ENVIRONMENTAL IMPACT ASSESSMENT PROJECT REPORT FOR PROPOSED CONSTRUCTION OF WATER AND SANITATION STRUCTURES IN BANGALE, TANA NORTH SUB-COUNTY, TANA RIVER COUNTY

Bangale Earth Dam

This report is submitted to the National Environmental Management Authority (NEMA) in conformity with the requirements of the Environmental Management and Coordination Act, 1999 and the Environmental (Impact Assessment and Audit) Regulation, 2003.

DOCUMENT AUTHENTICATION

This document has been prepared in accordance with Environmental (Impact Assessment and Audit) Regulation, 2003 Legal Notice No. 101.

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I do hereby certify that this report was prepared by a registered environmental assesor based on the information provided by the proponent, various government agencies, and local community amongst other stakeholders. To the best of my knowledge all information contained in this report is accurate and a truthful representation of all findings as relating to the proposed project

ACKNOWLEDGMENT

We hereby express our sincere appreciation to all the individuals and organizations that participated in the EIA exercise, and thereby helped in one way or the other to ensure successful completion of the exercise. Much appreciation goes to SMEA project management and technical team who ensured all that was needed were availed at the right time, in addition to providing necessary briefing about the project. We also recognize the project committee members led by area Chief Abdirahaman Shide, who mobilized the community to actively participate in the EIA exercise.

We therefore acknowledge that the final report is a result of a collaborative process that involved efforts and knowledge of the consulting team, project proponent and community among other consulted stakeholders.

ACRONYMS

ASAL- Arid and Semi Arid Land

^{0}C- Degrees Celsius

CHP- Community Hygiene Promoters

E- East

EA- Environmental Audit

EIA- Environmental Impact Assessment

EMCA- Environmental Management Coordination Act

EMP- Environmental Management Plan

EO- Environmental Officer

GIS- Geographical Information System for mapping

KFS- Kenya Forestry Services

KM^2- Square Kilometer

KWS- Kenya Wildlife Service

M^2- Square Meter

MDGs- Millennium Development Goals

MoA- Ministry of Agriculture

NEAP- National Environmental Action Plan

NEC- National Environmental Council

NEMA- National Environmental Management Authority

OHSO- Occupational Health and Safety Office

PPE- Personal Protective Equipment

S- South

SHE- Safety Health and Environment

SMEA- Scripture Mission East Africa

SWM- Solid Waste Management

ToR- Terms of Reference

TWSP- Tana Water and Sanitation Project

VAT- Value Added Tax

WARMA- Water Resource Management Authority

WSSD- World Summit on Sustainable Development

EXCECUTIVE SUMMARY

The project proponent SMEA aims to improve access to clean water and sanitation among the residence of Tana North Sub-county and its environs by rehabilitating existing dams, and building water cisterns in designated points near villages. This is a noble course that when completed successfully, will alleviate perennial water problem in the region and improve sanitation among the community members for sustainable development. However, Kenya government, through NEMA recognizes that such projects may have certain negative impacts to the community and environment in general. This is why NEMA demands that an EIA is conducted before such projects are implemented.

From this background, the project proponents commissioned an EIA, which studied whether the proposed projects poses any adverse environmental effect. The results indicate that the projects may pose various challenges to the environment and community at large. The assessment recommends mitigation measures to the identified adverse environmental effects. The recommendations were drawn in accordance with the provisions of Environmental Impact Assessment and Audit regulations 2003 and EMCA 1999. The EIA report is therefore a guide to the project implementers and manager.

The following are proposed sites for the projects and their GPS coordinates:

GPS coordinates to our sites:

BangaleDam S 00 44,166' E039 00,646'

Kuriti Store S 00 45,187' E038 48,792'

BasanhargesaStore S 00 46,824' E038 44,338'

Baleneka Store S 00 43,989' E038 55,721'

Miti boma Pump house S 00 34,702' E038 57,458'

Miti boma Dam S 00 34,731' E038 57,450'

The assessment was undertaken through site visits, FGDs, documents review, photography, scientific assessment and observation. During this exercise both positive and adverse impacts were identified analyzed and documented herein. A summary of the possible adverse impacts and mitigations is summarized in Table 1.

Table 1: Issues/ Impact and Proposed Mitigation Measures

Impact/Issue	**Mitigation Measures**
Soil Erosion	Limit the exposed surface area in terms of coverage area as well as duration by scheduling the construction work immediately after excavation works stabilize exposed soil with seed or subsequent use in landscaping Phase the construction activities to ensure that no more than necessary land is disturbed.
Dust pollution	Transportation of dust emitting materials to be done on covered trucks Pile the excavated soil in such away as to minimize disturbance
Solid waste	Prepare a plan to handle waste from land clearing adhering to the following principles: (a) wastes should not be disposed by the roadside (b) wastes should not be left unmanaged. In as much as possible use the excavated materials in landscaping and backfilling external latrine foundation Sort out the solid wastes to recover recyclable or reusable materials to ensure that materials that would otherwise be disposed off as waste are diverted to productive uses e.g. pipes and pieces of metal sheets. Sensitize construction workers on reuse of construction debris for

Impact/Issue	Mitigation Measures
	successive construction activities like entrance reinforcement Compost off excess plant materials and use it as manure on landscaped areas
Occupation hazard	Provide for first aid facilities as per the OSHA The contractor to avail protective clothing to site workers including nose musk, gumboots, overall and gloves Personnel training on workforce safety Control access to working sites Plan for stabilization and evacuation of the injured
Risk of falling	Ensure that the pits are covered specifically during none working times. Slab should be installed as soon as reinforcement work is completed Sensitive school fraternity on risks of falling Secure the construction site
Noise	Minimize noise levels by sensitizing construction workers on the same All materials should be transported to site during vacation or weekends
Water stagnation	The hand dug well should be completely fitted with a soak pit for channeling of excessive water Pupils to be sensitized on none wastage of water

Impact/Issue	Mitigation Measures
Pump breakage/ maintenance	Communities to be sensitized on proper pump handling Servicing of the pump should be done as per manufacturers specifications
Deterioration of sanitation and ground water contamination	Provide for proper drainage off from the latrines Latrine cleaning waste water should be channeled into the pit Regular monitoring for run off or underground seepage into the latrines Locate the latrines on raised ground but at least 100 metres away from ground water sources/ water points Sensitive communities on proper use and regular disinfecting of the latrine Exhaust the latrine in a way that promote public health and dispose of in approved sewer treatment locations

The assessor recommends that:

- Communities should be sensitized on pump handling
- Pump maintenance to be often done as per manufactures specification
- Waste water from pit latrines should be channeled into a soak pit for subsequent use in gardening.
- Follow the EMP and monitor for any other unmentioned impact
- Follow up on cleanliness of the latrines and ensure that exhausting is done in a manner that promotes public health

The expert further recommends that the authority issue a license subject to an undertaking by the proponent that all the proposed mitigation measures will be implemented.

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CHAPTER ONE: INTRODUCTION

1.1 Overview

North Eastern Kenya has suffered from a series of problems related to shortage of safe water and sanitation. The access to this important commodity has been as a result of perennial droughts causing severe food and water shortage in large parts of this area. In addition, the region is classified under arid and semi arid areas of Kenya. In Tana North District of Eastern Kenya, there is a chronic shortage of water in most parts of the year and water relief to several of the settlements in the area has become a regular exercise. As such, the demand for sustainable safe water and sanitation in this particular region is overwhelming to the available service providers such as government agencies, who largely use water tracking methods to supply water during severe shortage.

Norwegian Lutheran Mission (NLM), through its Kenyan chapter Scripture Mission East Africa (SMEA) wants to implement a water development project in the area dubbed Tana Water and Sanitation Project (TWSP). The project's objective is to partake in improving the water security situation in the area for both humans and livestock and conduct health and sanitation training as a natural continuation of the sustainable water development intervention. In other words, SMEA through its TWSP plans to promote communities in this region to be self-reliance by empowering them through water and environmental sanitation; training the communities in current health related techniques and assist them in capacity building for sustainability at community level. The overall objective is to provide a better life for the people of Tana North District.

The environmental aspect of the project is based on the organisation's desire to promote the overall natural resource management, putting more emphasis on community environmental concerns. This is especially significant because the proposed project may lead to some undesirable environmental outcomes if pre-established community and expert concerns are not raised and mitigated before and during project implementation.

From this background, SMEA found it prudent to commission an environmental impact assessment. The outcome of this assessment reveals and proposes mitigation plan for any adverse impacts that the following projects may cause:

1. Kuriti Water Cistern Constructions,
2. BisanHargeisa Water Cistern Construction
3. Balaneka Water Cistern Construction
4. Bangale Earth Dams Rehabilitation,
5. Miti Boma Earth Dam Rehabilitation
6. Digging and construction of pit latrines near the facilities.

North Eastern Kenya is mainly inhabited by the Somali nomads and agro-pastoralists, some Oromo and other smaller people groups. The nomads are camel or cattle herders who roam the arid plains in search for food and water for their livestock. The agro-pastoralists are either permanently settled along the few major rivers in the area or they live a semi nomadic life where they move between their farming areas and the permanent water source of the rivers. They usually grow maize and sorghum in addition to keeping some livestock. As a result of urbanization, modernization, famine and population growth many people have left their traditional way of life and now live in villages and towns such as Garissa, Wajir, Mandera and Bangale.

1.2 Rationale of the EIA

SMEA is aware that any development project has a potential to affect both biological and physical environment. Thus the organisation wants to ensure that both built and natural environment is protected through appropriate interventions involving the maintenance of ecological and socio-economic factors. The organisation also believes that both projects phases, from input to outputs, must be achieved in the most sustainable manner by protecting the environment through proper environmental management practices. Furthermore, environmental concerns are considered as significant part of any development projects, right from planning to implementation. To avoid any unnecessary conflicts with regards to land use and community interests, the proponents commissioned an EIA in order to incorporate environmental concerns as informed by NEMA. Lastly, it is important to note that a

comprehensive EMP is mandatory for a project of this nature and magnitude because the planned activities are likely to results into large quantities of solid wastes, waste waters, and possible conflicts among users.

1.2.1 Scope

The Kenya government, through NEMA, requires that all new projects or programme activities that reach a threshold for EIA be subjected to an EIA process at the planning stage in order to take into consideration any significant environmental impact during the design, construction, operation and decommissioning of the facilities. Thus, the following are the scope of this EIA:

- Assessing the baseline characteristics of the area
- Describing the proposed project
- Highlighting the provisions of the relevant environmental laws
- Identifying and discussing the potential adverse effects of the proposed projects on the environment
- Identifying appropriate mitigation measures
- Preparing and providing an EMP strategies

1.2.2 Objectives

The main objective of this exercise was to assess the biophysical, socio-economical and human health consequences of the proposed water and sanitation projects both in the construction, operation and maintenance phases.

