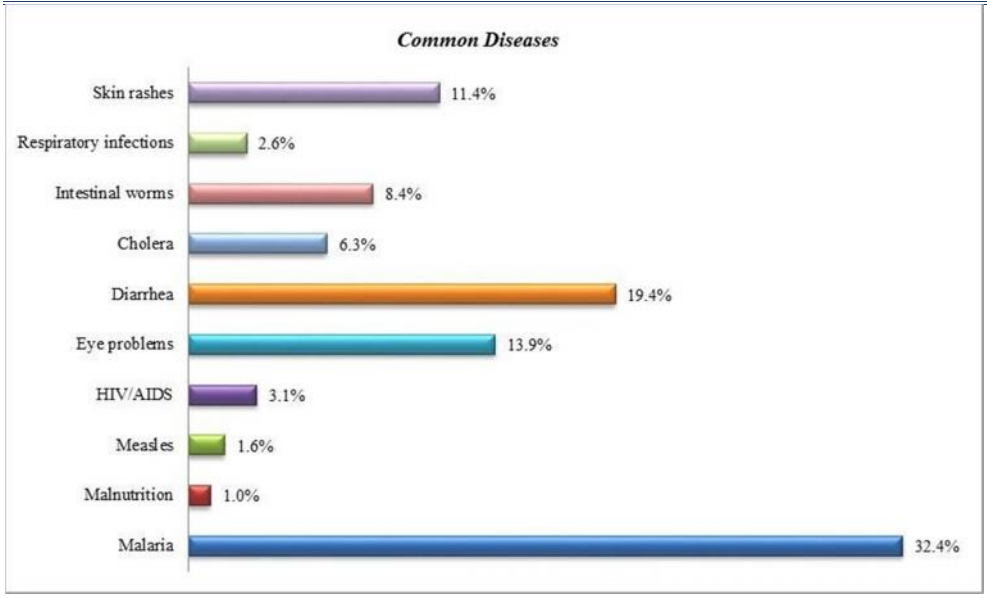


Figure 3-27: Prevalence of Diseases in the Area

Source: Survey data-Zamconsult Consulting engineers.

Most of the respondents when sick seek medical attention from a health centre, visit a traditional doctor or pray.

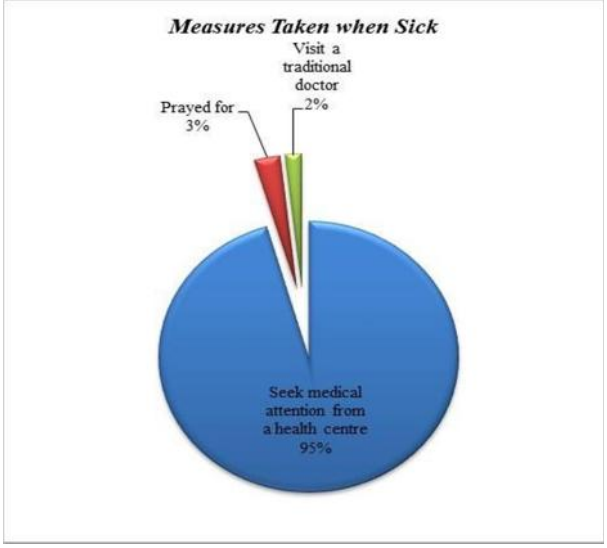


Figure 3-28: Type of Treatment

Source: Survey data-Zamconsult Consulting engineers.

The health facilities sought by the local population are mainly government health centres and hospitals followed by private institutions. The other health institutions visited by the population are shown in the chart below.

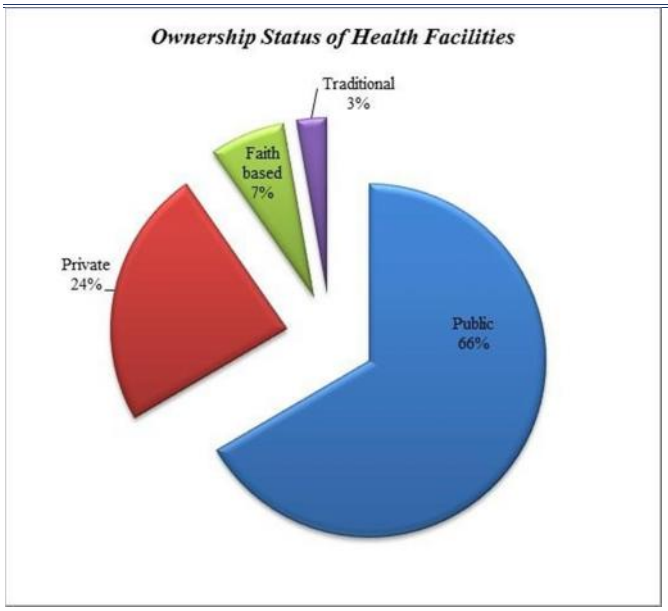


Figure 3-29: Ownership Status of the Health Facilities.

Source: Survey data-Zamconsult Consulting engineers.

Majority of the health centres are not located far away from the population with about 77% travelling less than 1 Km and 1-3 Km to access health facilities. The distances travelled by the population are shown in the chart below:

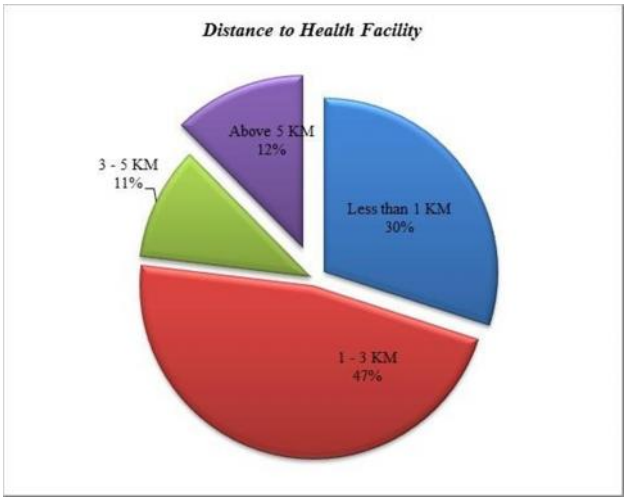


Figure 3-30: Distance to the Health Facilities.

Source: Survey data-Zamconsult Consulting engineers.

The level of HIV/AIDS awareness is high. 94% of the population is aware of HIV/AIDS.

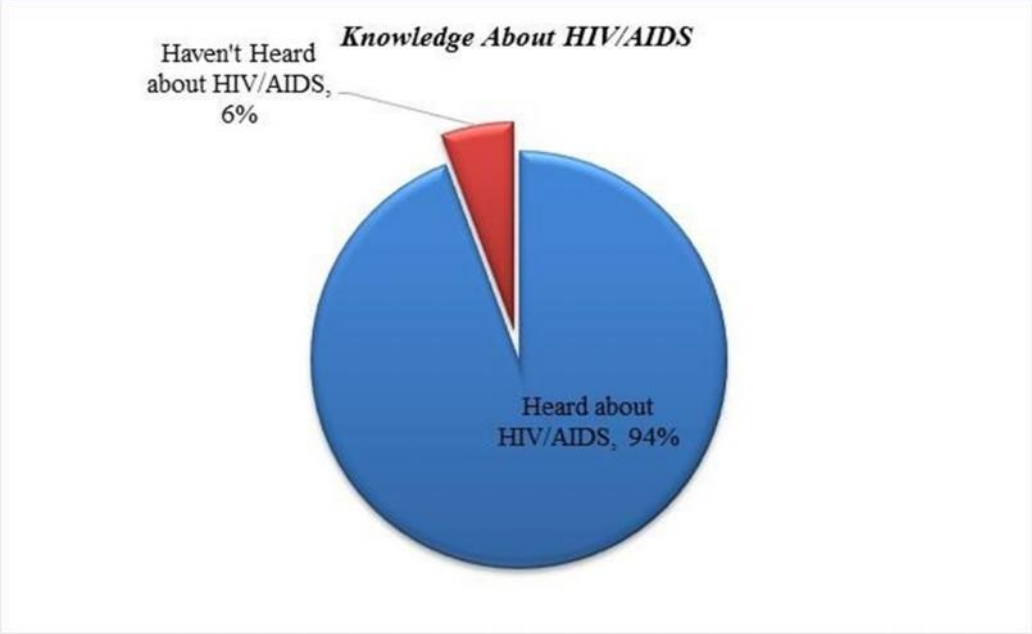


Figure 3-31: Level of Awareness on HIV/AIDS

Source: Survey data-Zamconsult Consulting engineers.

Information about HIV/AIDS is mainly received from the media, health workers/clinic, relative/friend, and religious leaders as shown in the chart below.

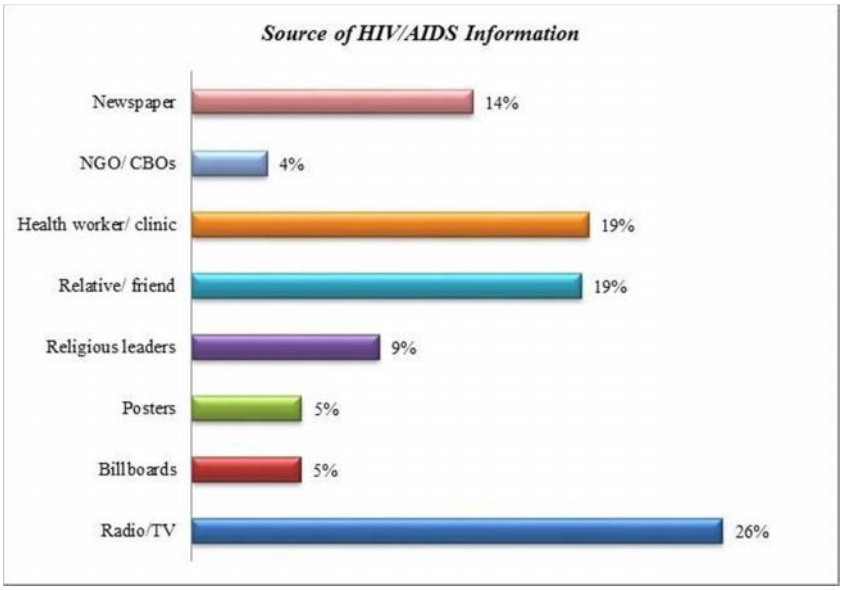


Figure 3-32: Source of information on HIV/AIDS

Source: Survey data-Zamconsult Consulting engineers.

11% of the respondents are apparently affected by HIV/AIDS.

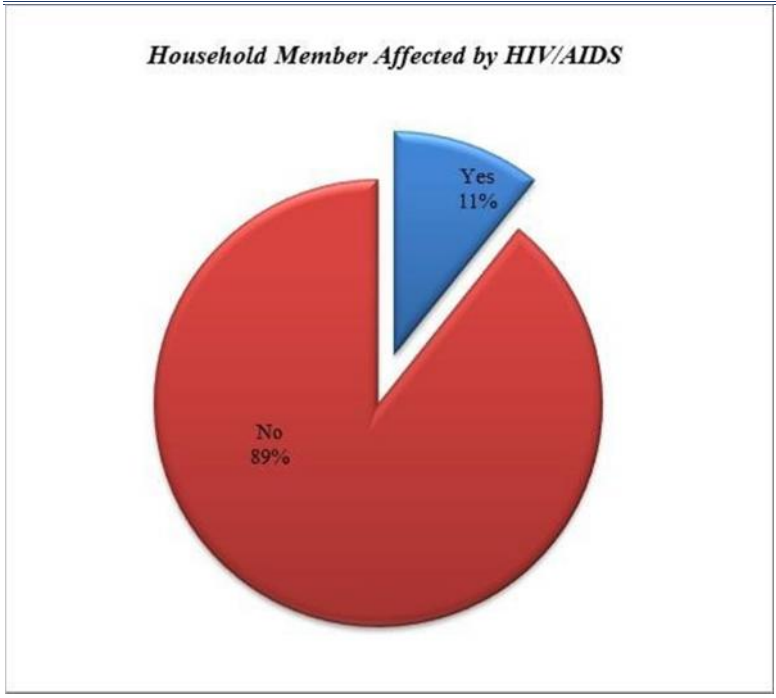


Figure 3-33: Household Members affected by HIV/AIDS

Source: Survey data-Zamconsult Consulting engineers.

90% of the respondents feel that HIV/AIDS can be prevented while 3% says it cannot be prevented, the rest of the population does not know about the prevention of HIV/AIDS.

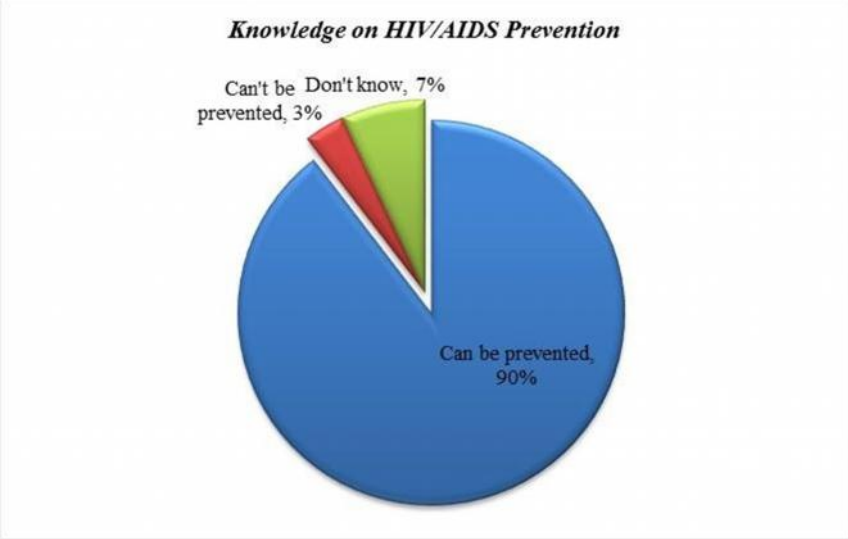


Figure 3-34: Knowledge on whether HIV/AIDS can be prevented

Source: Survey data-Zamconsult Consulting engineers.

93% of the respondents know where to go for voluntary counselling and testing for HIV/AIDS.

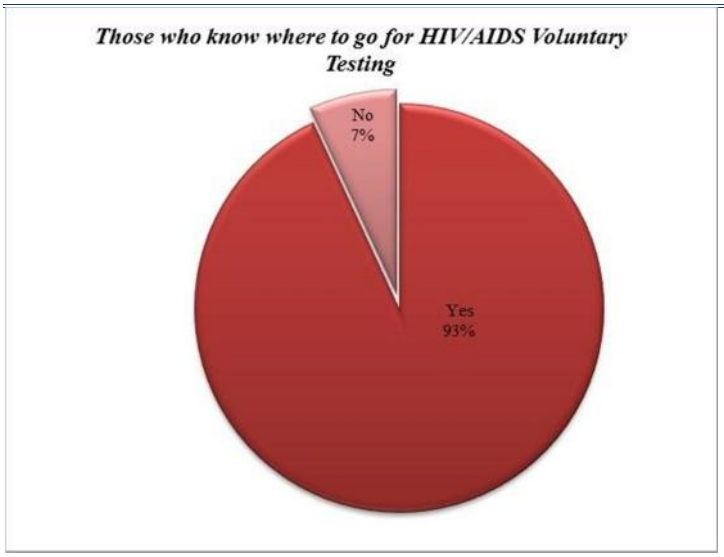


Figure 3-35: Respondents who know where to go to for Voluntary HIV/AIDS Testing Source
Source: Survey data-Zamconsult Consulting engineers.

3.7 Knowledge and Opinion of the Proposed Project

Majority of the population (77%) are aware of the project's objective to increase water supply to Kilifi, Malindi, Gongoni and Mombasa areas, as shown in the figure below:

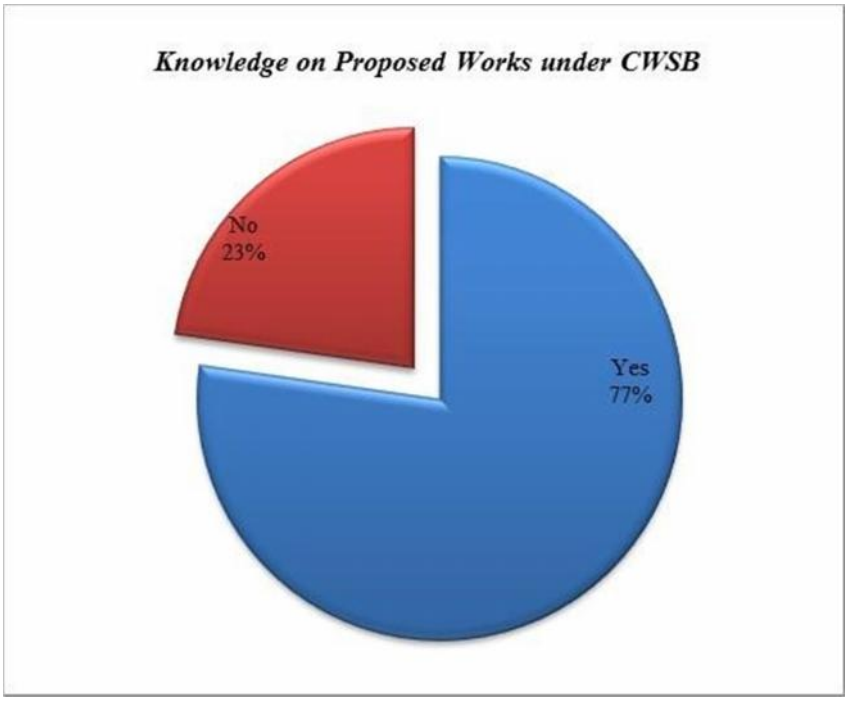


Figure 3-36: Knowledge on the Proposed Project
Source: Survey data-Zamconsult Consulting engineers.

Based on the knowledge on the project, 77% of the population believe that the project will positively benefit people, the other 23% believe that the project will have adverse effects which are highlighted in the charts below:

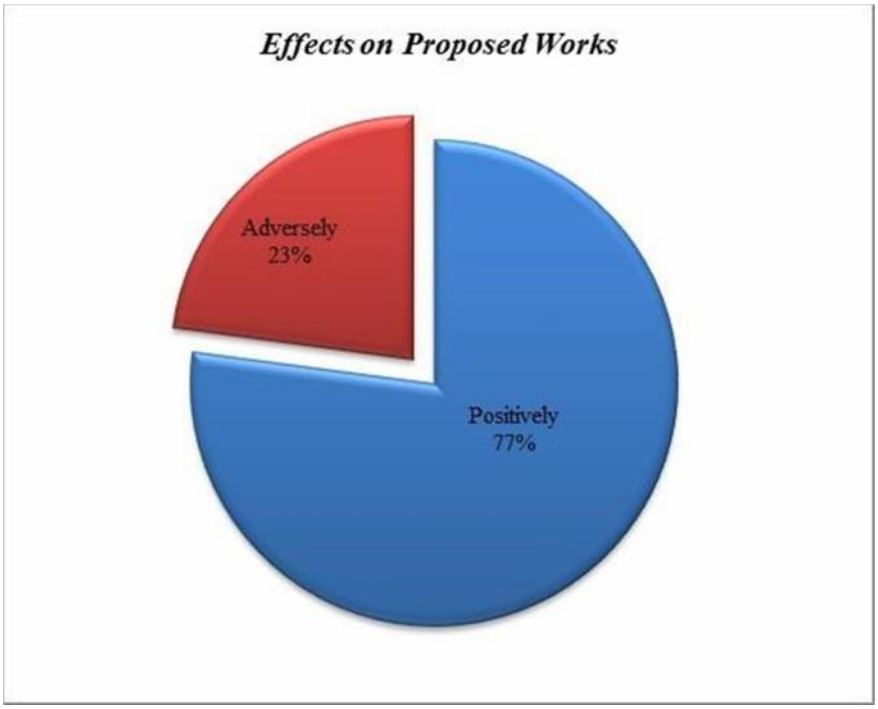


Figure 3-37: Effects of the Proposed Project Source:

Source: Survey data-Zamconsult Consulting engineers.

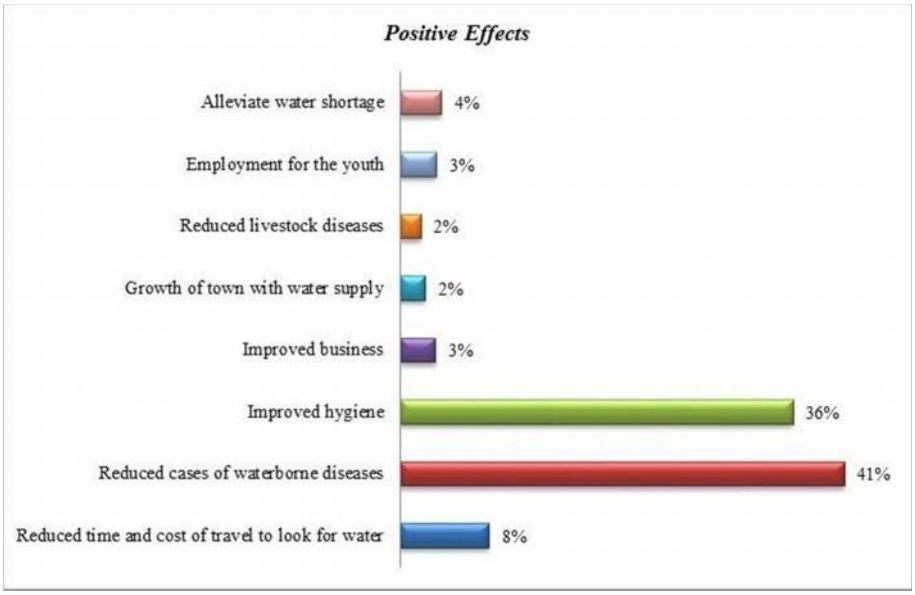


Figure 3-38: Positive Effects of the Project Source:

Source: Survey data-Zamconsult Consulting engineers.

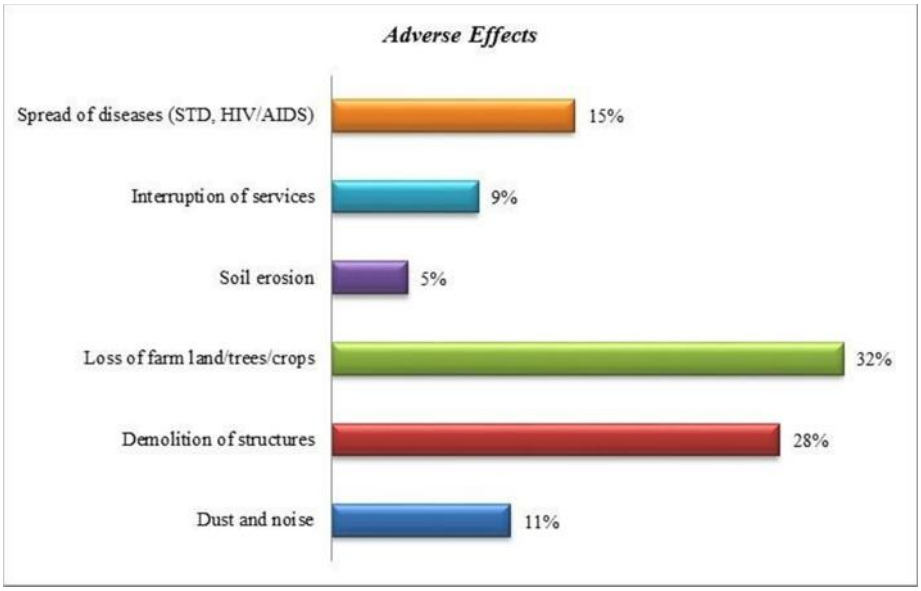


Figure 3-39: Adverse Effects of the Proposed Project

Source: Survey data-Zamconsult Consulting engineers.

The following suggestions were made in order to mitigate the adverse impacts of the project.

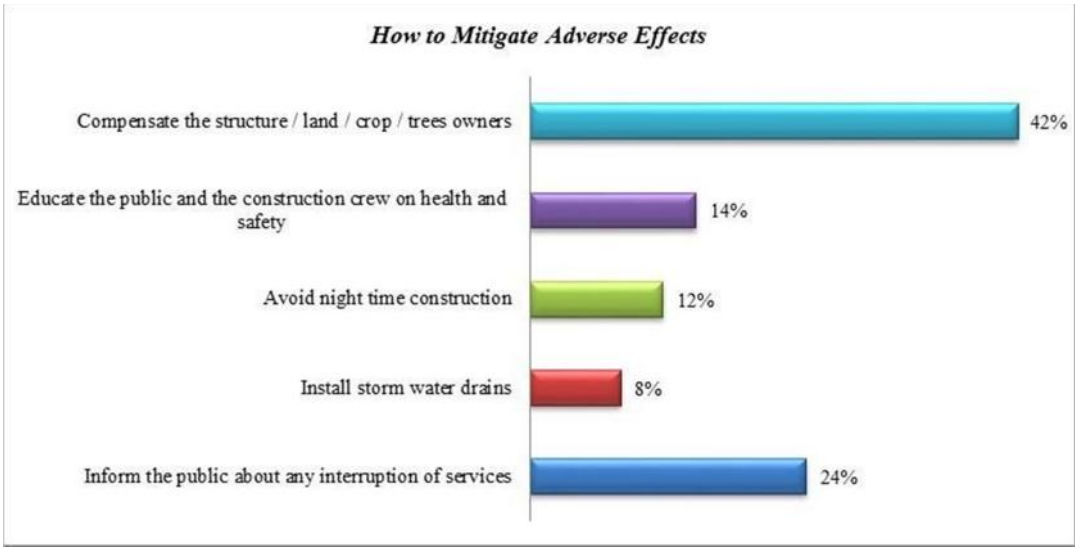


Figure 3-40: Mitigation Measures for the Adverse Impacts

Source: Survey data-Zamconsult Consulting engineers.

NOTE: For all cases where the percentages add to more than 100, it means that the question put to the respondent could attract more than one answer.

3.8 Physiographic and Environmental Conditions

3.8.1 Location

The project site is located along the Sabaki River in Lango Baya location, Malindi sub-county in Kilifi County at the coordinates summarized in the table below:

Table 3-1: Location of the three (3) boreholes

Borehole	Latitude	Longitude
Borehole BH1	N 9654812.461	E 585865.5410
Borehole BH3	N 9654835.582	E 586040.236
Borehole BH4	N 9655486.258	E 587374.639

3.8.2 Climate

The pattern of rainfall in the project area is bimodal. The long rains fall from April to June, with a peak in May. The short rains, on the other hand, fall from October to December. The average annual rainfall ranges from 400 mm in the hinterland to 1,200mm at the coastal belt.

3.8.3 Topography

The project area is located within the Coastal region of the Country in particular the foot plateau, characterized by undulating terrain and altitudes between 60 and 135 masl.

The area slopes downwards towards the Indian Ocean.

The project area is also located 50m from the Sabaki River, from where it gets its recharge.

3.8.4 Geology

The area around the Baricho waterworks is situated in Triassic to Lower Jurassic rocks, forming an undulated topography. The Mesozoic sediments belong to the Mazeras formation, consisting of sandstone, siltstones, grits and conglomerates. The Mazeras

Formation is overlain unconformably by the Jurassic Kambe Formation, which consists basically of lime-stone. The limestone crops out some 2 km east of the waterworks, where

the Sabaki valley becomes narrower. Across the Baricho area, striking from south to north, the Lango-Baya fault separates the Mazeras sandstones to the west from Kambe limestone to the east.

Lower sea levels in the Pleistocene led to the incision of a deep and straight, almost east-west trending valley. The rising sea levels during Holocene caused the infilling of this valley with clastic sediments of 50m or more in the axis of the valley. This elongated quaternary structure is referred to in the literature as paleochannel as shown in the figure below.

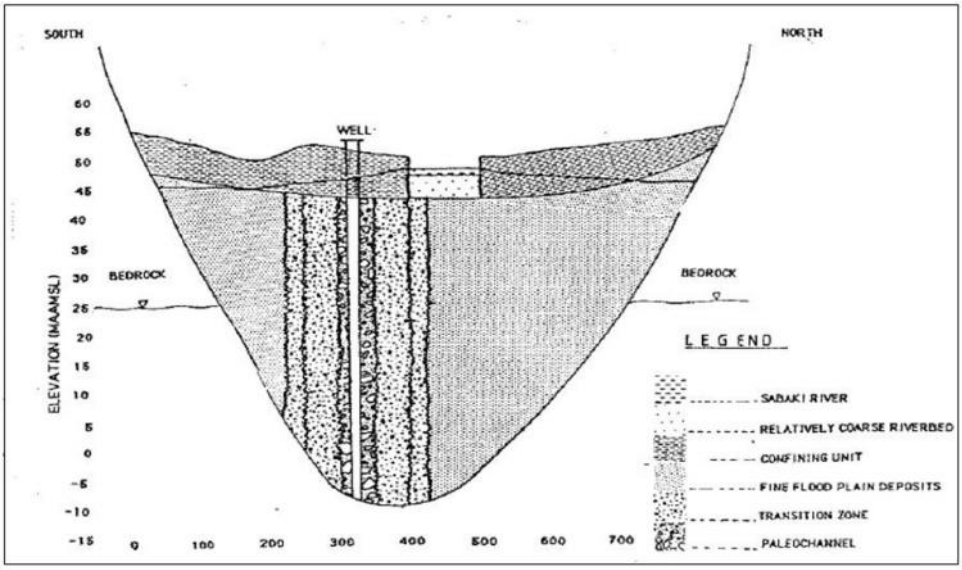


Figure 3-41: Cross-section through the paleochannel near Baricho well field

3.8.5 Hydrogeology

The quaternary paleochannel is filled with coarse sediments that have a substantial groundwater potential. This aquifer is termed as Sabaki Aquifer or Baricho Aquifer. Public water supply of the Coastal Region basically relies on water from this aquifer.

According to different seismic and resistivity sounding surveys performed in the past, the alluvial Baricho Aquifer (paleochannel) extends over 50km west of the Baricho waterworks. The geographical position of the channel axis in the project area is shown in the figure below.

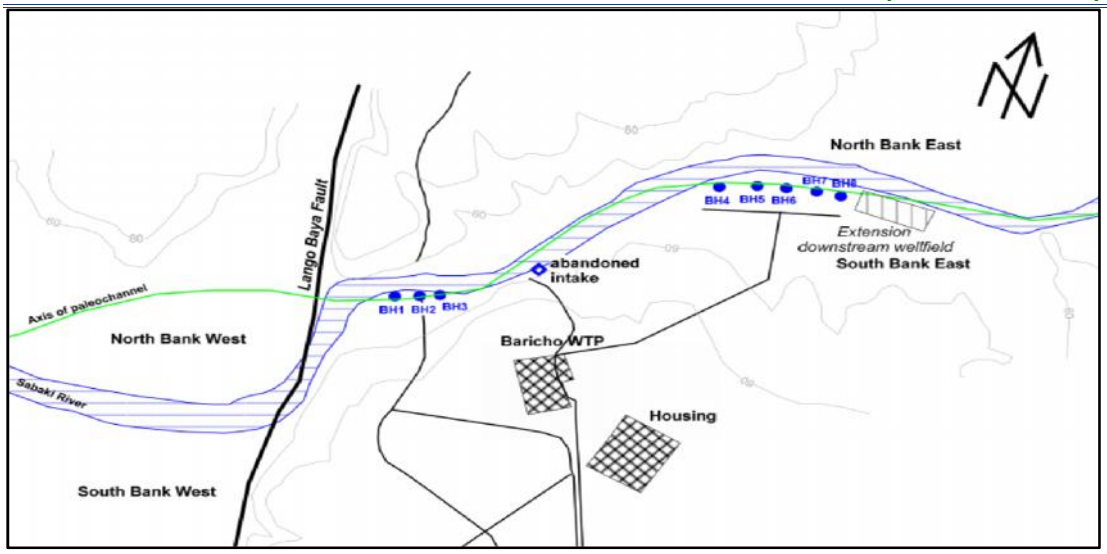


Figure 3-42: Paleochannel and Baricho well field

The aquifer is composed of sands, sandstone, grits and gravels, all intercalated with silts and clay. It is hydraulically connected to the Sabaki River, which is also responsible for almost the complete recharge of the aquifer. Water levels in the aquifer are generally controlled by water levels in the river.

The Sabaki River is the second largest permanent river that flows into the Indian Ocean within the country, with a flow range of 200m^3/s in the rainy seasons to 50m^3/s during the dry seasons. The water from the river directly recharges the aquifer throughout the year, and is more than enough to maintain the withdrawal of the existing and proposed well quantities.

Various hydrogeological models have been carried out over the years including one carried out by H.P Gauff Consulting Engineers and Fichtner Water and Transportation GmbH. They carried out analysis of the recharge of the aquifer showing that the impacts up to a quantity of 132,000m^3/day will not have a negative impact on the interaction between the aquifer and the river. The only scenario that will be dire is if the Athi River permanently dries up, a situation which is not foreseen.