The specific objectives of this exercise were:

- To assess the adverse environmental impacts of the project both negative and positive
- To advise the proponent on appropriate mitigation measures for significant negative biophysical and socio economic impacts anticipated from the project, including the need for proper and functioning committee for the management of the facilities for sustainability among other things.
- To develop an Environmental Management Plan to guide the construction and operation phase of the project with a mechanism for monitoring and evaluation

1.3 Expected Out-put

The proponents of the project expected the team of EIA consultants to cover the following:

- Concisely describe the project baseline environment
- Identify and analyse the environmental impacts
- Develop an Environmental Management and Monitoring Programme (EMP) for the proposed facilities
- Facilitate consultative forums through FGDs
- Provide any other data and information from literature that they deem will be useful for the sustainable implementation of the projects.

1.4 Methodology

1.4.1 Data collection process

The project's EIA process involved the use of various data collection methods and techniques to acquire the information available, which enabled the EIA research team to gather data within the key project locations and their surroundings. The various data collection methods used includes key informant interviews, focus group discussions (FGDs), site visits and observation, photography, and desktop environmental studies in accordance with the section 31-41 of the Environmental Impact Assessment and Audit Regulations, 2003.

Figure 1: An FGD session at Kuriti

Figure 2: Site observation at inlet and outlet of Bangale Dam

1.4.2 EIA Process, organization and structure

The EIA exercise took a period of twenty eight (28) days, with the lead expert coordinating the day-to-day activities of his team, with the help of project proponent's representatives. The client undertook to meet all logistical costs of the EIA exercise including transport, accommodation and food for the consultant and his team. The consultant, on the other hand, met the cost of producing the report. The client also provided contact persons, and any other information required by the consultant, including site plans, land use agreement, anticipated by-products of the exercise, development plans for the future and site history.

The general process during the exercise was as follows:

- Environmental screening, which identified the proposed projects as within the scope of an EIA exercise in accordance with schedule 2 of EMCA 1999
- Environmental scoping, which revealed key environmental issues
- Desktop studies of environmental issues in the region
- Focus group discussions (FGDs) and interviews with key informants
- Physical visits of the sites and making observation of the surrounding areas

1.4.3 Reporting and documentation

The EIA exercise was concluded by the consultant compiling a report in accordance with NEMA guidelines. The report was handed over to the project proponent for Consideration and approval. During this exercise, the consultant consistently briefed the client on the progress.

CHAPTER TWO: POLICY AND LEGAL FRAMEWORK

2.1 Introduction

The Environmental Impact Assessment regulations in Kenya are applied in accordance with provisions of the Environmental Management and Coordination Act of 1999. A physical structure construction of similar nature is covered under section sections 58 and 138 of this Act and section 3 of the Environmental (Impact Assessment and Audit) regulations 2003 Legal No. 101. The EIA should be done prior to commencement of a proposed project. In this chapter information on the policy, legislative and institution framework governing environmental management in Kenya has been provided.

2.2 Policy Framework

2.2.1 The Constitution of Kenya (2010)

The Constitution of Republic of Kenya that was promulgated on 27th August 2010 states in part as follows:

The Bill of Rights

Part 2 - Rights and fundamental freedoms

Environment

42. Every person has a 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 60.1(e) of the constitution provides for the sound conservation and protection of ecologically sensitive areas in Kenya.

2.2.2. Environmental and Development Policy (Session Paper No. 6 1999)

In Kenya, the national environmental policy aim at integrating environmental aspect into the national development plan. The broad objectives of the national environmental policy include:

- Optimal use of natural land and water resources in improving the quality of human environment;
- Sustainable use of natural resources to meet the needs of the present generation while preserving their ability to meet the needs of future generation;
- Integration of environmental conservation and economic activities into the process of sustainable development;
- Meet national goals and international obligations by conserving bio-diversity, arresting desertification, mitigating effects of disaster, protecting the ozone layer and maintaining an ecological balance on earth

2.2.3 National Environmental Action Plan (NEAP)

The NEAP for Kenya was prepared in 1994. It was a deliberate policy effort to integrate environmental considerations into the country's economic and social development. The integration process was to be achieved through a multi-sector approach to develop a comprehensive framework to ensure that environmental management and the conservation of natural resources are an integral part of societal decision-making.

Relevance to the proposed project

The NEAP has indicated how resources within particular sections of the country should be managed in order to ensure their sustainable utilization. The project shall be implemented and operated based on these guidelines

2.2.4 National Policy on Water Resources Management and Development

The National Policy on Water Resources Management and Development session paper No. 1 of 1999) was established with an objective to preserve, conserve and protect available water resources and allocate it in a sustainable rational and economic way. It also desires to supply water of good quality and in sufficient

qualities to meet the various water needs while ensuring safe disposal of waste water and environmental protection.

The policy focuses on streamlining the provision of water for domestic use, agriculture, livestock development and industrial utilization with a view to realizing the Millennium Development Goals (MGDs) as well as vision 2030. To achieve these goals, water supply (through increased household connections and developing other sources) and improved sanitation is required in addition to interventions in capacity building and institutional reforms.

2.2.5 The World Commission on Environment and Development of 1987

The commission focused on the environmental aspects of development, in particular the emphasis on sustainable development that produces none lasting damages to the biosphere and to particular ecosystems. In addition to environmental sustainability is the economic and social sustainability. Economic sustainable development is development for which progress towards environmental and social sustainability occurs within available financial resources.

On the other hand, social sustainable development is development that maintain the cohesion of a society and its ability to help its members work together to achieve common goals, while at the same time meeting individual needs for health and well-being, adequate nutrition, and shelter, cultural expression and political involvement.

2.2.6 Rio Conference 1992

The Rio Conference 1992 and the Earth Summit emphasize the concept of sustainable development as an attempt to balance exploitation of resources and their capacity to meet future needs. The 2000 World Summit on Sustainable Development (WSSD) in Johannesburg, South Africa emphasized the fact that people, environment and development are the three pillars of life and must co-exist in symbiotic relationship.

2.3 Relevant Legislation

2.3.1 Environmental Management and Co-ordination Act (EMCA) No. 8 of 1999

Environmental Impact Assessment (EIA) is a provision of EMCA Section 58 that requires every development project that is likely to have significant impacts to be issued by an EIA licence before commencement. In addition, it provides for protection and conservation of environmentally significant areas and levies charges to person whose activities endanger the environment. The proponent has done an EIA to adhere to this.

2.3.2 Environmental Management & Co-ordination (Waste Management) Regulations, 2006

Under Waste Management, the EMCA (Waste Management) Regulations, 2006 stipulate that:

- No person shall dispose of any waste on a public highway, street, road, recreation area or in any public place except in a designated waste receptacle;
- Any person whose activities generate waste shall collect, segregate and dispose or cause to be disposed off such waste in the manner provided for under these Regulations;
- Without prejudice to the foregoing, any person whose activities generate waste has an obligation to ensure that such waste is transferred to a person who is licensed to transport and dispose of such waste in a designated waste disposal facility;

The Regulations go further to state that: -

- No person shall engage in any activity likely to generate any hazardous waste without a valid EIA license issued by the Authority under the provisions of the Act.

Relevance

The proponent shall implement all measures in the **EMP** to comply with this regulation.

2.3.3 The Environment Management and Coordination (noise and excessive vibration pollution Control) Regulations, 2009

Part II of this regulation on general noise prohibition states that: except as otherwise provided in these regulations, no person shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. In determining whether noise is loud, unreasonable, unnecessary or unusual, 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 nose can be controlled without much effort or expense to the person making the noise
- On excessive vibrations, the regulation states that no person shall;

It is an offence to;-

a) make or cause to be made excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others and the environment ;
b) cause to be made excessive vibration which exceeds 0.5 centimeters per second beyond any source property boundary or 30 meters from any moving source;

Any person who contravenes provisions of this regulation commits an offence.

2.3.4 The Factories and Other Places of Work Act (Cap 514 of the laws of Kenya)

The Act requires building and operational activities to meet habitable standards. The essence is to ensure aesthetics, convenience, safety and health of persons.

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2.3.5 Occupational Safety and Health Act, 2007

This OSHA Act came into law in October 2007 as an improvement of the Factories and other places of work, CAP 514. The two laws are basically the same except that the scope of OSHA has been extended to cover all work places where persons are employed unlike CAP 514 that concentrated only on factories and industrial set up. The Act makes it mandatory for occupiers or employers to provide personal protective equipments (PPE) and all practicable means to prevent injury to health of workers who are exposed to any potentially harmful substances or condition.

Relevance to the proposed project

Workers and occupants safety will be given priority during both construction and operation phases of the project.

2.3.6 Work Injury Compensation Benefit Act 2007

This Act provides guideline for compensating employees on work related injuries and diseases contacted in the course of employment and for connected purposes. The Act includes compulsory insurance for employees. The Act defines an employee as any worker on contract of service with employer. It is recommended that all workers contracted during the project implementation phase have the required insurance covers so that they can be compensated in case of injury at work.

2.3.7 The Public Health Act of 1996

This Act enhances cleanliness in the operational places. It ensures appropriate drainage, ventilation and amongst others disposal of wastes. Premises that do not meet these requirements constitute violations.

2.3.8 The Registered Land Act (Cap. 300 Laws of Kenya)

This Act provides for the absolute proprietorship over land (exclusive rights) by the government and the people of Kenya. This is line with Article 61(1) of the Constitution of Kenya. The proponent has adhered to this by registering the land.

2.3.9 The Water Act Chapter (Cap. 372 Laws of Kenya, revised 2002)

The Act vests water in the State and gives the provisions for the water management, including, pollution, drainage, flood control and abstraction. It is the main legislation governing the use of water especially through water permit system. The proponent will have to acquire a permit to adhere to this.

2.3.10 The Lakes and River Act (Cap. 409 Laws of Kenya), Survey Act 1989, water quality regulations (2006) and Water Resources management Rules (2007)

This Act provides for protection of river, lakes and associated flora and fauna. The provisions of this Act may be applied in the management of the project by ensuring that any waste water and latrines are managed so as not to corrupt water bodies.

Penalty

Failure to comply with the Environment Management and Coordination Act, 1999 will on conviction lead to imprisonment for a term of 24 months or a fine of Kshs, 2 Million or both as provided for in the act.

2.2.11 The Environmental Management and Co-ordination (Water Quality) Regulations, 2006

These Regulations were published in the Kenya Gazette Supplement No. 68, Legislative Supplement No. 36, and Legal Notice No. 120 of 29th September, 2006. The Regulations provides for sustainable management of water resources including prevention of water pollution and protection of water sources (lakes, rivers, streams, springs, wells and other water sources).

This regulation sets quality standards for water used for drinking, industrial, agricultural, recreational, fisheries and wildlife purposes.

2.2.12 Water Act, 2002

The Water Act (2002) provides for management, conservation, use and control of water resources. Section 2(1) defines "pollution" in relation to water resources to mean any direct or indirect alteration of the water resources so as to make it less fit for any beneficial purpose for which it is or may reasonably be expected to be used; or harmful or potentially harmful to:

- The welfare, health and safety of human beings

- Any aquatic or non-aquatic life or property or
- The environment

2.4 Institutional Framework

Presently, various institutions and county government departments in Kenya deal with environmental issues. Some of these institutions and departments include: National Environment Council (NEC), National Environmental Management Authority (NEMA), Ministry of Agriculture (M.o.A), Kenya Forest Services (KFS), Kenya Wildlife Services (KWS), Water Resource Management Authority (WRMA), Lake Basin Development Authority (LBDA) and Local Authorities among others.

2.4.1 National Environmental Council

National Environment Council (NEC) is established under the EMCA of 1999 No. 8 part III, section 4. NEC is responsible for setting national goals, objectives and determines policies and priorities for the protection of the environment. It is responsible for promoting cooperation among public departments, local authorities, private sector, NGOs and such other organizations engaged in the environmental protection programmes.

2.4.2 National Environment Management Authority (NEMA)

The purpose for which NEMA was established is to generally supervise and coordinate all matters relating to environment. This institution is also the principal instrument of the Government on matters relating to implementation of all policies relating to the environment. NEMA mandate is designated to the following committees:

a. **County Environmental Committees**

b. **Public Complaints Committee**

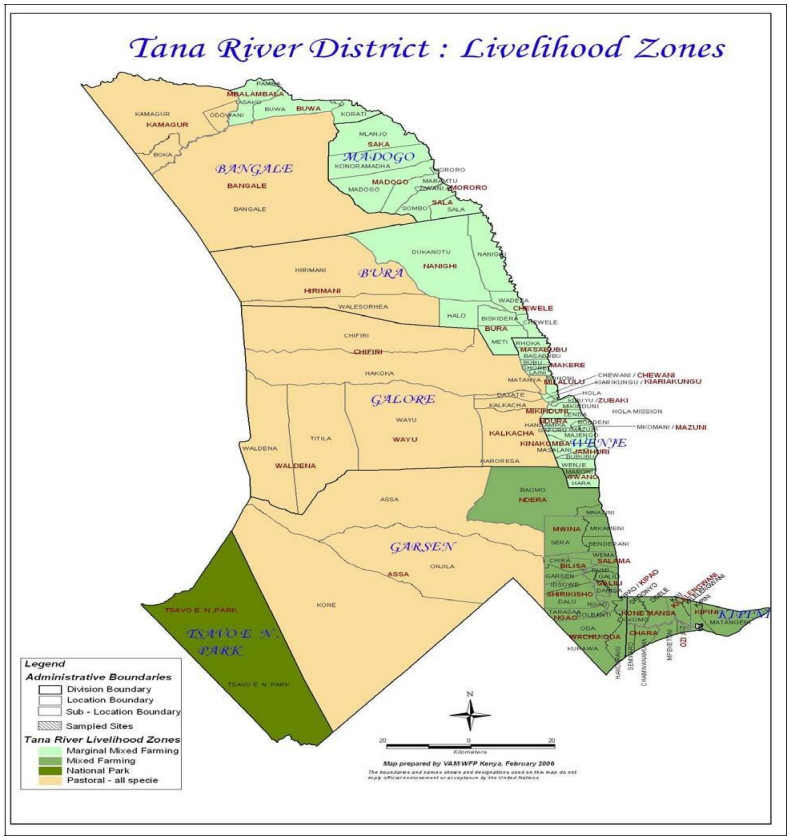
c. **National Environment Action Plan Committee**

d. **Standards and Enforcement Review Committee**

CHAPTER THREE: PROJECT DESCRIPTION AND ITS ENVIRONMENTAL SETTING

3.1 Project Location

The project is mainly located in Bangale village. The region, which is largely inhabited by the pastoral community, is surrounded by Odowani, Buwa and Korati to the north; Boka and Kamagur to the west, Saka, Madogo and Sombo to the east; and Bura and Nanighi to the south.



(Source: Ministry of Water and Irrigation)

The proposed project sites are located at the following GPS coordinates:

Bangale Dam	Dam	S 00 44,166' E039 00,646'
Kuriti	Store	S 00 45,187' E038 48,792'
Basanhargesa	Store	S 00 46,824' E038 44,338'
Baleneka	Store	S 00 43,989' E038 55,721'
Miti boma	Pump house	S 00 34,702' E038 57,458'
Miti boma Dam		S 00 34,731' E038 57,450'

3.2 Baseline information of the study area

3.2.1 Geographical location

The proposed project sites are in Tana North Sub-county, formerly Tana North District. Tana North Sub-county is one of the sub-counties that make up the larger Tana River County, which is geographically located at the coastal region of Kenya. Tana River County shares boundaries with other administrative units such as Kitui County to the West, Garissa County to the Northeast, Meru County to the North, Lamu to South and Kilifi County to the Southwest. The county also borders the Indian Ocean to the South with a coastal strip of about 35km. The county's total land area is 38,782km^2.

3.2.2 Climate and Rainfall

Tana North Sub-county covers an area of12000sq Km where most of it is arid Acacia. The sub-county experiences drought almost every year, with the average annual temperature standing at 30^{o}C.

This area is characterized with low unreliable rainfall, with low auderratic bimodal rainfall that is highly variable in both space and time. Long rains occur between the months of April and May while short rains occur in the months of October and November. In most cases rainfalls are short but with high intensity storms that produce considerable runoff and soil erosion, the annual relief rainfall varies between 200mm and 400mm. The short rains are the most reliable in the district.

3.2.3 Natural resource base

Tana North Sub-county is home to some natural resources including:

i.) Large tracks of land
ii.) Livestock (camels, cows, goats and donkeys)
iii.) Wildlife
iv.) Solar and wind energy

3.2.4 Flora and fauna

The project area is mainly occupied by acacia forests, thorny shrubs and bushes. For example, there are dwarf shrubs of acacia and other thorny trees *Propopisjuliflora* (mathenge). These are drought resistant vegetations, and takes

time to sprout when cut due to low amount of rainfall. The scanty natural vegetation thrives during long and short rains and loses their leaves during dry spells. The presence if acacia suggests soil with impeded drainage conditions. It is also an indicator of shallow water table, also seen in few shallow water points scattered in various parts of the region.

Figure 3: The dominant acacia tree in the region

The area is also comprised of bush land and scattered forest patches, which have undergone significant changes over the years as a result of human activities and changes in rainfall patterns.

3.2.5 Temperature and Humidity

This area is generally hot throughout the year. The hinterland of the district receives an average temperature of 30^{O}C the climate is arid to semi-arid. The land consists of an undulating plain at an altitude of 150 – 400m, interrupted in a few places by low hills. The countryside is covered by acacia forests, shrubs and bushes with no natural, perennial water sources except for the Tana River and some wells in Boka village. This makes it an ideal habitat for the camel nomads but makes rural settlements and farmers extremely vulnerable to drought.

3.2.6 Soils

The project area is dominated by yellowish brown soils often stratified sand to clay. The textures of the top soils ranging variably from sand to clay thus infiltration of the soils varies with the texture.

3.2.7 Drainage

The land outside the riverine valley of Tana River is thinly populated but has a number of smaller and larger villages, only the Tana River, the water pans and the unprotected spring at Boka have any significance for the project target area. Households and institutions with roof catchments are few and most of them are located in Hola, Bura or Madogo. Almost all the shallow wells are on the Tana River as there is no or very little groundwater available in the hinterland. There are also no functioning boreholes in the northern part of Tana North district as the one they had in Tuula Village is now in permanent disrepair.

This leaves us with one perennial spring at Boka, the Tana River and approx. 10-15 earth pans covering approx. 6000km^2. As the Tana River is located on the eastern perimeter of the district it is not really a relevant source of water for the inhabitants of the district and thus its inhabitants depend on the springs in Boka and the earth pans as their water source.

3.3Intervention Description

3.3.1 Project Design

The main objective of the project will be to construct sustainable, perennial water points for human and livestock consumption. The entire project will mainly consider barkard and earthpan with the aim of harvesting rain water.

The project intends to construct three water cisterns (barkards) at Kuriti, Balaneka and BisanHargeisa; rehabilitate Bangale and MitiBoma Earth Dams, and construction of pit latrines at each of these locations.

As there is no or little groundwater in the area none of the dams in the area is perennial and most of them dry up after just a few weeks of heavy rains.

In Bangale and Miti Boma the project aims at rehabilitating the dams, and creating a piped system where the water is pumped to an overhead tank thereby being available in the tap, in Kuriti and Bisan Hargeisa the project aims to construct two water cisterns (Barkards) with the aim of harvesting rain water.

The water cisterns will be 12m by 12m in width and length, and 4m deep. Each water cistern will be accompanied by a pump house outside and plastic water tanks

outside to the selling point (kiosks) near each respective village. Each water cistern is also designed to have silt traps at the inlets. The project will also dig a trench to link the identified laga and water catchment area to the inlets, with the aim of trapping maximum amount of water during long and short seasons. The trench is expected to be over 150 meters long.

The project also proposes to rehabilitate two dams at Bangale and MitiBoma. The dams are design specific, with each fitted with a pump house and water kiosks outside the water points.

In addition, the project proposes to construct pit latrines for use by the community members collecting water from these points.

The structures are to be reinforced to engineer's specifications so as to guarantee safety. The structures of water cisterns, pit latrines, pump houses, and water tanks in kiosks will be done to high standards according to the design specifications.

3.3.2 Water sanitation situation

The main objective of the TWSP is to participate in improving the water security situation in Tana North District by contributing to the construction of reliable and sustainable water points through community and government institutions. The situation with regards to water security is poor in this area only the Tana River, the water pans and the unprotected spring at Boka have any significance for the project target area. Households and institutions with roof catchments are few and most of them are located in Hola, Bura or Madogo. Almost all the shallow wells are on the Tana River as there is no or very little groundwater available in the hinterland. There are also no functioning boreholes in the northern part of Tana North district as the one they had in Tuula Village is now in permanent disrepair. The only functioning dam is the Bangale dam that is under constant pressure both from the animals and the human population

Figure 4: Miti Boma Dam (dried up due to long drought)

This leaves us with one perennial spring at Boka, the Tana River and approx. 10-15 earth pans covering approx. 6000km^2. As the Tana River is located on the eastern perimeter of the district it is not really a relevant source of water for the inhabitants of the district and thus its inhabitants depend on the springs in Boka and the earth pans as their water source. None of the pans in the target area are perennial and most of them dry up after just a few weeks. The few pans which have good capacity and potential for longer duration attract therefore large herds of livestock when the smaller pans dry out. This creates several problems around these pans such as overgrazing and water right tensions, and it further reduces the duration of the few remaining pans.