The Baricho Aquifer is semi-confined to confined, with saturated thicknesses of 50 m or more. The vertical hydraulic conductivities are in the order of 1-5 x 10-3m/s, indicating a

good permeability. Of importance to this project is the fact that the aquifer is comprised of a sand layer confined between two impermeable rocks. This sand layer is trapped between the two rock layers and is where the water percolates to and is stored from the River, as such the water within this layer has its sediment removed. The existing setup ensures that there will be no danger of land subsidence due to abstraction of water from the aquifer.

Transmissivities of the aquifer range from 30 x 10-3m²/s to over 100 x 10-3m²/s along the axis of the paleochannel.

3.9 Flora and Fauna

3.9.1 Flora

The project area is characterized by brush and thicket characteristic of a lowland dry forest in the coastal region. This vegetation zone is mainly cultivated with cashewnuts, mangoes, coconuts and food crops and is mainly grassland. Agriculture does very well in the area due to its proximity to the Sabaki River. The general flora is shown in the figures below:

Figure 3-43: Vegetation Cover at Proposed Location

3.9.2 Fauna

The project area is home to various snake species, millipedes and centipedes and lizards.

3.10 Socio Economic Infrastructure

3.10.1 Administration

Kilifi County has six Sub-Counties namely:

- Kilifi
- Ganze
- Malindi
- Magarini
- Rabai
- Kaloleni

The project area falls within Malindi Sub County in Lango Baya Sub location.

The table below shows the project affected locations and sub-locations indicating their corresponding populations as per the Kenya Population and Housing Census of 2009.

Table 3-2: Administrative data as per Kenya Population and Housing Census 2009 data

Sub-location	Location	Area Km^2	Population
Lango Baya	Lango Baya	141	8,349

3.10.2 Health Facilities

There are medical facilities under the management of the government, religious organizations and private owners well distributed in Lango Baya. Extreme health cases are referred to the Malindi Sub-County hospital.

3.10.3 Transport and Communication

Transport in Kilifi County is composed of road, Water and air. The major road serving the area is the C103 road linking Malindi to Tsavo National Park. The road is of gravel standards and has little traffic. The figure below shows the C103 road.

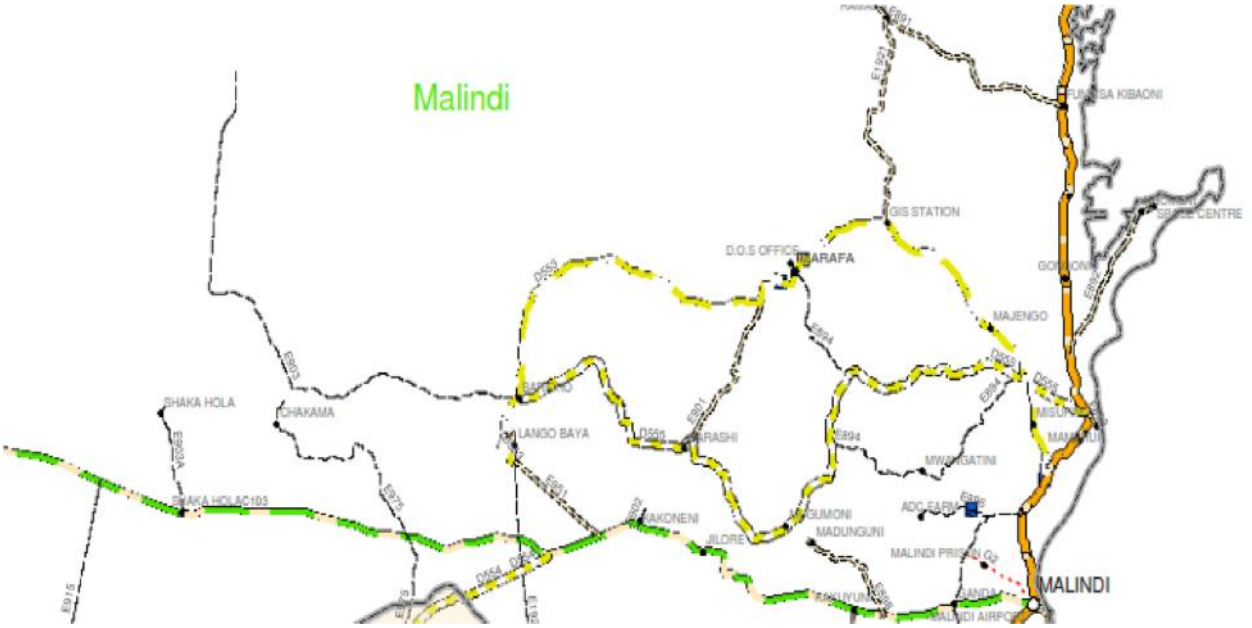


Figure 3-44: Road Network around the Project Area

The mobile network coverage is limited in the project area.

3.10.4 Commerce and Industry

The project area is predominantly agricultural with majority of the population carrying out subsistence farming. Shopping centres are far between. Lango Baya centre has developed as a result of the Baricho works.

Most of the crops grown in the area include, cashew nuts, coconuts, maize, mangoes and cassava. The harvested crops are sold by individual farmers, there are no co-operatives The Figure below shows some of the agricultural activities in the project area.

Figure 3-45: Maize and Coconut farming in the Project Area

3.10.5 Trading Centres

The Baricho well field is located within Lango Baya centre, which grew as a result of the water treatment works. Other centres are few and far between.

4.0 PROJECT DESCRIPTION

4.1 Background

This project is being funded jointly by the World Bank and the Government of the republic of Kenya (GoK). Three additional wells (BH9, BH10 and BH11) had been drilled under a preceding contract and it was anticipated that the newly constructed BHs would increase production at Baricho Water Works Site by 33,000 m^3/day. However, on 24th April 2018, an extreme storm event caused Sabaki River to break its banks and resulted in severe flood damage.

CWWDA has since repaired BH5, BH6, BH7 and BH8 and brought into operation the new boreholes BH9, BH10 and BH11.

The damage to BH1, BH3 and BH4 was extensive and could not be repaired through normal CWWDA operation and maintenance. Therefore, these boreholes are targeted for re-placement under this WSDP project.

4.2 Project Location

The Project is situated at the Baricho water works, 40 km west of Malindi Town in Lango Baya Location, Malindi Sub-county in Kilifi County. The well fields are positioned in the alluvial flood plain of the Sabaki River, the borehole head works will be located in land belonging to CWWDA and therefore no land acquisition is anticipated. Refer to appendix 1 and figure 4-1 for project location details.

The coordinates of the borehole locations are summarized in the table below:

Table 4-1: Location of the three (3) boreholes

Borehole	Latitude	Longitude
Borehole BH1	N 9654812.461	E 585865.5410
Borehole BH3	N 9654835.582	E 586040.236
Borehole BH4	N 9655486.258	E 587374.639

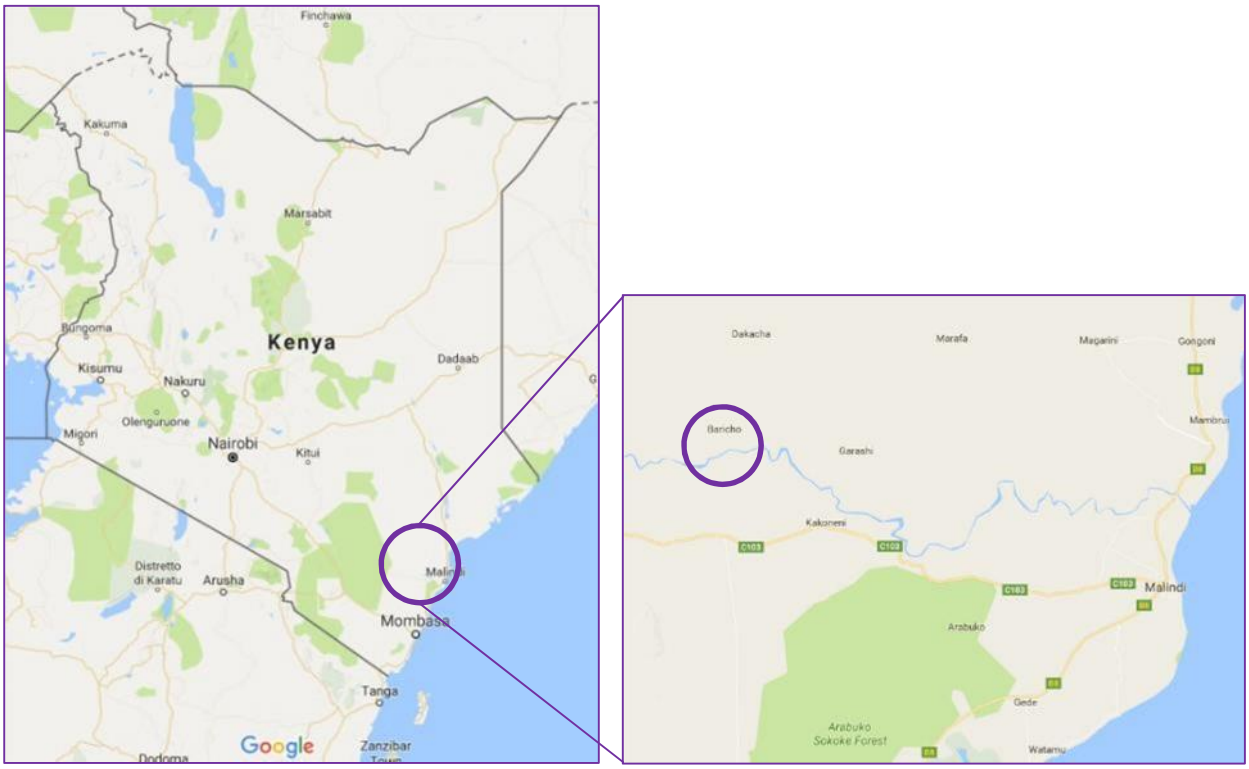


Figure 4-1: Location Map of the Project Area.

The distance from the well fields to the Water Treatment Plant (WTP) is 0.6 km (upstream well field) and 2.4 km (downstream well field). The existing wells are situated at distances of around 50 m from the Sabaki River. The distances between neighboring wells is around 90 m in the upstream well field and between 120 and 160 m downstream well field.

The raw water is pumped from the wells to Baricho WTP, where it is disinfected with Ca-hypochlorite, stored before being pumped toward Mombasa and Malindi for onward distribution to other coastal regions.

The general arrangement within the site is as in figure 4-2 below and, in the attached topographical map under appendix 1.

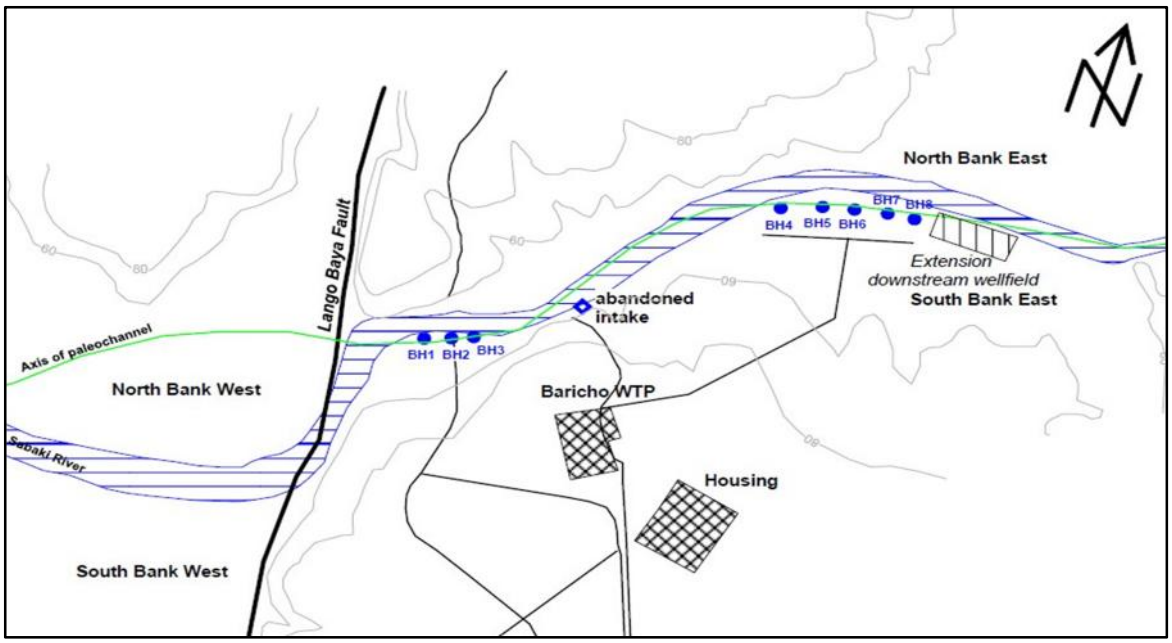


Figure 4-2: Site layout plan

4.3 Scope of works

The scope is to construct three (3) replacement boreholes at Baricho (BHs 1, 3 and 4) and provide secondary flood protection of the boreholes i.e. protect each well individually. This aims to reinstate the boreholes to their original production capacity of 11,000 m^3/day each (totaling to 33,000 m^3/day).

The works are being carried out at the Baricho Water Works and consist of:

- Drilling of three (3) new replacement boreholes in the Sabaki Well field near Baricho.
- Installation of well pumps and equipment.
- Connection of new DN 350 well draw pipelines to the existing DN 500 collector pipeline for borehole No's 1 and 3 and connection of new DN 350 well draw pipeline to the existing DN 500 well collector pipeline for borehole No. 4.
- Construction of an Earth embankment of selected excavated material in layers compacted as specified or to the engineer's requirements.
- Preparation of the foundation on which the gabions and gabion mattresses are to be placed. This shall be cut/excavated or filled and graded to the levels and grades shown on the drawings.

- Finished land installation and landscaping to suit the engineers satisfaction.

4.4 Project cost

The total cost of the project is KShs. 414,032,958.55. The estimated project duration is eight (8) calendar months.

5.0 PROJECT ALTERNATIVES

5.1 Alternative project location

An alternative site is one of the options considered for this project. In this case, the proponent will have to relocate the project to another suitable site instead of implementing it on the proposed site. This option would require the identification of suitable land, infusion of more funds for land acquisition, preliminary/feasibility studies, hydrogeological investigations, professional consultation etc. All these have already been undertaken for the current site. Adopting this alternative will delay the implementation of the proposed development which might render it unattainable in the long term.

This alternative is thus out of question considering that suitable land is available and belongs to Coast Water Works Development Agency.

5.2 The No Project Alternative

The other best alternative to address the significant impacts associated with such projects is the “No project alternative”. This alternative will ensure that the current site setting remains in its natural condition with minimal interference to the environment. In addition, Kilifi, Malindi and Mombasa will not receive optimal water supply to meet the current deficit of 33,000m^3/day occasioned by the closure of BHs 1, 3 and 4.

The project implementers have gone a step further to come up with a plan to harmonize the project with the environment by carrying out ESIA to take care of any negative impacts on the bio-physical and social environments. This step will ensure that the project stakeholders benefit from the project through sustainable development.

5.3 Alternatives water sources

The community should consider rain water harvesting through roof catchments to augment the current water supply from Baricho water works. This will reduce pressure on the ground water reserves and will provide plenty of water for use as an alternative measure.

6.0 CONSULTATIONS AND PUBLIC PARTICIPATION (CPP)

6.1 Introduction

The Consultations and Public Participation (CPP) Process is a policy requirement by the Government of the Republic of Kenya. It is a mandatory procedure as stipulated by EMCA 1999 section 58, on Environmental and Social Impact Assessment for the purpose of achieving the fundamental principles of sustainable development. Section 17 of the Environmental (Impact Assessment and Audit) (Amendment) Regulations of 2016, requires that all ESIAs incorporate Public Consultation, the aim of which is to ensure that all stakeholders interested in a proposed project (including project beneficiaries and the general public in the vicinity of the proposed project) are identified and their views, opinions, concerns, and recommendations are considered during project planning, design, construction, operation and decommission phases.

6.2 Stakeholder composition and briefing

The Consultant carried out a public consultation exercise in the form of administering structured questionnaires and interpersonal contacts/direct interviews with stakeholders within the locality of the project area.

The exercise was undertaken on 23rd of September to 30th September 2019.

Sample questionnaires and photos of the exercise are presented in the appendices section of this report.