As a natural continuation of the construction of water points TWSP will run a hygiene and sanitation program among the target communities. Enough water improves the health and life quality of a community and clean water prevents disease and sustains and improves health. A part of this program is to train Community Hygiene Promoters (CHP) who will be responsible for forwarding their knowledge to the rest of the community. The aim of the training program is to change attitudes and behaviour in order to break the chain of disease transmission associated with inadequate hygiene and sanitation. Most communities have poor access to health care and want an extended training program covering important, basic health issues

3.4Project status and development description

The projects and their components are in the following status:

Projects	No. Of Units	Construction materials	Construction status as at 11.08.2015
Bangale Dam Rehabilitation	1	Stone blocks, barbed wire, net wire, wooden poles, aluminium sheets, plastic sheets, cut stone blocks, wooden bars, plastic pipes, metal nails, water tanks.	Pending
Kuriti Water Cistern Constructions	1	Stone blocks, barbed wire, net wire, wooden poles, aluminium sheets, plastic sheets, cut stone blocks, wooden bars, plastic pipes, metal nails, water tanks.	Paused
BisanHargeisa Water Cistern Construction	1	Stone blocks, barbed wire, net wire, wooden poles, aluminium sheets, plastic sheets, cut stone blocks, wooden bars, plastic pipes, metal nails, water tanks.	Paused
Balaneka Water Cistern Construction	1	Stone blocks, barbed wire, net wire, wooden poles, aluminium sheets, plastic sheets, cut stone blocks, wooden bars, plastic pipes, metal nails, water tanks.	Paused
MitiBoma Earth Dam Rehabilitation	1	Stone blocks, barbed wire, net wire, wooden poles, aluminium sheets, plastic sheets, cut stone blocks, wooden bars, plastic pipes, metal nails, water tanks.	Pending
Digging and construction of pit	6	Stone blocks, wooden poles, aluminium sheets, cut stone	Paused

latrines near the facilities		blocks, wooden bars, plastic pipes, metal nails.	

3.5 Land use planning for the sites

The project proponents have laid out a plan to level the landscape after project completion, using the existing soil excavated during the construction works.

3.5.1 Electrical system

Bangale as a locality has no electricity connections. Therefore, the project proponents are considering the use of diesel generators to power the water pumps. The project proponents have agreed to adhere to necessary guidelines and precautionary measures related to the use of these power sources and electrical equipments.

3.5.1 Water reticulation system

Other than use of water channels to direct storm water to the water cisterns, roof water will also be harvested from the roof catchments during rainy season. The collected water will then be pumped to the respective water towers/kiosks for community usage.

3.5.2 Waste water/ sewage management

There will be modern latrines at every site and surrounding areas for community use. So far, 8 latrines have been proposed at various points to contain the potential liquid wastes at the water points.

3.5.3 Storm water runoff

All storm water runoff at the water cisterns will be channelled to the nearest dam.

3.6 Description of the sites' construction and operational activities

3.6.1 Excavation works

Site excavations are expected to alter the ground status of the sites and their respective surroundings. This work is expected to create jobs to the local community who are expected to offer the needed labour.

Figure 5: The paused Bisanhargeisa proposed water cistern excavation work

3.6.2 Masonry and concrete works

The construction of cistern walls, floors, pavements, water tunnels, drainage systems and barbed wire fence among others is comprised of several masonry works. Some of the most common masonry activities to take place are concrete mixing, plastering, slab construction, cistern wall construction, cistern and water kiosks roofing, curing of concrete walls and building of equipment stores among others.

3.6.3 Plumbing

Pipes will be installed from the pumps to the dams/ water cisterns to the water kiosks. Plumbing will also be done to trap water from the rooftops. Plumbing works entails cutting of plastic pipes, use of adhesives, wall drilling and metal rails fixing among others.

3.6.4 Electrical works

Electric work installation will involve installation of gadgets and appliances such as electric cables, lighting apparatus, sockets and switches among others. These gadgets will be linked to the diesel generator, which is the only source of electric power for water pumping.

3.6.5 Cleaning activities

Cleaning and maintenance will be carried out by the appointed community members through the management committees of the sites. Cleaning activities will involve de-

silting the water channels and ensuring that no waste is dumped at the water sites and their surroundings.

3.6.6 Repairs and maintenance

The repair of the equipments and water sites will be done by the project proponents at the initial stages. However, because the projects are expected to be owned by the community at the end of it all, communities through their respective management committee are expected to take over the repairs and maintenance responsibilities through the sale of water at subsidised fee.

3.6.7 Site restoration

Once the construction activities are complete and all the dismantled materials are removed from the site, the sites will be restored by planting indigenous plants on the cleared grounds after filling up the holes and trenches created during construction.

CHAPTER FOUR: PUBLIC PARTICIPATION AND STAKEHOLDER COMMENTS

4.1Legal requirement

Section 17 of the environmental (Impact Assessment and Audit) regulations of 2003, requires that an EIA shall incorporate public consultation. The aim of public consultation is to ensure that all stakeholders interested in a project (including the project beneficiaries and the public in general in the vicinity of the project) are identified and their opinion considered during the project implementation and operation.

4.2Methodology and Data Collection

All project Data was collected and documented for future reference. The data and stakeholder consultation was done and obtained through focus group discussions, meetings, observation, site visits and photography.

Figure 6:Bangale Dam community public participation/ FGD

Various positive and negative impacts relating to the project were raised. In the same measure public consultation participants provided various solutions to issues which might emanate from the project at various phases. Some of the issues raised included;

- Conflict arising from communities coming to settle in the villages in search of water

- The community acknowledges that most people have moved away but once water is available through this project they are expected to come back
- The community plans to sensitize others on how to have a fare-user policy
- Engage the community more on how to prevent livestock interference with the water channel
- Trapping the overflows (e.g. band walls).
- Train the management committee on how to maintain the site/ resource after the project is complete, for sustainability reasons
- Safety measures e.g. fencing
- Prohibit settling around the water cistern sites and dams
- There is need to expand the inlet to prevent further siltation of the dams
- There is need to build more pit latrines far away from the dam

CHAPTER FIVE: ANTICIPATED ENVIRONMENTAL ISSUES/IMPACTS AND MITIGATION MEASURES

General

This chapter analyses the anticipated positive and negative impacts of the proposed water cisterns constructions, dam rehabilitation and pit latrines constructions. The impacts anticipated during the construction, operation, maintenance and decommissioning phases of the proposed project are outlined below.

5.1 Description of Impacts

5.1.1 Positive Impacts at Construction Phase

a. Jobs creation

The project will create employment through skilled and unskilled labour. The employment opportunity will uplift both the economic and social life of the locals, and to a larger extent, there will be transfer of knowledge and skills from the skilled to the unskilled.

b. Community participation

Community participation is a critical aspect of the project sustainability, their participation gives them a sense of ownership and this to a large extent facilitates the smooth operation of events and its management when the project phases off.

c. Awareness Creation

The project incorporates the sanitation aspect in its operation and this involves the construction of pit latrines that are very scarce in the area and with time this will probably be replicated by the locals in their homes thereby promoting good sanitation practices.

5.1.2 Negative impacts of the construction phase

Risk of falling

The dug barkard and water pans pose a real threat to both the livestock and the humans as well. This may cause fatal accidents if not well managed.

Mitigation

- Secure the construction site

- Fence off the operation area
- Ensure the pits are covered during non-working hours

Dust pollution

Dust may be emitted during site excavation works and this can potentially affect the site workers.

Mitigation

- Pile the excavated soil in such a way to minimize disturbance
- Workers to wear PPEs during working hours
- Transportation of dust emitting materials to be done carefully and on covered trucks

Occupational hazard

Occupational hazards are anticipated and this might be fatal or minor. Workers unavoidably expose themselves to these hazards during operation and this may affect project implementation.

Mitigation

- Workers to wear PPEs during working hours
- Provide for first aid facilities as per the OSHA
- Personnel training on workforce safety
- Control access to working areas

Drought

Drought and famine is an ever present threat in these arid lands. If the rains fail and there is a shortage of food and water in the area, the community participatory approach of the project will be undermined. The focus of the target group will be on basic needs and development activities will not be prioritized.

Operational phase

As discussed above this phase also have positive and negative impacts that would include;

5.1.3 Positive impacts

Availability of water

Tana North Sub-county is majorly semi-arid and with the upcoming project the residents of this area can be assured of water both for domestic use and for their livestock.

Efficient water use

The project aims to pipe the water to a central place where the community members will all be withdrawing water from thus minimizing the wastage associated with direct withdrawal of the water from the dam

Sanitation promotion

The occupants of this area are semi nomads and from the site visits made we spotted very few pit latrines in the area, the project is set to construct pit latrines as part of the TWSP project. This will eliminate contamination of the environment by faeces.

5.1.4 Negative impacts during operation phase

Water stagnation

Water being a precious commodity here all water should be harvested and stored for future use by all means; measures should be put in place to trap the overflows during heavy downpour. **Mitigation**

- Device a method of trapping the overflows e.g. band wall
- Community be sensitized on none wastage of water

Deterioration of sanitation and ground water contamination

This might particularly occur if waste cleaning water is inappropriately channeled and left all over the place untended to. Further sanitation deterioration might occur if excessive run-off seeps into the pits and overflows out with the latrine contents.

Mitigation

- Provide for proper drainage off from the latrine
- Latrine cleaning waste water should be channeled into the pit
- Locate the latrines on raised ground at least 100m from ground water resources

- Sensitive community on proper use of the facility
- Regular disinfecting of the latrine

Injury

This might occur to children, livestock etc. if worn out sections of the latrines are not promptly fixed. Unfixed sharp edges of the doors or exposed nails within the facility might contribute to injury which might prove fatal. The water pans if also not well fenced off might cause injury to both livestock and the human beings

Mitigation

- Regular monitoring for worn out latrine sections
- Prompt fixing of worn out latrine sections
- Fix durable doors, frames and iron sheets, this should withstand rough handling
- Ensure the water area is well fenced off to avoid accidents

Transmission of diseases

This might occur if cleanliness of the latrines is under-looked. Untreated waste might lead to outbreak of faecal related diseases in the local communities and beyond. Public issues might also occur during exhausting of filled up latrines at maintenance phase when the latrines are filled up.

Mitigation

- Develop a cleanliness routine of the latrines
- Make effort to use disinfectants during cleaning of the latrines
- Exhaust the latrines in a manner that promotes public health
- Dispose-off the exhausted latrines in approved areas designated for sewer treatment

Water conflicts

Water is an important commodity in this area thereby making it a subject of interest for everyone. If proper management strategies are not put in place there might arise conflict among the community members regarding the usage of the resource. Because of the availability of water others may choose to stay very near to the water source thereby posing a health risk.