Stakeholders were identified from within the project locality and its area of influence as follows:

- Local /business community drawn from Lango Baya and its environs.
- Local area leaders.
- Representatives of institutions of relevance to Baricho Water Works (CWWDA).

- Key informants inclusive of the project designers.

A total of 173 stakeholders were interviewed. The list of the respondents is presented under appendix 4 of this report.

6.3 Summary of stakeholder responses

The following key issues were highlighted during the exercise.

6.3.1 Provision of a public water tap

The local community requested that CWWDA provide them with a public water point. This will ensure that those who are not connected to piped water get to enjoy access to quality water within a shorter distance.

6.3.2 Water quality

It was established that most of the local residents have access to safe water for domestic use. 60% of the respondents view the water quality as good, 35% as fair and 5% as bad.

Those who are not connected to piped water access water directly from the nearby rivers. Water fetched from the river is used at the domestic level without any kind of treatment. This makes the consumers of the water more vulnerable to water-borne diseases.

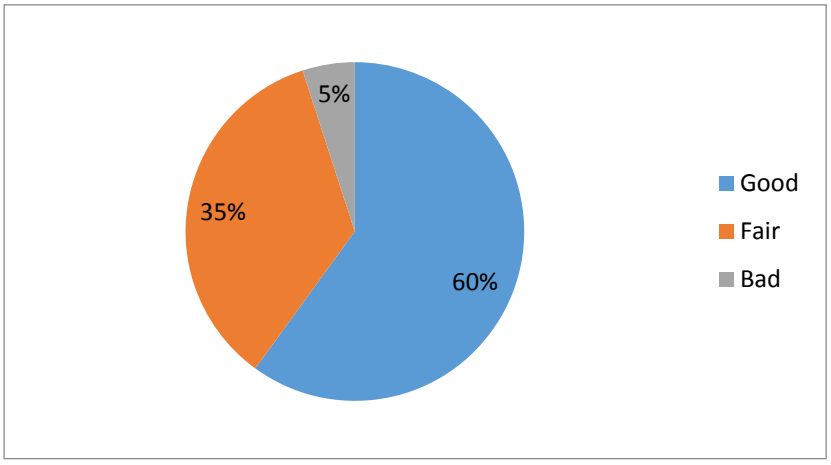


Figure 6-1: General Status of Water Quality

6.3.3 Sources of water.

The distance to the nearest water point varies from less than 0.2km to about 4km. Water for domestic us is fetched from various sources which include; individual/private taps, public water kiosks or from the river. 35% of the respondent fetch water from the river 20% buy from public kiosks and 45% from individual/private taps.

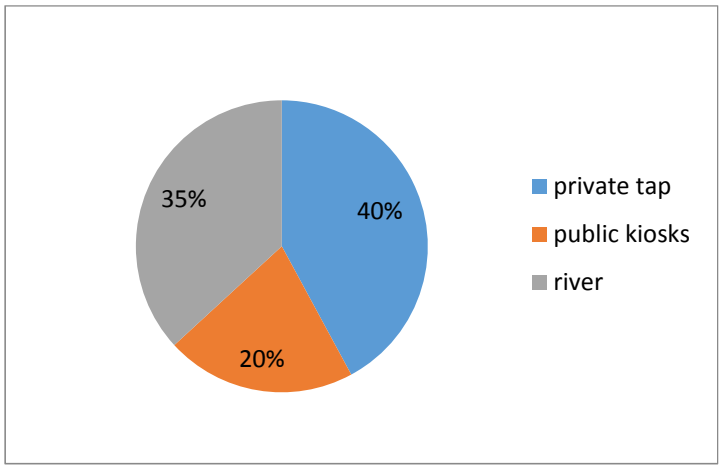


Figure 6-2: Category of Water access points

6.3.4 Positive environmental and social impacts

From the stakeholder responses, the following positive impacts were highlighted:-

- Drilling of the replacement boreholes will increase water supply in the region.
- Creation of job opportunities resulting in economic empowerment of the beneficiaries.
- Improved trade and commerce in the nearby Lango Baya market.
- The project will result in access to potable water and within a shorter distance.
- Drilling of the boreholes will attract other infrastructural development in the area e.g. better access roads.
- Increased government revenue; drilling of the boreholes means a wider supply of water, more people supplied to water leads to increased revenue to the government through collection of water revenue.

6.3.5 Negative environmental and social impacts

Whereas the stakeholders fully embraced the proposed project, a few negative impacts that require to be mitigated during the project life cycle were highlighted as follows:

- Immorality: There is potential for increased moral decadence due to increased immigrant workers from other regions. This could result in behavioral influences leading to unplanned pregnancies and spread of STDs.
- Air pollution: during borehole drilling, there is potential for air pollution which could lead to respiratory diseases.
- Destruction of land and vegetation: the community felt that machinery used for drilling might interfere with community land leading to loss of soil structure and fertility.
- Potential for injury or loss of life by workers and laborers due to construction related hazards.

6.3.6 Mitigation measures

The stakeholders recommended that the issues noted under subsection 6.3.5 above be mitigated by putting into consideration the following:-

- Organize civic education to the local community to reduce rates of immorality.
- Compensation should be made where necessary to ensure that the local community do not incur any losses.
- Personal protection equipment (PPE) should be used throughout the construction process to avoid any injury or death.
- The contractor should fence the site; to prevent livestock from accessing it.
- Work should be undertaken within working hours; i.e. 8am to 5pm.

6.4 Conclusion

The stakeholders appreciated that the proponent had given them a chance to participate in the decision-making process concerning the proposed project and were

satisfied that the project will partly resolve the challenges of unemployment in the area especially among school leavers.

The stakeholders were grateful that there will be reliable water to meet their needs; all respondents were positive about the project and agreed that it should be implemented without fail.

The local community recommended that during the construction stage the local population be given the first priority during the recruitment of labour by the contractor. They indicated that by participating in the construction process they will be economically empowered and will own up the project.

Women felt that during borehole drilling there will be job opportunities for them, whereby they will be selling food and beverages to labourers.

The local community felt that during construction there will be a ready market for their farm produce. This will improve their wellbeing and living standards.

7.0 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS: IDENTIFICATION, ANALYSIS AND MITIGATION.

7.1 Introduction

This chapter presents the general environmental and social impacts which may result from the proposed project. The emphasis will be initially on the specific impacts that are likely to result from the nature of works (e.g. drilling of the wells, placement of casings, water tests, etc.).

In general, successful implementation of the project will have high socio and economic benefits to the people and will contribute to their health and wellbeing. Overall, expected negative impacts are related to borehole drilling and associated works such as the installation of casings, water tests and pumping. These impacts are localized and not considered significant and long-lasting and can be mitigated through appropriate mitigation measures.

The severity and duration of these impacts can be minimized by ensuring that the drilling and construction works are limited to short working sections and that works are carried out rapidly and efficiently.

Table 7-1 presents a characterization of expected impacts.

Table 7-1: Characterization of excepted impacts

Aspect	Predicted Impact	Characterization of Impacts								
		Nature		Effect		Time Range			Reversibility	
		Positive	Negative	Direct	Indirect	Short Term	Medium Term	Long Term	Reversible	Irreversible
Ambient Air Quality	Increased local pollutant emissions and trace constituents such as VOCs Increased GHG emissions such as CH_4 and CO_2		X	X		X			X	
	Increased levels of dust and particle emissions from construction vehicles and equipment		X	X			X		X	
Soil/water pollution	Contamination of groundwater from oil spills during construction	X	X				X	X		
	Surface water pollution from construction wastes	X	X				X	X		

Table 7-1: Characterization of excepted impacts

Aspect	Predicted Impact	Characterization of Impacts								
		Nature		Effect		Time Range			Reversibility	
		Positive	Negative	Direct	Indirect	Short Term	Medium Term	Long Term	Reversible	Irreversible
Noise and vibrations	Increase of noise and vibration levels due to construction activities		X	X		X			X	
Health & Safety	General construction related health and safety risks for workers		X	X		X			X	X
	Risk of diseases transmissions and snake bites									
Socioeconomics	Employment and job creation during construction phases	X		X		X	X	X	X	
solid and liquid waste	Generation of both solid and liquid waste at the construction site and camps		X	X		X	X	X	X	

7.2 Impact Categories

1. First, the likely significance of the potential issues of concern have been determined and ranked according to the following:
   - Potential environmental impacts which are deemed to be highly significant and need thorough investigation in the ESIA
   - Potential environmental impacts that are deemed to be moderately significant, and will require reasonable investigation in the ESIA
   - Potential environmental impacts that are deemed unlikely to be significant, and will need to be listed, and addressed in some way, but which will not require detailed assessment in the ESIA.

Secondly, the following characteristics have been defined for each impact:

Nature:

- Positive: applies to impacts that have a beneficial economic, environmental or social result, such as additional economic activity or enhancement of the existing environmental conditions.
- Negative: applies to impacts that have a harmful or economical aspect associated with them such as economical cost, loss or degradation of environmental resources.

Effect:

- Direct: applies to impacts which can be clearly and directly attributed to a particular impacting activity.
- Indirect: applies to impacts which may be associated with or subsequent to a particular impacting activity, but which cannot be directly attributed to it.

Time Range:

- Short Term: applies to impacts whose effects on the environment will disappear within a 1 year period, or within the construction phase.
- Medium Term: applies to impacts whose effects on the environment will disappear within a 5 year period following the construction phase.
- Long Term: applies to impacts whose effects on the environment will disappear in a period greater than 5 years following the construction phase.

Reversibility:

- Reversible: applies to impacts whose significance will be reduced and disappear over time (either naturally or artificially), once the impacting activity ceases.
- Irreversible: applies to impacts whose significance will not be reduced nor disappear over time (either naturally or artificially), once the impacting activity ceases.

7.3 Impacts Emanating From the Proposed Boreholes

The impacts are identified at two stages:-

- during construction and
- post-construction (operation phase)

7.3.1 Construction Phase Impacts

Most of the potential environmental and social impacts associated with the construction phase will be negative and temporary and can be mitigated with the use of standard environmental management procedures. The potential social impacts or nuisance will be those typically associated with construction activities involving vehicles, equipment, and workers. The predicted impacts include the following:

1) Soil-Related Impacts

All construction activities have some minor impacts on the soil. However, these are localized and restricted locally to the borehole drilling site and trenches for the collector pipes. It is expected that these impacts are also short-lived during construction and mitigation measures are recommended. The key impacts will revolve around soil erosion, contamination and disturbance of the natural soil structure, piling of soil near the borehole sites and trenches, improper replacement of soil to its original position, mixing of layers and compaction thus reducing the ecological function of the soil.

Mitigation Measures
o The valuable top soil containing organic material, nutrients as well as seeds and the soil fauna would be excavated separately and piled in an adequate manner for re-use.
o In cases where it is identified that during drilling there is a danger of increased runoff

Mitigation Measures
or erosion, temporary drainage channels or holding ponds can be employed o After completion of the boreholes, immediate restoration by spreading piled top soil and sowing adequate grass cover and planting of trees will be followed where vegetation has been removed, therefore the impact is temporary and reversible. o Plan emergency response measures in case of accidental oil spills.

2) Impact on Water Resources

Potential environmental impacts associated with water resources include sedimentation, foreign material spills, pollution slumping, disturbance to drainage and removal of vegetation. Vegetation and solid waste, if allowed to accumulate in waterways, may cause localized pooling and flooding.

Improper handling of construction wastes and increased waste water generation may cause pollution of the existing water sources, the Sabaki River in particular.

Mitigation Measures
o Construction materials and other debris (mud from the drill, grout, etc.) shall be prevented from entering the River. o Proper handling of waste from the site through placement of bins and proper sanitation facilities. o Ensure protection of the riverine ecosystem by proper handling of cement during grout filling.

3) Social - Economic Impacts

During construction, the project will have clear benefits with regard to local employment opportunities. The project will additionally require various skills and services, e.g. plumbers, pipe fitters, etc. for which appropriate personnel will be contracted.

The increase in employment will temporarily lead to an overall increase of income directly and indirectly (through increased demand of other local services). Consequently, farmers will also benefit from higher income levels as they sell their products. New businesses will grow such as food vending to construction workers.

Immigration of people from different regions may lead to behavioral influences and this may increase the spread of diseases such as HIV/AIDS.

Mitigation Measures
o Unskilled construction and skilled (if available) labour to be hired from the local population as far as possible to minimize on influx of foreigners into the community. o Use of manual labour during site clearance and trenching to ensure more employment of locals and hence ensure project support throughout the construction process. o Sensitize workers and the surrounding community on awareness, prevention and management of HIV / AIDS through staff training, awareness campaigns, multimedia, and workshops or during community Barazas.

4) Air Quality

Construction activities such as bush clearing, materials delivery, borehole drilling and construction traffic will generate a lot of noise and dust especially during the dry seasons.

Vehicular traffic to the proposed sites is expected to increase slightly especially during delivery of raw materials. Vehicular traffic emissions will bring about air pollution by increasing the fossil fuel emissions into the atmosphere.

Mitigation Measures
o Use of protective clothing like helmets and dust masks by construction crew. o All the vehicles and construction machinery should be operated in compliance with relevant vehicle emission standards and with proper maintenance to minimize air pollution.

5) Construction Noise and vibration

Noise and vibration generated during construction by heavy construction machinery, such as drilling rigs and transportation vehicles.

Generally, construction noise exceeding a noise level of 70 decibels (dB) has significant impacts on surrounding sensitive receptors within 50m of the construction site.

Mitigation Measures
o Avoid night time construction when noise is loudest. Avoid night-time construction using heavy machinery, from 22:00 to 6:00 near residential areas. o No discretionary use of noisy machinery within 50 m of residential areas and schools. o Good maintenance and proper operation of construction machinery to minimize noise generation.

6) Biodiversity and Conservation Impacts

Removal of vegetation as well as trees will lead to loss of plants and animal habitats. The biodiversity affected includes insects such as butterflies and worms, small mammals, reptiles and birds. Water contamination will cause high toxicity to plants and animals living in watercourses.

Mitigation Measures
o Re-plant the indigenous vegetation as much as practically possible once work is completed. o Spare the vegetation that must not necessarily be removed. o Sensitize workers and enable them to properly handle hazardous spillages or wastes.

7) Public Health, Safety & HIV & AIDS Impacts

Construction staff and the general public will be exposed to safety hazards arising from construction activities.

The project works will expose workers to occupational risks due to handling of heavy machinery, construction noise, electromechanical works etc.

Construction activities i.e bush clearing, materials delivery, borehole drilling and construction traffic will generate a lot of dust and this may affect the respiratory system.

The high temperatures in the area will expose the workers to difficult working conditions.

The Lango Baya area is home to various species of snakes, which may put the workers at risk due to continuous interaction during the construction period.

Construction sites may be a source of both liquid and solid wastes. If these wastes are not well disposed, these sites may become a breeding ground for disease causing pests such as mosquitoes and rodents.

Immigration of people from different regions may lead to behavioural influences which may increase the spread of diseases such as HIV/AIDS.

Improper handling of solid wastes produced during and civil works such as spoil from excavations, scrap metal, mortar, paper, masonry chips and left over food stuff present a public nuisance due to littering or smells from rotting.

Improved clean water supply to the Mombasa, Malindi Kilifi, Malindi and Gongoni, will lead to improved public health and quality of life through reduced risk of waterborne and water related diseases; and increased public satisfaction.

Mitigation Measures
o Ensure that all construction machines and equipment are in good working conditions to prevent occupational hazards. o Establish a Health and Safety Plan (HASP) for both civil and electromechanical work. o Use of dust masks while working in dusty environment o Provide workers with appropriate personal protective equipment (PPE). o Provide first aid facilities in case of accidents o Provide workers with adequate drinking water and breaks. o Provide workers' training on safety procedures and emergency response such as fire, oil and chemical spills, pipe bursts and other serious water loss risks. o Sensitize workers and the surrounding communities on awareness, prevention and

Mitigation Measures
management of HIV/AIDS through staff training, awareness campaigns, multimedia and workshops or during community Barazas. Provide information, education and communication about safe uses of drinking water. o Work to minimize or altogether eliminate mosquito breeding sites. o Provide appropriate human and solid waste disposal facilities All these activities are in accordance with the Occupational Health and Safety Act of 2007

8) Gender Empowerment Impacts

There is need to promote gender equality in all aspects of economic development and more so in construction. Women roles in construction are mainly confined to supply of unskilled labour and vending of foodstuffs to the construction workers. Where available skilled women should be engaged as much as possible.

The increase in the distribution of water to the inhabitants will immediately transform their ways of life, especially women who are the first concerned when it comes to water supply. Women who are the main economic players will have more time to spend on other economic activities.

Mitigation Measures
o Ensure non-discrimination of job opportunities on the basis of gender.

7.3.2 Impacts during Operation & Maintenance

Environmental and social impacts and risks are anticipated.

1) Socio - economic potential positive or beneficial impacts

Numerous socio-economic potential positive or beneficial impacts from successful implementation of the project will include:

- Better access to safe drinking water leading to improved standard of living; and changes in exposure to both communicable and non-communicable diseases;
- Improvements in domestic hygiene and a reduction in health risks that were associated with poor water quality or inadequate access to services, as a result of improvements in drinking water quality and its availability;
- The project will contribute to increase in local development and employment as the local population are likely to be employed during the construction phase and after construction due to water related investments;
- Sanitation will also be promoted with its attendant improvement in the health of the people such as reduced incidence of water borne diseases.
- The project is expected to contribute to poor communities well-being associated with improved services, stability, and health.
- Employment creation will be the key positive environment impact as operation and maintenance personnel will be required for the rest of the project life. The availability of water and easy access will trigger other developments and businesses.

Other potential impacts typically associated with operation and maintenance activities are such as:

2) Generation of both solid and liquid waste

The establishment of an adequate water distribution system will be mostly beneficial to the local community, however with the provision of water comes the increase in the generation of solid and liquid waste. Majority of the stakeholders within the project areas, use pit latrines. The rest of the population either use septic tanks or has no sanitation facilities at all. Mombasa is the only town that is sewered, however people still dispose sewage into the ocean.

Water supply will lead to an increase in the generation of solid and liquid waste and hence lead to the pollution of the aquatic ecosystem in the supply areas.

Mitigation measures:
• Provide adequate waste disposal facilities. Ensure collection of all solid waste from generation points, safe transportation to a central point where they are sorted out and safely disposed according to type to protect the environmental resources. • Put in place adequate and efficient sanitary facilities for handling liquid waste especially waste water to protect the aquatic ecosystem from pollution. • Pit latrines can be used in areas where the other services are not available or feasible.

3) Leaks and burst

During the project duration there may be leaks and bursts caused by various reasons such as excessive pressures, among others.

Mitigation measures:
• A program of leak detection to be put in place to identify aging casings for replacement to avoid major bursts and frequent repairs.

4) Impact on Water Resources

As mentioned earlier, the generated solid and liquid waste from the project area may find its way into natural water courses, ground water and the ocean.

Thus, the entire water system and as a result, the ecological system will be negatively affected.

Mitigation measures:
• Wastewater will be channeled to the sewerage system if available or constructed septic tanks. Pit latrines can be used where sewerage system is not available or where construction of septic tank is not feasible. • All solid waste will be collected from generation points, safely transported to a

Mitigation measures:
central place where it is sorted out by type and then safely disposed according to type.

7.3.3 Impacts during De-commissioning

De-commissioning of the Project is not envisaged. Project components however will be rehabilitated over time having served their useful life.

8.0 ENVIRONMENTAL AND SOCIAL MITIGATION AND MANAGEMENT PLAN

8.1 General

An Environmental and Social Mitigation and Management Plan (ESMMP), as part of the recommendation has been designed recommending measures to be put in place for the significant potential negative impacts on the biophysical and socio-economic environment.

To allow for change in key environmental factors, provisions have been made for dynamism and flexibility of the ESMMP, hence it's subject to regular regime of periodic review.

This ESMMP should be availed to the proponent's regional office for reference during operation and maintenance of the project components.

Table 8-1: The Proposed Environmental and Social Mitigation and Management Plan (ESMMP)

Environmental / Social Impact	Mitigation Action Plan	Responsibility
Loss of flora and fauna	• Site clearance should be limited to the minimum area required for the execution of the works. • Records of the number and tree species cut to be kept. • Replanting of indigenous trees after the project is completed. • Top soil removed from the boreholes should be stockpiled and spread about after completion of work to facilitate regrowth of existing vegetation so as to rehabilitate the ecosystem	Contractor Contractor Supervisor – project Engineer to consult KFS on appropriate replanting seedlings Sub-County Environmental officer

Environmental / Social Impact	Mitigation Action Plan	Responsibility
Air pollution	• Vehicles and other equipment emissions should be kept to a minimum by servicing and maintaining the equipment to manufacturer's specification. In, addition, the contractor should be encouraged to use unleaded and low sulphur content petrol and diesel respectively for all equipment and vehicles	Contractor Supervising Engineer
Noise and Dust	• Use protective clothing like helmets and dust masks on construction crew. • Avoid night time construction when noise is loudest. • Avoid night-time construction using heavy machinery, from 22:00 to 6:00 near residential areas; • No discretionary use of noisy machinery within 50m of residential areas and other sensitive institutions; • Good maintenance and proper operation of construction machinery to minimize noise generation; • Installation of temporary sound barriers if necessary.	Contractor Supervising Engineer
Generation of solid and liquid waste	• Provide adequate waste disposal facilities. Ensure collection of all solid waste from generation points, safe transportation to a central point where they are sorted out and safely disposed according to type to protect the environmental resources. • Put in place adequate and efficient sanitary facilities for handling liquid waste especially waste water to protect the ground water from pollution. • Wastewater from residential quarters and offices to be directed to constructed septic tanks for safe	Contractor Supervising Engineer

Environmental / Social Impact	Mitigation Action Plan	Responsibility
	handling. • Pit latrines can be used in areas where the other services are not available or feasible	
Pollution of water resources	• Ensure proper solid and liquid wastes disposal mainly from the construction camps and offices. • Ensure proper measures are in place for collection and disposal of spilled oils and lubricants.	Contractor, Supervising Engineer Engineer in charge of Baricho
Health and safety	• Provision of Personal Protective Equipment (ear muffs, gloves and helmets) for the construction crew • Provide First aid kit and appropriate procedures and safety measures • Provide condom dispensers at appropriate locations coupled with awareness campaigns to workers and surrounding communities on HIV/AIDS throughout the construction period	Contractor Supervising Engineer CWWDA - Environmental Department

8.2 Environmental Mitigation Cost Estimates

The cost of some of the proposed mitigation measures will have been included in the main engineering Bills of Quantities and therefore need not be included in the Environmental mitigation costs. These costs will also include the cost of supervision for the implementation of the ESMMP.

Table 8-2 shows cost estimates for environmental mitigation. The brief description of the items is for identification purposes and does not supersede or modify the detailed descriptions of works in other sections of this report.

Table 8-2: Budget for Environmental Mitigation

S/No	Item Description	Unit	Quantity	Unit Price (Kes)	Item Cost (Kes)
1	Emergency measures in case of accidental oil spill	LS	1.00	500,000.00	500,000.00
2	On completion of construction works, reinstatement of ground for vegetation regeneration	Ha	2.00	250,000.00	500,000.00
3	Provide waste collection bins at strategic points and ensure that all solid wastes are transported to a place of safe disposal	No	50.00	3,000.00	150,000.00
4	Provide Personal Protective Equipment (PPE) to the construction crew – helmets, overalls, gum boots, earplugs and dust masks.	set	500.00	3,500.00	1,750,000.00
5	Sensitize workers and the surrounding community on awareness, prevention and management of HIV/AIDS and other STDs through staff training, awareness campaign, media, and sign boards in local languages, workshops and during public Barazas.	Months	8.00	300,000.00	2,400,000.00
6	In collaboration with the Ministry of Health provide VCT centres	LS	1.00	300,000.00	300,000.00
7	Provide condom dispensers at appropriate locations	LS	1.00	200,000.00	200,000.00
				Total Budget	**5,800,000.00**

9.0 ENVIRONMENTAL AND SOCIAL MONITORING PLAN

The purpose of the Environmental and Social Monitoring Plan (ESMP) for the proposed project is to initiate a mechanism for implementing mitigation measures for the potential negative environmental impacts and monitor the efficiency of these mitigation measures based on relevant environmental indicators. The Environmental and Social Monitoring Plan identified certain roles and responsibilities for different stakeholders for implementation, supervision and monitoring. The objectives of the ESMP therefore are:

- To ensure that the recommendations in the approved ESIA report are adhered to by the various institutions.
- To ensure that the environmental and social mitigation and their enhancement actions are well understood and communicated to all involved stakeholders.
- To ensure that the proposed environmental and social remedial measures are implemented during the project execution stage.
- To evaluate the effectiveness of environmental and social remedial measures.
- To evaluate the effectiveness of various evaluation techniques and procedures.
- To provide the Proponent and the relevant Lead Agencies with a framework to confirm compliance with relevant laws and regulations.

Conversely, environmental monitoring provides feedback about the actual environmental impacts of the project. Monitoring results help in judgment of the success of mitigation measures in protecting the environment.

They are also used to ensure compliance with environmental standards, and to facilitate any needed project design or operational changes. A monitoring program, backed up by powers to ensure corrective action when the monitoring results show it necessary, is a proven way to ensure effective implementation of mitigation measures. By tracking the project's actual impacts, monitoring reduces the environmental risks associated with the project, and allows for project modifications to be made where required.

Table 9-1 presents the indicators that will be used to monitor the implementation of the project. The indicators are selected based on the project and major anticipated impacts.

Table 9-1: Environmental and Social Management and Monitoring Plan

Area	Environmental Component	Performance Indicators	Monitoring Requirements	Corrective Action
Borehole Sites	Noise	• Number of complaints • Distance from human settlements • Limit of acceptable noise standard issued by NEMA	• Liaise with other stakeholders. • Documentation on complaints about noise	Implement recommendations of ESMP report.
	Air pollution	• Number of complaints on dust nuisance • Distance from human settlements	• Physical inspection • Interview residents including workers • Liaise with other stakeholders	Implement recommendations of ESMP report. Implement recommendations
	Water pollution	• Number of complaints on pollution of water by downstream users • Obstruction of waterways	• Level of complaints • Physical inspection	In case of pollution investigate cause Implement corrective measures

	Occupational Health and Safety	• Healthy and safety awareness among staff • Number of accidents • Number of awareness campaign meetings held • Outpatient attendance register • First aid facilities in place	• Documentation • Interviews with workers and management • Liaise with other stakeholders	Investigate non-compliant issues Implement corrective measures
		•Compliance with Occupational Health and Safety Act (OSHA)		
	Solid and liquid wastes	• Presence or absence of scattered litter. • Flow of wastewater on the ground surface • Level of complaints on hygienic conditions and pollution of water sources.	• Physical inspection of site and sanitation facilities • Documentation in grievance register	Implement corrective measures

	Public health and safety	• Prevalence rates of common diseases. • Provision of condoms, contraceptives and mosquito nets. • Conduction of campaign meetings on transmission of diseases like HIV/AIDS and other STDs. • Availability of adequate solid waste bins. • System of safe disposal of both solid and liquid waste in place.	• Physical inspection • Documentation Number of complaints • Interview with residents	Investigate non-compliance and make recommendations Implement recommendations
		• Availability of first aid facilities. • Outpatient attendance registers. • Compliance with the Health and Safety Act.		

Construction Camp	Solid and liquid wastes	• Presence of scattered litter. • Signs of obstruction of water courses.	• Physical inspection • Number of complaints.	Implement recommendations
	Solid and liquid wastes	• Scattered litter • Signs of obstruction of water ways. • Flow of wastewater on the ground surface. • Provision of sanitary facilities to the construction crews.	• Physical inspection • Number of complaints	Implement recommendations

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusions

From an environmental and social point of view, the drilling and operation of the three replacement boreholes at Baricho will not have adverse levels of negative environmental and socio-economic impacts. An Environmental and Social Mitigation/Management and Monitoring Plan has been devised to aid the project implementers with a clear guideline into ensuring that all potential negative impacts are mitigated at the earliest time possible. An ESMMP budget has been devised to aid in the implementation of the ESMMP.

In view of the conclusions and recommendations outlined under this chapter, NEMA should consider issuing an EIA license to the project proponent to facilitate commencement of the project which is eagerly awaited by the beneficiaries.

10.2 Recommendations

This report recommends the following;

1. The proponent, supervising consultant and the contractor must adhere and implement in full the proposed Environmental and Social Mitigation/Management and Monitoring Plan. Its implementation must be monitored continuously by the representatives of the engineer and contractor to ensure total compliance.
2. The proponent must observe strict adherence to the legislations discussed under chapter two (2) of this report.
3. The contractor should prepare site specific ESMP for the camp site and submit the same to NEMA for issuance of EIA license. The ESMP should address the management action plans discussed under chapter eight of this report.
4. The proponent must adhere to the conditions that will be attached to the EIA license and must confirm adherence in writing to the Director General-NEMA.
5. The Contractor is advised to engage an environmentalist/social expert to monitor the implementation of the management plan by carrying out a self-audit on a pre-agreed schedule.

6. The proponent and the supervising consultant through their representatives should carry out control audits to ensure that the ESMMP is being implemented fully.
7. Good relations, between the contractor, the local community and other stakeholders, will need to be established and sustained throughout the construction period.

11.0 REFERENCES

1. The Republic of Kenya (2004), State of Environment Report, NEMA, Nairobi Republic of Kenya (2004), District Environment Profile, NEMA, Nairobi
2. Republic of Kenya, Environmental Management and Coordination Act (EMCA, 1999), Government Printer, Nairobi
3. Republic of Kenya, Water Act (2016), Government Printer, Nairobi
4. Public Health Act, Cap 242, Government Printer, Nairobi.
5. Republic of Kenya, Environmental Impact Assessment/Audit Regulations 2003, (Legal Notice , No.101) Government Printer, Nairobi
6. The Constitution of Kenya 2010
7. The Land Act, No. 6 of 2012
8. Environmental and Social Impact Assessment Report for Lot 1: augmentation of Baricho well field by Zamconsult Consulting Engineers.

12.0 APPENDICES

Appendix 1: Project site layout plan and location map

Appendix 2: Photo Gallery

Appendix 3: List of EIA Team, NEMA Registration Certificates and Practicing Licenses of Lead Expert and WMCL as Firm of Experts

Appendix 4: CPP respondents' list and sample questionnaires

Appendix 5: Project site layout plan and location map

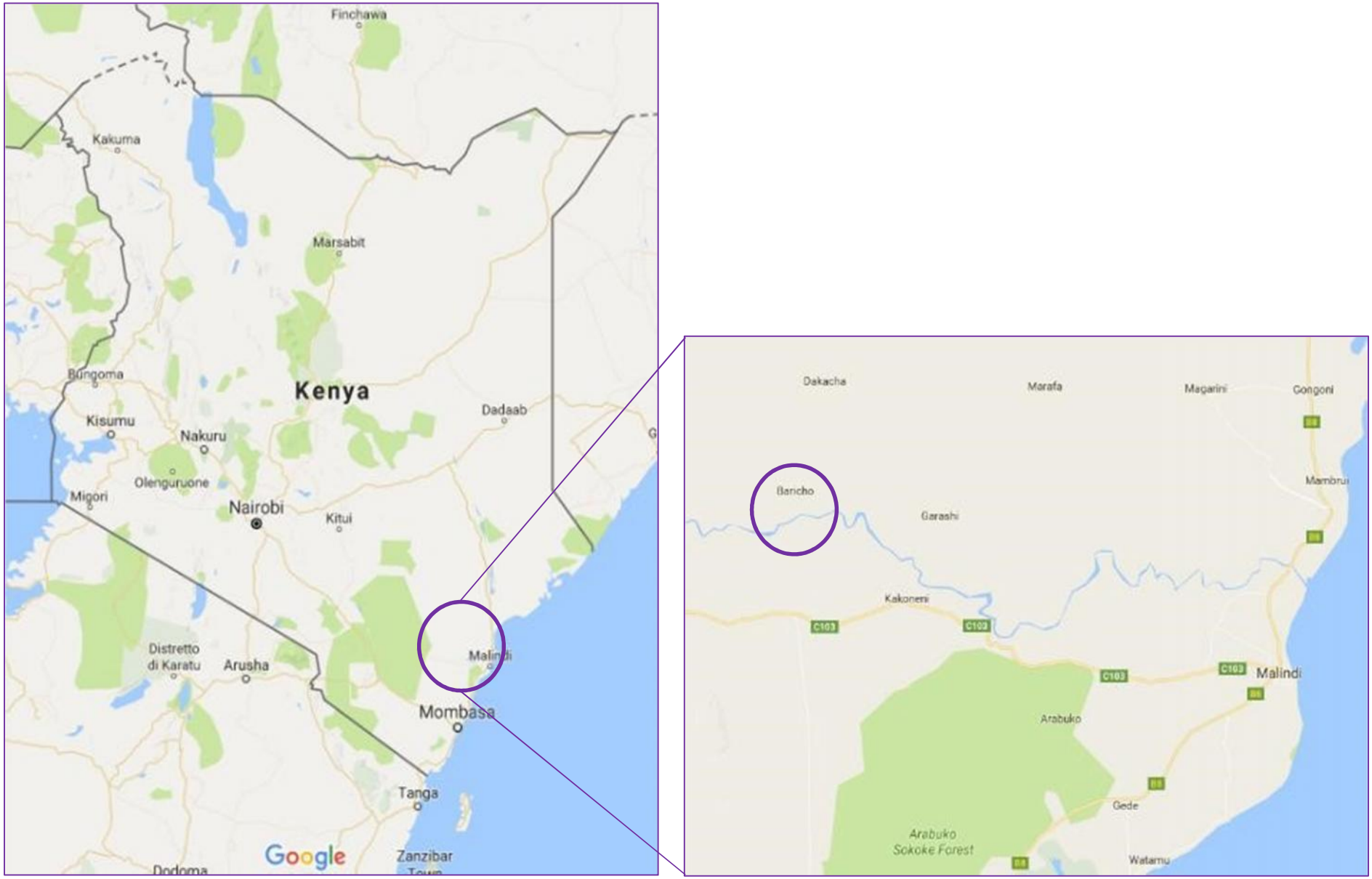
Appendix 6: Photo Gallery

Appendix 7: List of EIA Team, NEMA Registration Certificates and Practicing Licenses of Lead Expert and WMCL as Firm of Experts