This may also arise when the water levels go down and most people are advised to move their livestock to other areas since the remaining water is reserved for human consumption only.

Mitigation

- The water management committee should be empowered to help in the smooth running of the project
- Community training on conflict resolution methods
- Settlement around the water points should be prohibited
- Livestock movement control

CHAPTER SIX: ANALYSIS OF PROJECT ALTERNATIVES

6.1 Project Redesign Option

The options available for safe water and sanitation facilities to the villages are limited. For example, one of the most used methods of water supply is through water tracking by the government during severe water shortage. However, this option is expensive, unreliable and inefficient considering the inhabitants of this area are largely pastoralists. Furthermore, water trucking is less sustainable due to the high costs and inefficient water storage equipments.

For the case of the latrine, it will mean the project considering alternative human waste disposal means such as ecosan and sewer system. The former option will however require massive sensitization on use for which the project has no luxury of time and resources while the later system is too costly for the project to afford.

6.2 Sites Relocation Alternatives

The project proponents may have had alternative sites for implementation. However, the projects sites were proposed by respective communities, and approved by experts as the ideal locations. Should there be need to change any of the sites, the process may take up to three years given the community involvement and government regulations must be taken into considerations. In addition, new designs and approvals may take another one or two years to complete considering that planning and designs must meet the stipulated standards. The amount of investments that has been made so far will be considered wastes if new sites were to be chosen over the current ones. Assuming the new project sites are approved by the relevant authorities, it would take another year or so to get things together again. This kind of situation leads us to a *No Project Alternative Option*. A No project option has a lot of disadvantages including:

- The status quo remains in terms of socio-economic conditions of the community members;
- The local skills would be underutilized;
- No employment opportunities for the community members;
- Increased rural poverty, which will put pressure on the meager resources e.g. increased charcoal burning, further leading to deforestation;

- The water and sanitation project will fail to make any impact
- Further development of infrastructure (e.g. roads, electricity, etc) will neither take place nor be considered by national government as priority in the region.

The additional consequences is that the project proponents would be massively discouraged as they rely on donors who may blame them for failing to conduct due diligence before initiating the projects. Furthermore, this is a region that has all along been shunned by many public and private sector investors, thus aggravating poverty level in the region. Considering the above concerns and continuous assessment of the current status of the sites, change of project sites is not viable, and *No Project Option* is not a viable alternative to the local community and Kenyans.

6.3 Alternative Construction Materials and Technology

The construction of the structure will require a number of materials and equipments. These materials will be sourced both locally and internationally. The materials are expected to be accepted to achieve public health and safety standards. The project proponents have decided to give priority to equipments that save energy, water and general environment irrespective of the costs involved. Concrete blocks will be produced with locally sourced raw materials, in addition to metal bars and fittings. All these equipments will be checked to ensure they meet KEBS requirements. The proponents have proposed to use metal bars in place of timber where possible to avoid destruction of forest cover for timber. In case where timber is the only option available, exotic species would be preferred to indigenous species.

6.4 Alternative Water Source

Water source alternatives are discussed below:

6.4.1Water trucking alternatives

Water trucking has been used for so many years in this region to counter the adverse water scarcity in an almost annual basis. This alternative has offered a coping mechanism during the normal dry seasons, with the use of private water trucks and donkey cats who sell water to those who can afford to buy. During

adverse droughts, water trucking is a common relief intervention, mainly by NGOs, and the county and national government agencies.

Although this option is available, studies have shown that it is one of the most expensive water source alternatives given the distance covered when supplying water in trucks. Furthermore, it is unsustainable and difficult to manage, implement and monitor. This is because water is typically delivered to the central distribution points, where people receive it on 'first come first serve' criteria. This offers those living closer to distribution a point better advantage over those living further away.

An anecdotal evidence points to scenarios where uncertainty is created due to the lack data on quantity of water delivered and accessed by each target household. Claims have also been made by communities that better-off households contract public water truckers to transport water on their behalf, which they subsequently sell to drought-stricken community members. Furthermore, NGOs engaging in water trucking exercise as an intervention during drought tend to pay more to contract private water truckers, and higher fee to acquire water at the water points because of the common notion that NGOs are 'well-funded' and have a lot of monies to spend.

In the ensuing needs analysis, the extended dry spells the limitations is not only based on water shortage but the inability to afford water supplied by the vendors. It's thus important to note that purchasing power of the community is the primary obstacle, which makes water trucking a very expensive and unsustainable water source. Furthermore water trucking cannot be enough to water animals, and be made available for domestic use at the same time.

6.4.2 Water Voucher Alternative

In the past, organizations have collaborated to provide water vouchers to ease fair distribution of water to the communities in the regions affected by adverse drought. The beneficiaries were given vouchers with validity period of two weeks. Because water was only given in exchange of the vouchers, beneficiaries reported fare shares in terms of distribution, hence more equitable distribution even for those who lived far away from the distribution points. Organizations such as Oxfam that have

used voucher system contracted private water truckers to collect transport and deliver water to the beneficiaries.

However, it has been reported that water truckers often resisted the voucher usage because it means more work and less profit for them, as well as increased accountability and reduced opportunities for fraud that many of them have become constant beneficiaries. Resistance from local authorities was also reported as the new voucher system locked out their officers who were being paid to monitor the trucks delivering water to the community. It is also believed that various agencies experienced logistical challenges with the voucher system as they were forced to split award of tenders to different trucking companies to reduce conflicts.

From the above analysis, voucher system is not a very viable option in relation to water supply to the communities. A good project must be sustainable and devoid of conflicts amongst stakeholders involved.

CHAPTER SEVEN: ENVIRONMENTAL MANAGEMENT/ MONITORING PLAN

7.1 Introduction

The proponent of the proposed project acknowledges the fact that the proposed project activities will have some impacts on biophysical, safety and socio-economic environment. The main focus therefore will be on reducing the negative impacts and maximizing the positive impacts associated with the project activities through a program, which overtime will need continuously improvement.

An environmental management/monitoring plan has been developed to assist the proponent in mitigating and managing environmental impacts associated with the life cycle of the project. It is noteworthy that key factors and processes may change through the life of the project and considerable provisions have been made for dynamism and flexibility of the EMP. As such, the EMP will be subject to a regular review.

Tables 7.1, 7.2 and 7.3 respectively provide the Environmental Management Plan (EMP) for the construction, operational and decommissioning phases of the proposed project. In general, the tables outline potential safety, health and environmental risks associated with the proposed intervention and at the same time details all the necessary mitigation measures, their financial costs, as well as the persons responsible for their implementation and monitoring. The EMP will be used as checklist in future environmental audits.

Table 7.1 Impact and Management Action at Project Construction Phase

Environmental Aspect	Impact/Issue	Management action	Responsibility	Time	Cost
Physical	Soil Erosion	• Limit the exposed surface area in terms of coverage area as well as duration by scheduling the construction work immediately after excavation works • stabilize exposed soil with seed or subsequent use in landscaping • Phase the construction activities to ensure that no more than necessary land is disturbed.	-Contactor -Management committee -Management committee -SMEA/TWSP	At construction	Nil
	Solid waste	• Prepare a plan to handle waste from land clearing adhering to the following principles: (a) wastes should not be disposed by the roadside (b) wastes should not be left unmanaged. • In as much as possible use the excavated materials in landscaping and backfilling external latrine foundation • Sort out the solid wastes to recover recyclable or reusable materials to ensure that materials that would otherwise be disposed off as waste are diverted to productive uses e.g. pipes and pieces of metal sheets. • Sensitize construction workers on reuse of construction			**Nil**

		debris for successive construction activities like entrance reinforcement			
Environmental Aspect	**Impact/Issue**	**Management action**	**Responsibility**	**Time**	**Cost**
Human	Dust pollution	• Pile the excavated soil in such away as to minimize disturbance	-Contactor -Management Committee -SMEA/TWSP	At Construction	Nil
	Occupation hazard	• Provide for first aid facilities as per the OSHA • The contractor to avail protective clothing to site workers including nose musk, gumboots, overall and gloves • Personnel training on workforce safety • Control access to working sites • Plan for stabilization and evacuation of the injured			In contractors cost
	Risk of falling	• Ensure that the pits are covered specifically during none working times. • Slab should be installed as soon as reinforcement work is completed • Sensitize the community on risks of falling			5,000/=

		• Secure the construction site			
	Noise	• Minimize noise levels by sensitizing construction workers on the same			Nil

Table 7.2 Impact and Management Action at Project Operation and Maintenance Phase

Environmental Component	Impact/Issue	Management action	Responsibility	Time	Cost
Human	Water stagnation	• The rehabilitated dams should be completely fitted with a soak pit for channeling of a spillway • Community to be sensitized on none wastage of water	• Community through the management committee • Contractor • SMEA/ TWSP	At operation	-Nil -Cost of soak pit to be covered on construction

	Pump breakage/ maintenance	• Community to be sensitized on proper pump handling • The community through its management committee to spare aside funds for maintenance of the water points • Servicing of the pump should be done as per manufacturers specifications			-Maintenance and repair cost to be determined based on level of service required
Environmental Component	**Impact/Issue**	**Management action**	**Responsibility**	**Time**	**Cost**

Physical and Human	Deterioration of sanitation and ground water contamination	• Provide for proper drainage off from the latrine • Latrine cleaning waste water should be channeled into the pit • Regular monitoring for run off or underground seepage into latrines • Locate the latrines on raised ground but at least 100 metres away from ground water sources • Sensitive community on proper use and regular disinfecting of the latrine • Exhaust the latrine in a way that promote public health and dispose of in approved sewer treatment locations	• Community through the project management committees	At maintenance	Nil

Table 7.3 Impact and Management Action at Project Decommissioning Phase

Environmental Component	Impact/Issue	Management action	Responsibility	Time	Cost
Physical	Demolition waste	Use of an integrated solid waste management system i.e. through a hierarchy of options: 1. Source reduction 2. Recycling 3.Composting and reuse 4. Combustion 5. Sanitary land filling.	Project Manager & Contractor	One-off	5,000
		All foundations should be removed and reused for another latrine top or disposed of at a licensed disposal site.	Project Manager & Contractor	One-off	7,000
		The materials should be taken to a licensed waste disposal site.	Project Manager & Contractor	One-off	0
Physical	Rehabilitation of project site	Implement an appropriate re-vegetation programme to restore the site to its original status	Project Manager & Contractor	One-off	10,000

		Consider use of indigenous plant species in re-vegetation	Project Manager & Contractor	One-off	
		Trees should be planted at suitable locations, particularly along the water channels and near lagas.	Project Manager & Contractor	Once-off	

CHAPTER EIGHT: CONCLUSION AND RECOMMENDATION

8.1 Conclusion

Availing safe water and sanitation to Bangale community will not only reduce the risks of water borne diseases but also provide the community with water security and livelihood. Availing portable water in the villages and school compound will improve pupils' health and enable the community at large to generate some income by selling of water to residence. The latrines on the other hand will be a convenience to community and school pupils, and save learning time amongst other benefits mentioned in chapter five of this report.