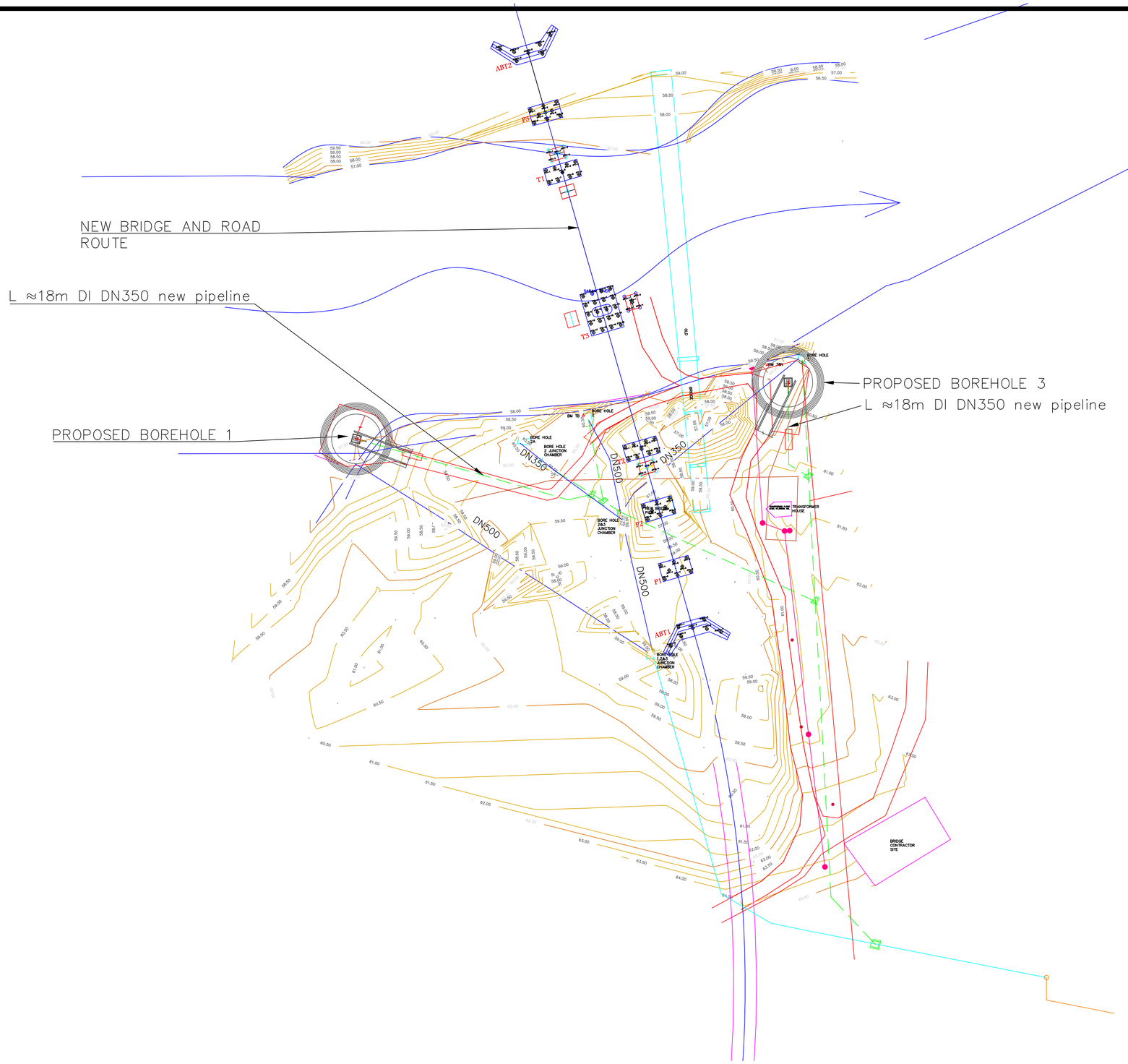
No	Name	Profession	Qualifications	Position
1.	Eng. I. G. Wanjohi	Civil/Structural Engineer /Lead EIA/EA Lead Expert	BSC Civil Engineering/ JKUAT- Certificate in Environmental Impact Assessment and Environmental Audit.	Team Leader/Lead EIA Expert
2.	E. Kimani	Sociologist	Degree in Sociology and Economics	Sociologist
3.	Gitahi J. Gichuhi	Civil Engineer /Environmental Expert	BSC in Civil Engineering	Assistant Environmentalist
4.	E. Ireri	Civil Engineer /Environmental Expert	BSC in Civil Engineering	Assistant Environmentalist
5.	Robert Ngunjiri	Environmentalist	BSC. Environmental Studies and Community Development	Assistant Environmentalist

Appendix 8: CPP respondents' list and sample questionnaires

Project site location map.




Down Stream Wells location)
Upstream Wells location)
Proposed Dyke (3.8km)
BH1
BH2
BH3
BH4
BH5
BH6
BH7
BH8
BH9
BH10
BH11
Flood Extent
Pump Up
Ministry of Water
Development
Sabaki Water Supply
Langobaya
Shops
104
97
98
125
100
60



MAP LEGEND

- CONTOUR LINE
- ACCESS ROADS
- EXISTING PIPE LINE
- PROPOSED ALIGNMENT
- JUNCTION CHAMBER
- BORE HOLE
- FLOWMETER CHAMBER
- PROPOSED BORE HOLE
- POWER LINE
- BOUNDARY
- RIVER SABAKI

KENYA VISION 2030 TOWARDS A GLOBALLY COMPETITIVE AND PROSPEROUS NATION

THE REPUBLIC OF KENYA, MINISTRY OF ENVIRONMENT, WATER AND NATURAL RESOURCES
WATER AND SANITATION DEVELOPMENT PROJECT (WSDP)

DRILLING AND CONSTRUCTION OF THREE (3) REPLACEMENT BOREHOLES (BOREHOLES 1,3 & 4)

CLIENT
COAST WATER SERVICES BOARD
P.O. BOX 90417, 80100
MOMBASA, KENYA

CONSULTING ENGINEER
Wanjohi Mutonyi Consult Ltd.
Engineers • Environmentalists • Project Managers

Wanjohi Mutonyi Consult Ltd.,
Box 21714-00505,
Corner Ngong/Ndemi Road,
Nairobi.

REVISIONS	
DATE	DESCRIPTION

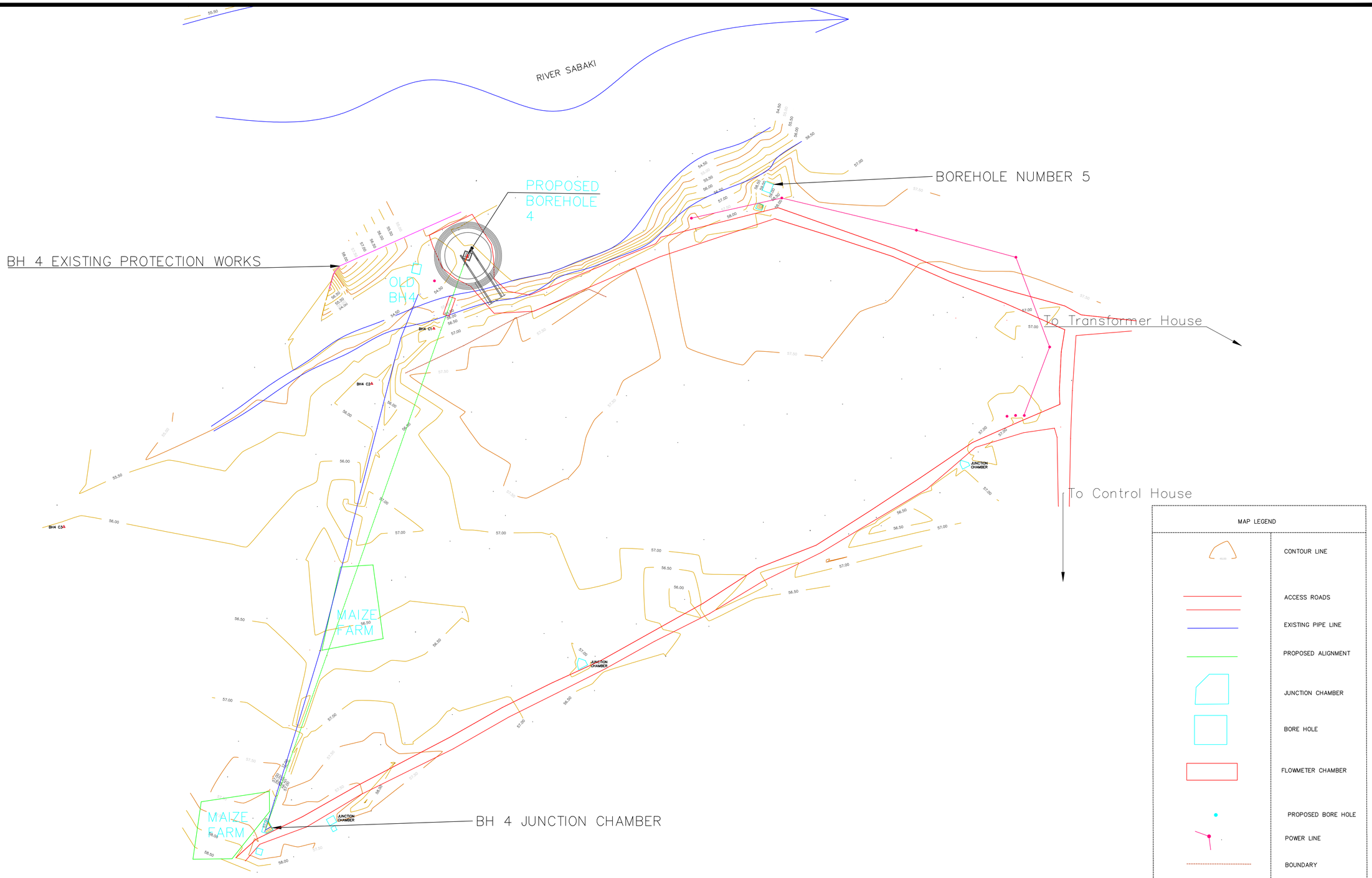
SURVEYED	BY:
DESIGNED	BY: GG
PREPARED	BY: AMK
CHECKED	BY: GG
APPROVED	BY:

SCALES
A1 SIZE
AS SHOWN

BARICHO REPLACEMENT WELLS

UPSTREAM WELLFIELD TOPOGRAPHICAL LAYOUT

Date : OCT 2019 | Drg. No. | Sheet No. 1 of 1



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DESIGNED	BY: GG
PREPARED	BY: AMK
CHECKED	BY: GG
APPROVED	BY:

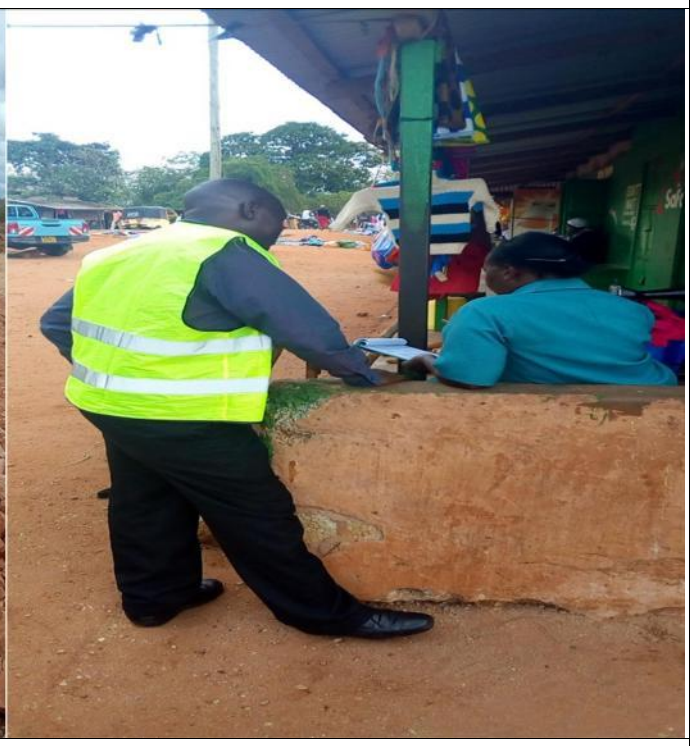
SCALES
A1 SIZE
AS SHOWN

BARICHO REPLACEMENT WELLS

BOREHOLE 4 TOPOGRAPHICAL LAYOUT

Date : JULY 2019 | Drg. No. | Sheet No. 1 of 1

	
Enumeration of questionnaire along the road at Langobaya	Proposed location of borehole 4

	
Enumeration of questionnaire at a homestead	Damaged borehole 3
	
Proposed location of borehole 1	Enumeration of questionnaires at Langobaya shopping Centre

FORM 5 (r. 14(4))

Application Reference No:... 164
Registration No:..... 0838
FOR OFFICIAL USE

THE ENVIRONMENTAL MANAGEMENT AND COORDINATION ACT

CERTIFICATE OF REGISTRATION AS AN ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT EXPERT

This is to certify Ms..... **WANJOHI CONSULTING ENGINEERS**
of..... **P. O. BOX 21714, NAIROBI** .....(Address)
has been registered as an Environmental Impact Assessment Expert in accordance with the provisions of the Environment Management and Coordination Act and is authorized to practice in the capacity of a Lead Expert/Associate Expert/Firm of Experts (Type)..... **FIRM OF EXPERTS**
.....

Dated this ...19TH.....day AUGUST..of 2005.....

Signature.....

(Seal)

Director General
The National Environmental Management Authority

GPK (L)

FORM 5 (r. 14(4))

Application Reference No:.....431.....
Registration No:.....0979.....
FOR OFFICIAL USE

THE ENVIRONMENTAL MANAGEMENT AND COORDINATION ACT

CERTIFICATE OF REGISTRATION AS AN ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT EXPERT

This is to certify Ms. **ENG. ISAAC GATHUNGU WANJOHI**
of..... **P. O. BOX 21714-00505, NAIROBI** .....(Address)
has been registered as an Environmental Impact Assessment Expert in accordance with the provisions of the Environment Management and Coordination Act and is authorized to practice in the capacity of a Lead Expert/Associate Expert/Firm of Experts (Type)..... **LEAD EXPERT** .....

Dated this ..... **6TH** day ..... **DEC.** ....of 20..**05**.....

Signature.....