At the same time section of the project might have adverse impacts that might affect smooth project implementation. Although insignificant, the adverse project impacts should not be overlooked and should be attended to as outlined in the EMP.

8.2 Recommendations

- Sensitize community on pump handling
- Pump maintenance to be often done as per manufactures specification
- Waste water to from the borehole should be channeled in a soak pit for sub sequent use in watering vegetations planted to protect the soil around water points and channels.
- Follow the EMP and monitor for any other unmentioned impact
- Follow up on cleanliness of the latrines

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APPENDICES

Appendix A: Focus Group Discussion (FGDs) Report

KURITI

- Size 4m deep, 12m by 12m wide
- Pump house outside and plastic water tank to the selling point (kiosk) near the village
- Water treatment will be done at the site with filters, then piped to the village
- Pipes- plastic pipes (durability aspect)
- Trench to the luga is 150m
- Use of silt traps, to trap silts before the water reaches the barkad
- Trench not so big
- The overflow is expected to fill the nearby dam

Kuriti FGD

- KassimMaalimadomo- headman
- AbdirahamanShide- Chief
- HindiaMahamud – Committee member
- Abdullah Maalim- Committee member
- AmbiaGababa- Committee member
- Mohamud Hassan- committee member
- Present members- 10
- They chose the site by themselves
- Livestock graze unattended but the community promises to ensure no interference with the water channels
- However, the community has never been trained before on site management
- Management committee promises to take full responsibility

Expected problems

- Conflict arising from communities coming to settle in the village in search of water
- The community acknowledges that most people have moved away but once water is available through this project they are expected to come back
- The community plans to sensitize others on how to have a fare-user policy
-

Recommendations

- Engage the community more on how to prevent livestock interference with the water channel
- Trapping the overflows (e.g. band walls).
- Train the management committee on how to maintain the site/ resource after the project is complete, for sustainability reasons
- Conflict resolution measures
- Ensure no livestock is allowed to interfere with the water channels

BASANHARGESA

- The wide catchment area is the source of water
- Barkad under construction (similar to Kuriti site)
- Soil type- loamy
- The barkad water is expected to be for domestic use only

Recommendations

- Fencing
- Prohibit settling around the barkad site

BANGALE DAM

FGD findings

- The dam dries up completely when long/ or short rains fail
- The short rains are no longer reliable due to adverse change in weather patterns
- People fetch water directly with drums at the site. The programme is to ensure water is pumped out for people to fetch for watering animals and other forms of usage
- The facilities around the dam are insufficient
- TWSP constructed the inlet to prevent siltation of the dam
- There is a danger of drowning
- Possible conflict when the water level goes down. This is when the residents deny the nomads from using the water
- One inlet, which also acts as the outlet

Recommendation

- There is need to expand the inlet to prevent further siltation of the dam
- Settlement around the dam should be prohibited
- There is need to build more pit latrines far away from the dam

MITI BOMA

- Soil does not hold much water, hence TWSP is planning to reconstruct the site
- The dam was completely dry at the time of visit

BOKA

Proposed Borehole

- 14ft
- Most springs in the area are salty
- There are a few with fresh water identified by community members
- The community claims the project of sinking boreholes had been started by IUCN and FAIDA but abandoned
- No initial geological test done, and they relied wholly on the local community knowledge
- There is need for more geological tests to establish the sustainability and usability of the available water.

Appendix B: Annual narrative report 2013

1) General project information:

a) Project name: Tana Water and Sanitation Project (TWSP)
b) Digni number:
c) Target group

The target group are the marginalized Orma, Wardey and Somali nomads/semi-nomads of the Tana North District. Main focus will be towards the settled communities who regularly receive water trucking.

d) Overall development goal

The overall development goal of the TWSP is to partake in improving the livelihoods of the marginalized inhabitants of Tana North District.

This will be done by participating in improving the water security situation in Tana North District by contributing to the construction of reliable and sustainable water points through community and government institutions. The TWSP will also aim at improving the health situation with regards to water borne diseases by conducting basic health and sanitation training among the communities targeted by the water development intervention as well as among other communities when required.

Further, the TWSP will aim at strengthening the government and community institutions through capacity building and cooperation. The approach of the TWSP will be community based, focusing on providing resources where the target groups lack these or helping the target groups utilizing the resources they already have to promote development.

e) Objective(s)

1.1 Objective	1.2 Expected Results	1.3 Activity	1.4 Result indicator
Improved water security in Tana North District	1. Increased number of people has access to perennial water sources in the district. 2. Decrease in the need of water relief. 3. A reduction in conflicts with regards to water rights. 4. Reduction in time spent on fetching water.	- Plan location and type of water point in close collaboration with both government and target groups. - Design each water point applying good engineering design. -Construct good quality, impervious earth dams and barkads through good design and through community contribution - Conduct capacity building within the community through the whole construction process.	- A number of new water points have been constructed and/or existing water points have been upgraded to an improved design - The constructed water points are durable, i.e. does not empty due to high seepage and poor design. - A reduction in seasonal migration due to water shortage. - A reduction of conflicts related to water rights. - Women in the target communities spend less than 30 min on fetching water daily.

2.1 Objective	**2.2 Expected Results**	**2.3. Activity**	**2.4 Result indicator**
Improved basic health and sanitation conditions in Tana North.	1. Decrease in number of cases of water borne diseases 2. Improved livelihoods due to better housing conditions 3. An increased use of latrines among the settled communities. 4. Increased awareness among the target communities regarding traditional harmful practices and HIV-Aids.	- Conduct health and sanitation training among the target communities. - Construction of pit privies in villages in collaboration with the communities. - Introduction of home improvement measures among the target group. - Regular follow up.	- The number of water borne diseases among the target groups have gone down with 25%. - At least 20% of the households in the target group are using the home improving implements introduced by the TWSP. - At least 20% of the households in the target group are utilizing the water improvement measures introduced by the project. - At least 20% of the target group use the pit privies - Most significant change stories with regards to increased awareness of traditional harmful practices and HIV-Aids.
3.1 Objective	**3.2 Expected Results**	**3.3 Activity**	**3.4 Result indicator**
Improved, government and community water management in the area	- Good collaboration between government and community with regards to water management. - Repair, operation and maintenance of the water points are functioning.	- Training of water management committees. - Training of community craftsmen through the construction process. - Close collaboration with both the government and the communities in all project activities. - Regular follow up.	- The government plays an active role in water management in the district. - The established WMC's are working according to established management routines. - The water points are taken care of. Damages are being repaired and regular maintenance is done.

f) Anticipated results 2013

Expected Results	Indicators
Established a functioning project base in Bangale village	Buildings completed and infrastructure working
Established a functioning project team in Bangale village.	The required staff is hired and the different personnel are established in their positions.
Establish good collaboration with the relevant government institutions.	Documented dialogue with the government.
Constructed or rehabilitated an earth pan at a location to be named in the master plan.	Works completed and the water point is functioning satisfactory
Steering committee established and functioning	Members documented. Minutes from meetings.
Constructed a new barkad at a location to be named in the master plan.	Works completed and the water point is functioning satisfactory
Established two WMCs among the target Communities.	WMCs defined. Women represented. Roles and responsibilities defined.
Ownership established among the target communities.	Good process with the community documented. Good management in place. Operation, maintenance and repair conducted (may be hard to document after only one year)

2) To what degree has the program/project been implemented according to the annual plan for 2013? What changes have taken place in the project compared to plans for 2013 and the project document?

The project has made a huge progress in comparison to 2011 and 2012. In 2011-2012, the only main activities were to establish rapport with the communities, government institutions and to facilitate acquisition of the land, which was accomplished. The main investment project activities started taking place in the 2nd and 3rd quarter of 2012. We started hiring staff and project base construction work in the very last quarter of 2012.

In 2013 we have completed approximately ¾ of project base construction work. The most important infrastructures have been completed and are operational. We have hired over ¾ of the staffs that are required to implement the project.

The two projects planned for 2013 have begun and is progressing on well. At Kuriti, the community is excavating the ground for an underground water cistern, and have completed ¼ of the work. Project committee for the Rehabilitation of Bangale Dam has been instituted and plans to start the work are in progress. Despite the challenges that slowed down the work, the project has made a significant progress in comparison to 2011-2012 periods.

3) What activities have been carried out during the year?

1. Established a functioning project base in Bangale village

In spite of challenges that slowed down the work, the project is excited to report that approximately ¾ of the work has been completed.

We have managed to complete office building with five rooms (one with a small store), which will serve as offices for: Construction Department (water), Health and Sanitation Department, Project Manager, Reception/accountant and Adult literacy project and furnished them with the most important equipments like, Desks, chairs, printers, scanners, wireless network and other offices stationaries.
One assembly hall/classroom, spacious stores (between two 20 feet containers) and the guards' room have all been complete and furnished.

The junior staff house building with 4 rooms and 6 pit latrines have also been completed and functional. Two of the staff houses have been occupied by the project staff. The next two has also been booked for occuption within the 1st quarter of 2014.

Wiring work for most of these buildings have also been done and waiting for instalation of solar power. The offices is already using a small generator to run computers and other office work like printing, scanning and coppying documents.

The generator house has also been complete and the generator moved in and waiting for wiring work to be completed to start operation.

Excavation work for the underground water tank in the compound (for the project base) is in progress. ¾ of excavation work has been done. Cement blocks have been produced and dried.

The semi-detached house is also complete with a roof. The plastering work is going on.

3 bedroom specious expatriatehouses is coming up and waiting to be roofed soon,

Plumbing and wiring work for all the building has started and is going on.

2. Established a functioning project team in Bangale village.

A functioning project team has been instituted. The project has hired a new project manager, administrator/construction adviser, project facilitator, water and sanitation officer/adviser, one construction foreman, a storekeeper and office manager all stationed in Bangale now, except water and sanitation adviser who is in Nairobi owing to health related issues.

In addition, The project has also hired other support staff working at the base. We have hired 10 local construction casual workers, 1 cook/housekeeper/cleaner and 4 guards;We had also hired 2 community mobilizers on a one month contract basis, to mobilize the community to participate in the projects. The project is planning to hire an accountant/receptionist soon.

The staff has already proven that they have enough experience and expertise to implement the programs competently. With the help of adequate support facilities and equipment's, we anticipate speedy implementation of programs in 2014.