(Seal)

Director General
The National Environmental Management Authority

GPK (L)

FORM 7 (r.15(2))

nema
mazingira yetu | uhai wetu | wajibu wetu

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/6797

Application Reference No: NEMA/EIA/EL/9721

M/S **WANJOHI MUTONYI CONSULT LTD**
(individual or firm) of address

P.O. Box 21714-00505, Nairobi

is licensed to practice in the

capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Firm of Experts**
registration number **0838**

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

Issued Date: **1/25/2018**

Expiry Date: **12/31/2018**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001: 2008 Certified

FORM 7 (r.15(2))

mazingira yetu | uhai wetu | wajibu wetu

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/6798

Application Reference No: NEMA/EIA/EL/9723

M/S **ENG. I. G. WANJOHI**
(individual or firm) of address

P.O. Box 21714-00505 ,Nairobi

is licensed to practice in the capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert**
registration number **0979**

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

Issued Date: **1/25/2018**

Expiry Date: **12/31/2018**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001: 2008 Certified

SUMMRAY OF HOUSEHOLD QUESTIONNAIRES

S/N	NAME	ID	PHONE NO.	LOCATION
1	KAHASO KAZUNGU	4971791	716289072	LANGOBAYA
2	STEPEN GIKUNDI	21828998	711733101	LANGOBAYA
3	GRACE KIJAO	30532786	790876609	LANGOBAYA
4	DANSTON TUVA	37332158	7087716684	LANGOBAYA
5	RIZIKI MWAGANDI	20590284	N/A	LANGOBAYA
6	SAMASON MWAKOMBI	33387833	796209401	LANGOBAYA
7	ALEX BAYA AMISI	31446061	706184786	LANGOBAYA
8	PETER IBRAHIM KENGA	2371811	725263913	LANGOBAYA
9	KITSAO YAA JEFA	4971079	N/A	LANGOBAYA
10	FOLENI KAZUNGU	31758132	070-6377451	LANGOBAYA
11	SALAMA NYUNDO	33050310	N/A	LANGOBAYA
12	PAULINE PENDO	29585835	715778860	LANGOBAYA
13	SIDI KAPENGE	20679747	793871346	LANGOBAYA
14	GLADYS KARISA	35603238	718677131	LANGOBAYA
15	SALAMA KAZUNGU	35443883	7160430	LANGOBAYA
16	FLORENCE SIDI	25247403	721269159	LANGOBAYA
17	DANIEL MWAKAMISHA	30385227	701054196	LANGOBAYA
18	FRANCIS BAYA GUNGO	29450675	707150583	LANGOBAYA
19	CHARLES YERI	5534207	727141371	LANGOBAYA
20	SIDI KAHINDI YAA	31251566	745000248	LANGOBAYA
21	CHARO IHA THOYA	4971666	708192593	LANGOBAYA
22	WINNIE KALELI	22208945	726311586	LANGOBAYA
23	AMOS NGULI	29861330	713545579	LANGOBAYA
24	SAMSON BARAKA	29169538	725305004	LANGOBAYA
25	FURAHA KITSAO	31251535	769744741	LANGOBAYA
26	KANZE THOYA	4582501	N/A	LANGOBAYA
27	MTAWALI KATANA	4983380	7906153703	LANGOBAYA
28	ONESMUS MASHA	106688773	717487150	LANGOBAYA
29	MYSTIC PONDA	33953957	759626969	LANGOBAYA
30	JOHN RANDU	27543521	712450678	LANGOBAYA
31	JOEL NGANGA NGUGI	21978616	728602253	LANGOBAYA
32	DUNCAN BAYA	24372578	711844897	LANGOBAYA
33	NANCY NEEMA MGHAZA	31274667	719294640	LANGOBAYA
34	GARAMA MOHAMED NDURI	29820839	742504736	LANGOBAYA
35	MWANYALE BAYA	34142385	769743071	LANGOBAYA
36	MORRIS GONA NGUMBAO	29672111	706778637	LANGOBAYA

SUMMRAY OF HOUSEHOLD QUESTIONNAIRES

37	SANITA SAMUEL KITSAO	32046192	N/A	LANGOBAYA
38	FIKIRI KATANA	30122231	791887069	LANGOBAYA
39	STEPHEN	37099540	790157486	LANGOBAYA
40	MARY NYEVU KAZUNGU	37444249	N/A	LANGOBAYA
41	BARAKA VIOZO	35987047	748206265	LANGOBAYA
42	FRANKLINE KITHUKU	33606443	N/A	LANGOBAYA
43	HARBEL K CHANGUMI	34604266	N/A	LANGOBAYA
44	EMMANUEL CHARO	32194711	N/A	LANGOBAYA
45	MAXWEL OCHIENG	36469555	N/A	LANGOBAYA
46	FURAHA CHARO	26775131	720416648	LANGOBAYA
47	ELINAH DAMA KALU	2778729	721489403	LANGOBAYA
48	ALICE KADZUNGU WILIAM	13851250	718539744	LANGOBAYA
49	PURITY KOMBE	28197677	708216483	LANGOBAYA
50	JOSEPH KAHINDI	25928269	701383592	LANGOBAYA
51	KASHUTU CHARO	27033543	N/A	LANGOBAYA
52	MORRIS KATANA	31259101	714973824	LANGOBAYA
53	DOUGLAS KALAMA NGUMA	27657979	719736420	LANGOBAYA
54	ERICK JERAM	N/A	797278207	LANGOBAYA
55	SAMINI MWINGA	9476440	724341328	LANGOBAYA
56	NICHOLAS MWALIMU	28023306	7155171998	LANGOBAYA
57	ROBERT BAYA	23846804	717665559	LANGOBAYA
58	JEFWA KACE KATANA	26272205	N/A	LANGOBAYA
59	EVERLYN BENDERA	35844653	714613079	LANGOBAYA
60	WILSON KITSAO	36828264	702701047	LANGOBAYA
61	BETTY SAFARI	28527997	746818193	LANGOBAYA
62	KATANA KALAMA	35136997	795974099	LANGOBAYA
63	GIDEON IMOLI	29619000	792307983	LANGOBAYA
64	LEONARD T IHA	29388674	700319921	LANGOBAYA
65	BOSCO MRAMBA	N/A	769744816	LANGOBAYA
66	JULIANE MAPENZI KARISA	N/A	708124044	LANGOBAYA
67	PRISCILLAH K KADZUNGU	25247410	712783286	LANGOBAYA
68	CHARO KARISA	21027556	716405180	LANGOBAYA
69	FESTUS FONDO	31825398	718610732	LANGOBAYA
70	YUSSUF HUSSEIIN	25143104	725815780	LANGOBAYA
71	HEZRON MELE	31924247	742029913	LANGOBAYA
72	SELINA MJENI KALELI	28706867	705774478	LANGOBAYA
73	VIRGIE MBUGUA	N/A	728856569	LANGOBAYA
74	JOSHUA MATU	25583647	707563183	LANGOBAYA

SUMMRAY OF HOUSEHOLD QUESTIONNAIRES

75	SIFRA JILO	38247051	717327689	LANGOBAYA
76	FLORENCE KOMBE KATZO	12845878	716655820	LANGOBAYA
77	RUTH NEEMA KOMBEI	34985837	708144697	LANGOBAYA
78	WINNIE MKAMBE	22208945	726311586	LANGOBAYA
79	GRACE SALAMA	25735913	N/A	LANGOBAYA
80	FLORENCE MWAMBU	9965961	727473006	LANGOBAYA
81	MOKI KOSAMA	077-6969	711581227	LANGOBAYA
82	RAPHAEL MWABUI KITONYO	1014607	720742224	LANGOBAYA
83	FRANCIS BARAKA	29516724	707607800	LANGOBAYA
84	FAITH MASHA KALAMA	3103805	790294739	LANGOBAYA
85	ALICE AMINA CHENGO	35144986	741764703	LANGOBAYA
86	JOSEPHAT MWAGANDI PONDA	32691070	790874981	LANGOBAYA
87	JUMWA MASHA	13141744	N/A	LANGOBAYA
88	DANIEL KATANA KARISA	5470875	N/A	LANGOBAYA
89	DAMA KARISA	20809566	N/A	LANGOBAYA
90	MWENDAN KALAMA	2169884	701469687	LANGOBAYA
91	SIMON KARISA	33862048	716916263	LANGOBAYA
92	ANDERSON NGUMA KALAMA	4968693	797740908	LANGOBAYA
93	JUMWA NYALE TINGA	4982957	N/A	LANGOBAYA
94	JUMWA MWENI	37148746	743128246	LANGOBAYA
95	ADAM MORRIS	34454701	759073991	LANGOBAYA
96	BEATRICE KAINGU	13141701	713209680	LANGOBAYA
97	PHILISTER RIZIKI	24037176	742911316	LANGOBAYA
98	SIDI MASHA	5539624	790323915	LANGOBAYA
99	MWENDA KIPONDA	31954276	N/A	LANGOBAYA

SUMMRAY OF HOUSEHOLD QUESTIONNAIRES

S/N	NAME	ID	PHONE NO	LOCATION
100	BRENDA KAHUNDA	38200112	792108391	LANGOBAYA
101	LOICY KACHE	23582372	719813507	LANGOBAYA
102	ARSON KARISA	12844849	711265138	LANGOBAYA
103	MWARO KATANA	31346617	769744809	LANGOBAYA
104	EMMANUEL KIBAYA	9965953	7140356600	LANGOBAYA
105	STEPHEN BAYA	746502	729393414	LANGOBAYA
106	JEMIMAH KAZUNGUI	9878036	707542719	LANGOBAYA
107	MAUREEN	N/A	N/A	LANGOBAYA
108	PRISCILLAH ZAWADI SAMMY	28280997	716674101	LANGOBAYA
109	SAMSON MATANO	30413021	710441518	LANGOBAYA
110	SHINDO JOYA CHEA	4588452	714359194	LANGOBAYA
111	BOSCO MRAMBA	N/A	769744816	LANGOBAYA
112	DAVID GUYA GUNGA	28834987	710288309	LANGOBAYA
113	SIDI KONDE TUVA	30738529	707039216	LANGOBAYA
114	STEVEB OKOTH	37848647	797949266	LANGOBAYA
115	DAMA KAZUNGU KATAZI	11377404	N/A	LANGOBAYA
116	DAVID S. MUTUA	7356248	729164526	LANGOBAYA
117	SAMUEL BAYA	20862026	700459941	LANGOBAYA
118	CHRISTINER BAYA	247211440	7147549	LANGOBAYA
119	ISAAC CHAKA	9427405	726907596	LANGOBAYA
120	JOHN MUNENE	10160288	702011491	LANGOBAYA
121	PURITY MAHENZO	371636339	716319187	LANGOBAYA
122	MELLE M DONALD	33626365	795109626	LANGOBAYA
123	ELIZABETH AMINA	35569413	769172280	LANGOBAYA
124	KADII KIPONDA MWAMBERU	4564580	N/A	LANGOBAYA
125	PAULINE MWANGALA	29025017	769172203	LANGOBAYA
126	THOMAS MAKI	28815159	728148311	LANGOBAYA
127	SAMSON THOYA SINGA	20376608	7134721152	LANGOBAYA
128	MANYOSO KARISA	26904240	721406202	LANGOBAYA
129	ANDERSON KITHII THOYA	20540832	700494195	LANGOBAYA
130	EMMANUEL SINYA KARIS	30584504	795109594	LANGOBAYA
131	JOSHUA KENGA	34637134	769744638	LANGOBAYA
132	LINET REHEMA WANJE	27189167	712531477	LANGOBAYA
133	JEFFAN KALU	8466857	715200061	LANGOBAYA
134	DANIEL AMANI	24004607	728485765	LANGOBAYA
135	MWANAKOMBO	N/A	725883628	LANGOBAYA
136	WANJE KALNENGA	31310069	758205800	LANGOBAYA
137	MTAWALE KATONA TOYA	N/A	N/A	LANGOBAYA
138	ELIJAH KAHINDI	26213965	713700548	LANGOBAYA

SUMMRAY OF HOUSEHOLD QUESTIONNAIRES

139	SHAUGAO KARISA	13141694	705981865	LANGOBAYA
140	YABAYA MWIRI	N/A	7150966073	LANGOBAYA
141	DAVID KADZUNGU KALEMEI	2391034	722843127	LANGOBAYA
142	MITSAHZU NDORO	4971700	799794657	LANGOBAYA
143	STELLA KARIEMI	33810412	790551107	LANGOBAYA
144	NYEVU CHEA MSANZU	9772713	N/A	LANGOBAYA
145	JUMWA KAHINDI WANJE	26046295	718827151	LANGOBAYA
146	MARGERET KADZEHA NGONYO	27792404	700699105	LANGOBAYA
147	HARIET NEEMA	35427456	N/A	LANGOBAYA
148	LILIAN KADZO	25446205	718761187	LANGOBAYA
149	DAMAH KARISA INA	4971850	N/A	LANGOBAYA
150	MARGERET KAZUNGU	21509999	N/A	LANGOBAYA
151	KAZUNGU KAHINDI	12844893	718356393	LANGOBAYA
152	DHAHABU KAHINDI	35284444	79803751	LANGOBAYA
153	KABIBI KATANA MASHI	25410682	743327769	LANGOBAYA
154	MWENDA SAFARI	21106200	706849831	LANGOBAYA
155	KAHUNDA KITSAO	1314708	791887107	LANGOBAYA
156	KALIUME KAHINDI NDEKA	4582268	718827151	LANGOBAYA
157	ALICE JUMWA WANJE	31770807	798931899	LANGOBAYA
158	KANA KAZUNGU	9772720	790514654	LANGOBAYA
159	GLADYS SIFA JUMA	31913195	796384525	LANGOBAYA
160	BARAKA KATNA	32231657	743327718	LANGOBAYA
161	ZAWADI THOYA	31525958	797897171	LANGOBAYA
162	PATIAKE KALEME	33750696	797897196	LANGOBAYA
163	KALJENI KAHINDI	27179232	791388103	LANGOBAYA
164	IRREN TABU	13141687	710451860	LANGOBAYA
165	SIDI KAHINDI	9966633	795319589	LANGOBAYA
166	MARIAM GARI	35479907	725296725	LANGOBAYA
167	HEMED ABDUL	38035419	769744648	LANGOBAYA
168	BAHATI MATHA NYANJE	31263171	798432866	LANGOBAYA
169	AGNES ZNIGO KAHINDI	34489759	717509594	LANGOBAYA
170	KAFEDHA NGAZA	9772749	715314791	LANGOBAYA
171	SAMUEL TANGA	3084405	713546125	LANGOBAYA
172	GEORGE JEFWA	32053551	740304337	LANGOBAYA
173	ROBERT PENDO	34150917	716314770	LANGOBAYA

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

An Environmental And Social Impact Assessment (ESIA) is being carried out for the three placement boreholes at Baricho on behalf of Coast Water Services Board (CWSB), in accordance to the provisions of EMCA 1999/Amendment Act 2015.

This gives opportunity for all stakeholders to present views, opinions and/or concerns relating to the project. We **WANJOHI MUTONYI CONSULT LIMITED** being the consultant for the project would be grateful, if you as stakeholders in this project, kindly fill this questionnaire.

Stakeholder's Details

a) Name. EMMANUEL K. BAYA b) ID/No. 9965953 c) TEL/No. 0710-356600
d) Occupation. CHIEF e) Location. LANTO BAYA
f) Signature. g) Date. 24/09/2015.

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms....(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
1) Job creation to the youth will be witnessed.
2) Sharing of knowledge and skills will be witnessed among employees
b)During its operation after completion
1) Steady supply of water into the area and its environs.
2) There will be no leakages of taps as now witnessed.

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
1) Cultural diversity will be witnessed as employees will be from different places.
b) During its operation after construction
1) Issues of inter-marriages, and prostitution may be witnessed in the area.

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
1) Mitigation on the above - can only be curbed through capacity building into the employees.

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?
1) Through Information sharing.
2) Through planning Stage to its Completion for the purpose of Sustainability.

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

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Stakeholder's Details

a) Name SAMUEL G.BAYA b) ID/No. 0746502 c) TEL/No. 0729393414.
d) Occupation SNR. ASST. CHIEF e) Location LA'G.BAYA
f) Signature ..... g) Date 24.09.2019

1.Do you support the proposed project?(tick).(YES)or(NO). ✓

2. What is the common source of water in the area?
Private Tap.✓...Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good....✓..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day..✓.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms...✓(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
EMPLOYMENT AND INCOME AT OUR MARKET AND SHOPS DURING TO EMPLOYEES FROM OUTSIDE OUR AREA.
b)During its operation after completion
JOB OPPORTUNITY WILL INCREASE AND ALSO WATER WILL BE PLENTY.

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
NO NEGATIVE IMPACT BECAUSE IT IS DONE IN THE AREA ALREADY ADVICED.
b) During its operation after construction JOB OPPORTUNITIES AND WATER LEVEL INCREASE.

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated NO NEGATIVE IMPACT ALL THE PLACEMENT BOREHOLES TO BE DONE AREA IN THE STRICTED AREA.

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project? COMMUNITY AWARENESS AND ALSO GET DONE BOREHOLE FOR IRRIGATION OF THE FARMS BECAUSE THE RIVER CHANGES ITS SITES EVERY NOW AND THEN.

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

Thank you

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Stakeholder's Details

a) Name. SALAMA NYUNDO b) ID/No. 33050310 c) TEL/No. N/A
d) Occupation. FARMER e) Location. LANGOBAYA
f) Signature. g) Date. 25/9/2019

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap……Public Tap/kiosk.✓.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify)……

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ✓..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day..✓.....(2)Every Alternative Day Of The Week……..(3)Once A Week……

5. How far is this water source in km?
(1)Less than 0.2kms✓....(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
get clean water for domestic use
b)During its operation after completion
People will get job opportunities

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
Land will be stronged and soil Organisms
b) During its operation after construction
The land will be used again the place will no fertile

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated To crete wealth.

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?
By promote jobs to the community.

Thank you

WANJOHI MUTONYI CONSULT LTD.
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NAIROBI.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name. MARY NYEVU KAZUNGI b) ID No. 37444249 c) TEL/No.....
d) Occupation.... NIL .....e) Location... LANGOBAYA.....
f) Signature.....g) Date... 25/09/2019.....

1.Do you support the proposed project?(tick).(YES)or(NO). ✓

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk.....Bore Hole... ✓ .....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ..... (3) Bad... ✓ .....

.4. How often do you fetch water?
(1)Every Day... ✓ .....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms....(2)0.2kms-1km.....(3)1km-2km... ✓ ...(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction It has made People to be busy ~~their~~ in work
b)During its operation after completion People have Changed life Standard of living.

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction Lot of movement and Noisy in the area.
b) During its operation after construction water Contain Chlorine Which kills some Plants.

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
.....
.....
.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?..... Lessons Should be made for the locals to be aware of the Project.
....

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI

Thank you

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details
a) Name..PURITY KOMBE.....b) ID/No..28197677..c) TEL/No..0708216483
d) Occupation..TEACHER.....e) Location.....
f) Signature..~~.....~~.....g) Date..25/9/2019.....

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.✓...Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good...✓..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day...✓.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms✓..(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
.....creation of job opportunitie and skills of labour.....
.....
b)During its operation after completion
.....Water will take long time to be clean.....
.....

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction Damage the plants
.....
.....
b) During its operation after construction
.....water will not good becaw of too dirty.....
.....

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
.....Skills of labour.....
.....
.....
8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?.....
.....By collecting views to the Youth.....
.....
....

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name... JOSEPH KATHENDI ..b) ID/No. 25928269 ..c) TEL/No. 070/382592
d) Occupation. SELF EMPLOYMENT ..e) Location. LANGO BATA
f) Signature.....g) Date. 25/9/2019

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap. ✓ ...Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... ✓ ..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day..... ✓ .....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms....(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km..... ✓

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction Skills of Labour
.....
.....
b)During its operation after completion
..... clean water
.....

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction Air pollution for the air and land will
..... not be used again.
b) During its operation after construction
..... destruction of land.
.....

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated It promotes wages to the people
.....
.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?..... - By collecting views to the local community
..... - By informal through meetings
....

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

An Environmental And Social Impact Assessment (ESIA) is being carried out for the three placement boreholes at Baricho on behalf of Coast Water Services Board (CWSB), in accordance to the provisions of EMCA 1999/Amendment Act 2015.

This gives opportunity for all stakeholders to present views, opinions and/or concerns relating to the project. We **WANJOHI MUTONYI CONSULT LIMITED** being the consultant for the project would be grateful, if you as stakeholders in this project, kindly fill this questionnaire.

Stakeholder's Details

a) Name. KASHUTU CHARO ...b) ID/No. 27033543 c) TEL/No. 07.....
d) Occupation... SELF EMPLOYMENT .....e) Location... LANGOBATA.....
f) Signature.....A.....g) Date... 27/9/2019.....

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk..✓.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ..✓..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day...✓.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms✓...(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
.....During construtions youth get ~~of~~ jobs.....
.....
b)During its operation after completion
.....
.....wa people will benefit from water.....

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
.....Machine will distruct the land and will.....
.....no fertile to the soil.....
b) During its operation after construction
.....water will take long to be clean.....
.....

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
.....promotes unity to the people and also.....
.....jobs.....
.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?.....
.....promote the living standards of people.....
.....and collecting different views.....
....

Thank you

WANJOHI MUTONYI CONSULT LTD.
P.O. Box 21714 - 00505,
NAIROBI.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name. ROBERT BAYA b) ID/No. 23846804 c) TEL/No. 0717665559
d) Occupation. ELECTRICIAN e) Location. LANGOBAYA
f) Signature. DK g) Date. 24/9/2019

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk. KIOSK .....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good ..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms..(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
(1) JOB OPPOTUNITIES (2) ENOUGH WATER TO THE COMMUNITY.
b)During its operation after completion
ENOUGH WATER TO THE COMMUNITY.

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
.....
b) During its operation after construction
IT WILL MAKE THE LAND WITHIN (SOROUNDING VERY DRY HENCE FAMERS HAVE LESS PRODUCTION.

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
TO BE DRILLED ATLEAST AN INTERVALS OF 100–200M.
.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?
(1) RECRUITING CASUALS AND SKILLED PERSONELS FROM WITHIN THE SOROUNDING COMMUNITY.
(2) THERE SHOULD BE ATLEAST A BOREHOLE THAT CAN BE USED BY COMMUNITY FOR IRRIGATION.

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name...WINNIE MKAMBE.....b) ID/No...22205945.....c) TEL/No...0726311556...
d) Occupation.....BUSINESS.....e) Location.....LANGOBAYA.....
f) Signature.....g) Date.....25/9/2019.....

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk....✓.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good.....✓..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day...✓.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms....(2)0.2kms-1km..✓..(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
- BOOM IN BUSINESS - RENTAL ROOMS.
-
b)During its operation after completion
- GROWTH IN POPULATION - BUSINESS.
- LAND VALUE WILL INCREASE.

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
- NOISE.
- DUST
b) During its operation after construction
- COST OF LIVING.

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
- DO FREQUENT WATERING - MORNING & EVENING

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?
OFFER EMPLOYMENT TO THE LOCALS.

Thank you

WANJOHI MUTONYI CONSULT LTD.
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ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name... Virgie mbevqva ....b) ID/No.....c) TEL/No... 0728856569
d) Occupation... Tailor .....e) Location... LANSO BAHA .....
f) Signature.....g) Date... 25/9/19 .....

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap✓....Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good✓..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day✓.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms✓....(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
Income will increase
.....
b)During its operation after completion
Well have dot of water
.....

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
Shortage of water
.....
b) During its operation after construction
.....
Water will be dirty
.....

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
ensure the Pipes are well fitted before
the kick off the construction
.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?.....
To be employed
.....
....

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name STEPHEN KITSIKUNDI b) ID/No. 21828998 c) TEL/No. 0711733101
d) Occupation MASON e) Location LANGO BAYA
f) Signature ..... g) Date 26/9/2019

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.✓....Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ✓..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day.✓.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms✓..(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
create jobs opportunities to youth
b)During its operation after completion
water will be used to the community

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
pollute soil organisms
b) During its operation after construction
Land will be strongled.

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
Measures should be take to avoid destriation

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?
By coming coming to togetus

Thank you

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ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name. SHINDO JOYCE CHEA ...b) ID/No. 25588452 .....c) TEL/No... 0714359194.....
d) Occupation..... K.F.S .....e) Location..... LANGOBAYA .....
f) Signature..... .....g) Date..... 24/9/2019 .....

1.Do you support the proposed project?(tick).(YES)or(NO). ✓

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk..... ✓ .....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ..... ✓ ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day.....(2)Every Alternative Day Of The Week... ✓ .....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms....(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km... ✓

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction It creates job opportunities.
.....
.....
b)During its operation after completion Water will be available.
.....
.....

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction ~~Blasting the sand~~
.....
.....
b) During its operation after construction People in the near area might
.....live the area and migrate to some other place.
living space for the project to take place.
c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
.....
.....
.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?.....
People who knows the Project
.....should conduct a class to inform
.... the villagers.

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name. Isaac Chaka b) ID/No. 9427405 c) TEL/No. 0726 907896
d) Occupation. Information Tech. e) Location. Lungo Baya
f) Signature. [signature] g) Date. 24/9/2019

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms...(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction Create jobs to the locals and create wealth.
b)During its operation after completion Pass knowledge

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction Cultural dilution.
b) During its operation after construction More foreigner may course some culture imbalance

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated Get as many locals as possible so that the above impact is not experienced.

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project? Get labour from them, pass knowledge involve them in the project with an aim of employing them permanently.

Thank you

WANJOHI MUTONYI CONSULT LTD.
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NAIROBI.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name..PAULINE MWANGALA..b) ID/No..29025017..c) TEL/No..0769172203
d) Occupation..Nil..e) Location..LANGOBAYA
f) Signature..Pauls..g) Date..24/09/2019.

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap……Public Tap/kiosk..✓..Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify)……

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ..✓..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day..✓.....(2)Every Alternative Day Of The Week……..(3)Once A Week……

5. How far is this water source in km?
(1)Less than 0.2kms….(2)0.2kms-1km.✓..(3)1km-2km…..(4)Above 4km…….

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction ..It may Create Wealth.....
b)During its operation after completion ..Some may change their life style due to employment.....

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction .....
b) During its operation after construction ..Some water may contain Some chemicals which will lead to disaster.....

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated ..Through informing people about. ~~good~~ and making some people to acquire knowledge knowledge.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?..through getting some jobs and advised about the project.....

....

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name...Thomas Maki.....b) ID/No..28815159...c) TEL/No..0728148311..
d) Occupation...student.....e) Location...Langambaya.....
f) Signature.....g) Date...24/09/2021.....

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk...✓.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good...✓..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day...✓.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms✓..(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
.....Job opportunities.....
.....
b)During its operation after completion
.....adequate water flow to the tap.....
.....

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
.....The domestic, livestock may be stu fall on.....
.....open pits during construct.....
b) During its operation after construction
.....
.....

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
.....See fencing the area during.....
.....construction.....
.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?.....Giving job and be educated.....
.....about boreholes.....
.....
....

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name. Liviet Rehema Mwaje ....b) ID/No. 27159167 ....c) TEL/No. 0712531477 .....
d) Occupation. Business .....e) Location. Langabaya .....
f) Signature. ..... g) Date. .....

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms....(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
.....
.....
b)During its operation after completion
.....
Water Supply will not be a problem to us and even we will get clean water.

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
..... Water Shortage
..... Drinking dirty water
b) During its operation after construction
.....
.....

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
..... Plant More trees
..... Make sure the boreholes are well covered
.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?..... Make the Local People aware of the importance of
..... Drinking and using clean water.
..... - Provide job opportunities to our youths.
....

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name....Jeffan Kalu.....b) ID/No....8466857....c) TEL/No...0715260061....
d) Occupation.....Dobi / Ironer.....e) Location.....Langa Baya.....
f) Signature.....g) Date.....24/9/2019.....

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms....(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
Irrigation to our farms.
.....
b)During its operation after completion
Irrigating our farms
Quality of water
.....

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
- The water in the area will be dirtier than it was.
- Spillage of water every where
.....
b) During its operation after construction
.....
.....

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
- Be structured pipes for clean water
-
.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?.....
- Be employed in the Sector.
- Be trained on how to use ~~not~~ clean water.
....

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

Thank you

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

An Environmental And Social Impact Assessment (ESIA) is being carried out for the three placement boreholes at Baricho on behalf of Coast Water Services Board (CWSB), in accordance to the provisions of EMCA 1999/Amendment Act 2015.

This gives opportunity for all stakeholders to present views, opinions and/or concerns relating to the project. We **WANJOHI MUTONYI CONSULT LIMITED** being the consultant for the project would be grateful, if you as stakeholders in this project, kindly fill this questionnaire.

Stakeholder's Details

a) Name....DANIEL IMANI.....b) ID/No..24004607.....c) TEL/No..0728485765.....
d) Occupation.....e) Location.....LANGORATA.....
f) Signature.....g) Date.....

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk.....✓.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair .....✓..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day..✓.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms..✓.(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
.....
.....
b)During its operation after completion
.....water supply will not be a problem to us.....
.....

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
.....Plant trees.....
.....
b) During its operation after construction
.....
.....

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
.....Restricting pipe for clean water.....
.....
.....
8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?.....
.....To be employed in the sector.....
.....
....

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

Thank you

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE PROPOSED OF THREE (3) REPLACEMENT BOREHOLES AT BARICHO-Contract No.CWSB/WSDP/C/1/2018

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Stakeholder's Details

a) Name..Lilian Kadzo Kazungu..b) ID/No..25446205.....c) TEL/No...0718 761187...
d) Occupation...Farmer.....e) Location.....Langobaya.....
f) Signature.....g) Date.....24/9/2019.....

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap...Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ..... (3) Bad...✓ at times.....

.4. How often do you fetch water?
(1)Every Day...✓....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms....(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
.....
.....
b)During its operation after completion
.....That.....
.....

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
.....
.....
b) During its operation after construction
.....They should not limit the water to the community.....
.....as it is known the cattle were are always inflated after.....
.....certain usage of H_2O.
c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
.....- Looks for a designated point & place a water joint for.....
.....all pple in the area to benefit.....
.....- Look for an alternative way for our ~~home~~ cattles to drink H_2O when there is flood.
8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?.....
.....Employ more youths.....
.....
....

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

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Stakeholder's Details

a) Name.HEMED ABDUL RAZAK b) ID/No.38035419 c) TEL/No.0769744648
d) Occupation.....JOBLESS.....e) Location...Langobaya.....
f) Signature.....Hat.....g) Date.24-09/2019.....

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.✓..Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair .....✓..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day..✓.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms.✓.(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
.....
It will help the community since people will be employed.
b)During its operation after completion
.....
Water quality will be good.

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
.....
Might polute the environment since engine machines will be used.
b) During its operation after construction
.....
After construction there will be no any negatives.

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
.....
Engine machines that produce smoke should be well controlled.
.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?..Some needed resources that are available in the community should be bought from the area instead of buying them from other places. Local community members should be employed & by first priority.
....

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

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Stakeholder's Details

a) Name. KAFENHA NGAKA ..... b) ID/No. 9772749 ..... c) TEL/No. 0715314791
d) Occupation... FARMER ..... e) Location... LANGO BAYA .....
f) Signature..... ..... g) Date.. 27/9/2019 .....

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms..(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
.....
People will get more jobs
b)During its operation after completion
.....
Water will remain to the community for them to use

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
.....
Their will be no water during the construction
Because all Machine stopped
b) During its operation after construction
.....
Water will take long time to be clean.

c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
to promote people to get more jobs
.....
.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?.....
By collecting information to project.
Help the people to empower them
....

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.

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Stakeholder's Details

a) Name.ROBERT FONDO.....b) ID/No.34150917.....c) TEL/No.0716314770.....
d) Occupation..FARMER.....e) Location..LANGOBATA.....
f) Signature.....g) Date.25/09/19.....

1.Do you support the proposed project?(tick).(YES)or(NO).

2. What is the common source of water in the area?
Private Tap.....Public Tap/kiosk.....Bore Hole.....Shallow Well.....
Protected Springs/River.....Water Pan.....Others(Specify).....

3. what is the general quality of water(tick)
(1) Good..... (2)Fair ..... (3) Bad.....

.4. How often do you fetch water?
(1)Every Day.....(2)Every Alternative Day Of The Week.....(3)Once A Week.....

5. How far is this water source in km?
(1)Less than 0.2kms....(2)0.2kms-1km.....(3)1km-2km.....(4)Above 4km.....

6. What positive **ENVIRONMENTAL AND SOCIAL** impacts do you think the project will bring to the area?
a)During construction
.....Job Creation.....
.....
b)During its operation after completion
.....
.....Farmers will get water near the boreholes.....

7. What **NEGATIVE ENVIRONMENTAL AND SOCIAL** impacts do you think the new project will bring to the area?
a) During construction
.....Extraction of the land will destroy the soil organisms.....
.....
b) During its operation after construction
.....
.....It will pollute the air when the machine will be operating.
c) If you have filled some impact in (a) and (b) above, how do you think the above negative impacts can be mitigated
.....Sensitive measures should be taken to avoid the destruction.....
.....

8.How would you like the **LOCAL COMMUNITY** to be involved in the proposed project?.....
.....They Should be given jobs.....
.....
....

Thank you

WANJOHI MUTONYI CONSULT LTD.
P. O. Box 21714 - 00505,
NAIROBI.