3. Established good collaboration with the relevant government institutions and the community.

One of the most successful activities of the project for the year 2013 was to establish government and community relations. This is a big priority area for the project, for the purpose of fulfilling donor requirement, creating ownership through community involvement and meeting its subsequent sustainability objective. Community working, without pay, is something new that project had to spend a lot of time and resources to develop through capacity building and awaresness to encourage and facilitate

voluntering participation. Several meetings were conducted that finally culminated into signing of agreement between the project and the two communities who were to benefit from the project.

3rd march 2013 – a meeting was held between SMEA director, project coordinator, project manager and the area member of parliament (MP) where the project's goals and objectives were discussed and the MP affirmed his support for the project promised to organize a competent team that will work with us.

21st of May 2013 – Project manager met with the area ward representative, where they shared the development ideas. Ward representative, who is also the executive leader of the ward (entire Bangale Division); promised to be an advocate and a friend of the project.

14th June 2013 – a meeting with the community leaders of Bangale and Kuriti of the two proposed site to prepare for a meeting to discuss their roles and our roles in the project and informed them about the need to have a competent Water Management Committee.

18.07 – Meeting was held with the local leaders and the government officials, where the project manager updated the group on the progress of the project and informed them to prepare for baseline survey, defining the roles and responsibilities and signing agreements, security updates and to form WMC.

On 18 Sept, 2013Bangale project committee signed agreement, while Kuriti project committee signed agreement on 19 Sept, 2013.

Community relations have been established and agreements signs for the 2013 master plan. Government relations have also been established and the project is just waiting to sign an agreement.

4. **Develop aMaster Plan**

On 20th may 2013, Government representative and the local community leaders from the entire region met and identified two areas that needed immediate intervention in the year 2013, these are;

1. Bangale Dam – which is the main water source in the whole region which is in a deplorable condition. Both human being and the animals share this water without any restriction, which has turned the water into smelly, greenish, stuff that is not fit for consumption. The Dam is also being filled up with silt because there is no silt control mechanism in place. There is no functional MMC. The community asked the project to fence, rehabilitation Dam, and train WMC.
2. Kuriti location – the community requested for a water Cistern for approximately 150 household living in Kuriti that have no perenial water source.

The elders met again on 24th of June 2013 and identified 4 sites for water development in 2014-2015 as follows:

3. Kamaguru – Needs Water Cistern
4. El-Rar of Kamaguru – Needs a Dam
5. Baleneka of Bangale location – Needs Water Cistern
6. Basanargesa - Needs a Dam

5. Constructing water sources

Water point construction work at Kuriti, began in october of 2013. The work progress has been unexpectedly very slow, with interruptions due to communitie's lack of skill in performing the task and demands for incentives. However, ¼ of the excavation work by the community has been done. After several talks the community, has now agreed to resume work with or without incentives.

After the communities in kuriti excavate the cistern to the requieddepth,the following activities will follow; construct barkard 550m3 complete with roofing,erect perimeter fence around the barkard,erect water tower to hold water storage tank, intall solar pump to pump water into storage tank,install piping system to take water to the village by gravity,build tap station and a pay station.It is anticipated that the community will be able to generate income from selling water.The money collected be used for maintenance and operation for sustainability of the project.

The plans to rehabilitate Bangale Dam is at an advanced stage now. Project committee has been instituted. Most of planing and designing work has been done. The project is in the process of purchasing the required materials. The project will fence the dam, construct silt-traps, install/construct water reservoirs (for humans, and livestocks separately), water troughs (for couws,goats and sheep, camels and Donkeys separately), build tap station, 2 guards house and a pay station.

6. Conducting Environmental Impact Analysis

Environmental Impact assessment was carried out successfully. The project has acquired the license to go ahead with the construction work, and recomendations on how to conserve the enviroment and mitigate any adverse effect from NEMA and the enviromental experts.The project may have to still seek advice, or carryout other EIA's for the upcoming projects.

4) What results were achieved during the year? (On outcome level, plus impact level if possible) Check appendix to include relevant thematic focus areas

The project is at its initial stage and the following are remarkable steps towards achieving the expected result.

1. Established good collaboration with the relevant government institutions and the community.

One of the most successful activities of the project for the year 2013 was to establish government and community relations. This is a big priority area for the project, for the purpose of fulfilling donor requirement, creating ownership through community involvement and meeting its subsequent sustainability objective. Community working, without pay, is something new that project had to spend a lot of time and resources to develop through capacity building and awareness to encourage and facilitate volunteering participation. Several meetings were conducted that finally culminated into signing of agreement between the project and the two communities who were to benefit from the project.

2. Develop a Master Plan

On 20th may 2013, Government representative and the local community leaders from the entire region met and identified two areas that needed immediate intervention in the year 2013, these are;

1. Bangale Dam – which is the main water source in the whole region which is in a deplorable condition. Both human being and the animals share this water without any restriction, which has turned the water into smelly, greenish, stuff that is not fit for consumption. The Dam is also being filled up with silt because there is no silt control mechanism in place. There is no functional MMC. The community asked the project to fence, rehabilitation Dam, and train WMC.
2. Kuriti location – the community requested for a water Cistern for approximately 150 household living in Kuriti that have no perennial water source.

The elders met again on 24th of June 2013 and identified 4 sites for water development in 2014-2015 as follows:

3. Kamaguru – Needs Water Cistern
4. El-Rar of Kamaguru – Needs a Dam
5. Baleneka of Bangale location – Needs Water Cistern
6. Basanargesa - Needs a Dam

Name & title

Roba wakoTato

TWSP Project Manager

Appendix C: Kuriti Project Agreement

PROJECT AGREEMENT

BETWEEN

THE COMMUNITY OF KURITI VILAGE

And

TANA NORTH WATER AND SANITATION PROJECT

Project Name: KURITI WATER PROJECT Project No.: 003

This project agreement is between the community of Kuriti Village, represented by the elders and elected representatives of Kuriti village (hereafter referred to as *the project committee*) and the Tana north Water and Sanitation Project (hereafter referred to as *the TWSP*) and concerns construction of water point (hereafter referred to as *the project*), in Kuriti.

A complete list of *the project committee* is attached to this agreement.

SCOPE OF WORK

The scope of work for *the project* is as follows:

- Conducting a baseline survey to assess the current water and sanitation situation in the village.
- Planning and design of the water point in accordance with the approved budget frame for *the project.*
- Implementing the construction of the water point
- Establish agreed operation, management and maintenance routines for the water point that shall be used by the water management committee
- Establishment and training of a water management committee that shall manage the water point after completion of the project.
- Conduct health, hygiene and sanitation training in Kuriti village with particular focus on water and water borne diseases.
- Introduction of appropriate pit latrines in Kuriti Village as an extension of the health, hygiene and sanitation training program.
- Phase out of *the TWSP* and handing over *the project* to the Water management Committee and *the project committee.*

The approach and methodology of *the project* will be community based joint venture and, as outlined under the obligations of the community, the people of Kuriti Village will have to do their share of the work. Kuriti Village, represented by *the project committee*

will be the owner and implementer of the project while *the TWSP* will function as an advisor and assist with skills and resources.

OBLIGATIONS OF *THE PROJECT COMMITTEE*

The project committee will:

- take responsibility for *the project*, making sure the beneficiaries are informed about the scope of the work and the obligations of Kuriti Village.
- participate and facilitate in all activities described under the scope of work above voluntarily without expecting any payments or receiving any incentives from *the TWSP*.
- Mobilise the community to provide all the unskilled labour required for implementing *the project*. Since *the project* belongs to the community, it is expected that the community will contribute and participate in its own development without payment from TWSP. This will but an extra strain on *the project committee* but is an invariable requirement from *the TWSP* and its back-donor.
- establish a water management committee that represents the community and consist of at least two women. This committee shall be responsible for operation, management and maintenance of the earth dam after completion of *the project.*
- Mobilise at least 20 - 30 people from Kuriti Village who will receive health, hygiene and sanitation training. The participants in the training will not be required to pay any fees to TWSP, and they shall not be paid for participating in the training, but they will receive incentives in form of free snack and lunch during the training. They will also receive a certificate upon completing the training.

OBLIGATIONS OF *THE TWSP*

The TWSP will:

- give the community advice and assistance during the planning, design and implementation of *the project.*
- provide the necessary professional staff required for implementing *the project* such as engineer, masons, health and sanitation trainers etc. All costs for this staff will be covered by *the TWSP*.
- provide equipment and tools required for the work, e.g. hoes, shovels, mattocks, etc.
- provide the non-available building materials needed for the construction works.
- facilitate transport of locally available building materials.
- If required, provide water for the construction works
- Assist in establishing the water management committee and facilitate the development of operation, management and maintenance routines for the water point.
- conduct a health, hygiene and sanitation course for approximately 30 community members

- give advice and training on how to build and where to locate latrines in the community.
- Assist in handover of the completed *project* from *the project committee* to the water management committee.
- Provide follow up and monitoring of the water point and the water management committee after completion and handover.

CONCLUSION

We agree to the obligations described above and will do our best to fulfil our part of the agreement as stipulated in this text.

On behalf of *the TWSP*:

Joseph Halake
Project Manager
Date: 19/9/2013

On behalf of *the project committee*:

Name: ISMAIL Mohamed
Sign.:
Name: MAHAMUD HASSAN
Sign.:
Name: HINDIA MAHAMUD
Sign.: HINDIA
Date: 19-09-2013

Witness

Name: ABDI S. GARSE
Position: AT CHIEF
Date: 19/09/2013

Appendix D: Bangale Project Agreement

PROJECT AGREEMENT

BETWEEN

THE COMMUNITY OF BANGALE VILLAGE

And

TANA NORTH WATER AND SANITATION PROJECT

Project Name: REAHABILITAION OF BANGALE EARTH DAM Project No.: 002

This project agreement is between the community of Bangale Village, represented by the elders and elected representatives of Bangagle village (hereafter referred to as *the project committee*) and the Tana north Water and Sanitation Project (hereafter referred to as *the TWSP*) and concerns upgrade and rehabilitation works on the larger Bangale earth dam (hereafter referred to as *the project*), located south-west of Bangale Village.

A complete list of *the project committee* is attached to this agreement.

SCOPE OF WORK

The scope of work for *the project* is as follows:

- Conducting a baseline survey to assess the current water and sanitation situation in the village.
- Planning and design of the upgrade and rehabilitation works in accordance with the approved budget frame for *the project*.
- Implementing the upgrade and rehabilitation of the earth dam
- Establish agreed operation, management and maintenance routines for the earth dam that shall be used by the water management committee
- Establishment and training of a water management committee that shall manage the earth dam after completion of the project.
- Conduct health, hygiene and sanitation training in Bangale village with particular focus on water and water borne diseases.
- Introduction of appropriate pit latrines in Bangale Village as an extension of the health, hygiene and sanitation training program.
- Phase out of *the TWSP* and handing over *the project* to the Water management Committee and *the project committee*.

The approach and methodology of *the project* will be community based joint venture and, as outlined under the obligations of the community, the people of Bangale Village will have to do their share of the work. Bangale Village, represented by *the project*

committee will be the owner and implementer of the project while *the TWSP* will function as an advisor and assist with skills and resources.

OBLIGATIONS OF *THE PROJECT COMMITTEE*

The project committee will:

- take responsibility for *the project*, making sure the beneficiaries are informed about the scope of the work and the obligations of Bangale Village.
- participate and facilitate in all activities described under the scope of work above without receiving any incentives from *the TWSP*.
- Mobilise the community to provide all the unskilled labour required for implementing *the project*. Since *the project* belongs to the community, it is expected that the community will work voluntarily without incentives from TWSP. This will but an extra strain on *the project committee* but is an invariable requirement from *the TWSP* and its back-donor.
- establish a water management committee that represents the community and consist of at least two women. This committee shall be responsible for operation, management and maintenance of the earth dam after completion of *the project*.
- Mobilise at least 20 - 30 people from Bangale Village who will receive health, hygiene and sanitation training. The participants in the training will not be required to pay any fees to TWSP, and they shall not expect payments, but they will receive incentives in form of free snack and lunch during the training. They will also receive a certificate upon completing the training.

OBLIGATIONS OF *THE TWSP*

The TWSP will:

- give the community advice and assistance during the planning, design and implementation of *the project*.
- provide the necessary professional staff required for implementing *the project* such as engineer, masons, health and sanitation trainers etc. All costs for this staff will be covered by *the TWSP*.
- provide equipment and tools required for the work, e.g. hoes, shovels, mattocks, etc.
- provide the non-available building materials needed for the construction works.
- facilitate transport of locally available building materials.
- If required, provide water for the construction works
- Assist in establishing the water management committee and facilitate the development of operation, management and maintenance routines for the water point.
- conduct a health, hygiene and sanitation course for approximately 30 community members
- give advice and training on how to build and where to locate latrines in the community.

- Assist in handover of the completed *project* from *the project committee* to the water management committee.
- Provide follow up and monitoring of the water point and the water management committee after completion and handover.

CONCLUSION

We agree to the obligations described above and will do our best to fulfil our part of the agreement as stipulated in this text.

On behalf of *the TWSP*:

Joseph Halake

Project Manager

Date: 18/9/2013

On behalf of *the project committee*:

Name: MOHAMED Y. BASHIR

Sign.:

Name: Adm IBRAHIM MUR

Sign.:

Name: HALIMA GURE

Sign.: HALIMA

Date: 18/9/2013

Witness

Name: ABDI G-YO BORU

Position: CHIEF

Date: 18-9-2013

Appendix E: Memorandum of understanding

MEMORANDUM OF UNDERSTANDING

Between

Tana River County Water Office
And
Tana River County Health Office
And
Scripture Mission East Africa

This Memorandum of Understanding represents and confirms the collaboration between the Tana River County Water Office (hereafter referred to as TRC-WO), the Tana River County Health Office (hereafter referred to as TRC-HO) and Scripture Mission East Africa (hereafter referred to as SMEA). The TRC-WO and the TRC-HO together are hereafter referred to as *THE PARTNERS.*

WHEREAS: SMEA has offered to carry out the implementation of *Tana north Water and Sanitation Project* (hereafter referred to as the "TWSP") in Bangale Division, Bura Sub-County of Tana River County.

WHEREAS: *THE PARTNERS* are seeking assistance in establishing water security and promoting health and sanitation among the inhabitants of Bangale Division.

WHEREAS: *THE PARTNERS* agreed to the involvement of SMEA in alleviating the water supply problems and promoting health and sanitation of some of the settled and displaced people in Bangale Division in Bura Sub-County through water supply and health and sanitation programs.

THEREFORE: The parties hereto have committed themselves to make the following agreements in accordance with the terms set forth hereunder.

ARTICLE I

PROJECT DESCRIPTION, LOCATION, BENEFICIARIES AND OBJECTIVES OF THE PROJECT

1. The TWSP is described in the project document (hereafter referred to as the PD), which is attached to this MoU. The total budget for the project, over a five year period, is 159 160 079 KES. The project budget is subject to approval on a yearly basis by NLM's (Norwegian Lutheran Mission) back donors – Digni/NORAD.
2. The objectives and approach and methodology of the TWSP are fully spelled out in the attached PD.
3. The project base will be located in Tana River County, Bura Sub-County, Bangale Village.
4. Beneficiaries (target group) of this project are to be identified among the inhabitants and the displaced people of Bangale Division

ARTICLE II

OBLIGATIONS OF SMEA

1. As per the project document SMEA will operate in the area in collaboration with the beneficiaries and *THE PARTNERS* to implement the project.
2. SMEA will establish a project base in Bangale village, which will provide accommodation for expatriate and non-local Kenyan personnel and offices for the project.
3. SMEA shall provide the equipment, machinery, non-available materials and tools required for the implementation of the project. The communities will be encouraged to provide locally available materials and labour as community contribution. Sand, stones, gravel, clay, wood, etc, may be considered locally available materials.
4. SMEA shall hire Kenyan project staff and expatriate advisors as required in order to implement the project in a satisfactory way. All project staff shall be paid by the project funds.
5. SMEA shall, in collaboration with *THE PARTNERS*, establish an advisory steering committee for the TWSP as described in the PD.
6. SMEA shall prepare and submit semi annual progress and performance reports to *THE PARTNERS*.
7. SMEA shall, together with the beneficiaries and *THE PARTNERS* prepare and submit the annual "Plan of Operation" of the project two months before the beginning of the preceding budget year.

8. SMEA shall submit a phase out strategy at the end of the first year of the program should SMEA plan to terminate the project.
9. Upon termination of the project the project base, all project equipment and project vehicles will remain with SMEA as SMEA's property.
10. SMEA shall observe and keep the Kenyan law and consider the jurisdiction of Kenyan courts.
11. SMEA shall provide financial assistance needed to cover the construction and operational cost of the project as stated in the PD, which says that SMEA will provide funds for implementation of the project from 2013-2017. The number and type of water points is not defined and will be agreed upon on an annual basis in collaboration with *THE PARTNERS* and the beneficiaries.
12. SMEA shall participate with WASH (Water and Sanitation Health) partners in such forum as WESCOORD (Water Environment & Sanitation Co-ordination) in there quarterly gathering at the county headquarters.

ARTICLE III

OBLIGATIONS OF *THE PARTNERS*

1. *THE PARTNERS* shall keep the SMEA informed of all new developments and changes of the national and regional policies and directives within their respective fields of operation.
2. *The partners* shall advise SMEA so it can abide by Kenyan rules and regulations in the implementation of the TWSP.
3. *THE PARTNERS* shall provide advice, information and expertise, either upon request of such or upon its own observations within their respective fields.
4. *THE PARTNERS* shall keep the project management and project partners informed of any seminars, workshops and continuing education modules that might be beneficial to the project and the staff within their respective fields.
5. *THE PARTNERS* shall participate in the monitoring and evaluating of the project periodically and finally.
6. *THE PARTNERS* shall cooperate in facilitating and coordinating the necessary and agreed required support for the implementation of the project.
7. *THE PARTNERS* shall provide supporting letters for work permits, resident permits and visas for the SMEA expatriate staff who are coming to work in project as required
8. *THE PARTNERS* shall second one person from their respective offices to sit in the TWSP steering committee.

ARTICLE IV

OBLIGATIONS OF THE TRC-WO

1. The TRC-WO shall keep SMEA informed about, and coordinate water development activities in Bangale Division and Bura Sub-County in order to avoid duplication and achieve synergy.
2. The TRC-WO shall collaborate with the TWSP water construction department and provide advice, information and expertise, either upon request of such or upon its own observations within field of expertise
3. The TRC-WO shall provide assistance and support to the project in project implementation, community mobilisation and conflict resolution related to the construction, handing over and follows up of the water points.

ARTICLE V

OBLIGATIONS OF THE TRC-HO

1. The TRC-HO shall keep SMEA informed about, and coordinate health and sanitation activities in Bura Sub-County in order to avoid duplication and achieve synergy.
2. The TRC-HO shall collaborate with the TWSP health and sanitation department and provide advice, information and expertise, either upon request of such or upon its own observations within its field of expertise
3. The TRC-HO shall provide assistance and support to the project in project implementation, community mobilisation and conflict resolution related to the projects health and sanitation activities.

ARTICLE VI

EXTENSION

The project as laid down in this agreement and in the PD shall enter into force immediately after the signing of this Agreement and shall remain valid until 31.12.2017 subject to such extensions as may be renewed on mutual understanding of *THE PARTNERS* and SMEA by submitting a letter to the other contracting parties at least three months prior to the end of the agreement period.

ARTICLE VII

LIABILITIES

1. Subject to the provisions of this agreement, no party shall be liable to indemnification by any other party in respect of any claims, debts, damages or demand arising out of the implementation of the project.
2. Where the employee of any part to this agreement is injured, disabled, killed or any other claims in the course of the person's assignment in this project, the party employing the person shall be solely responsible in respect to all the claims that may arise from there.

ARTICLE VIII

RESOLUTION OF DISPUTES

Any dispute between the parties shall be resolved by negotiation between *THE PARTNERS* and SMEA or else the parties have agreed to be judged by the Kenyan law and court.

ARTICLE X

AMENDMENTS

Matters not included in this project agreement and the proposal may be amended on mutual understanding of *THE PARTNERS* and SMEA by submitting a letter to the other contracting parties. In case of controversies due to misinterpretation, this contract shall be interpreted in accordance with the provisions of the general policy of Kenyan laws on contracts in general.

ARTICLE IX

TERMINATION

If either party cannot meet its obligations or in the view of the other party this would seriously endanger the achievement of the project objectives, such other party will have the right to terminate this agreement. Unless consultations have resolved the problem, this agreement will terminate thirty days (30) after such other party sends a written notice of termination. When such a notice of termination is received, the party receiving it will immediately take all steps to terminate its activities so that expenses are kept to a minimum.

ARTICLE XI

EFFECTIVE DATE

This agreement shall enter into force when it is duly signed by the four contracting parties and shall remain valid until 31.12.2017

IN WITNESS THEREOF: The parties hereto, acting through their duly authorized respective official representatives, have hereby signed the agreement at place and on the day and year below written.

For & on behalf of
the **TRC-WO**

TANA RIVER COUNTY GOVERNMENT
COUNTY CHIEF OFFICER WATER
P.O. Box 29, HOLA

Signature
Date: 07/08/2014

For & on behalf of
the **TRC-HO**

COUNTY CHIEF OFFICER OF HEALTH
TANA RIVER COUNTY
07 AUG 2014
P.O. Box 38 HOLA

Signature
Date: 07/08/2014

For & on behalf of
the **SMEA**

Scripture Mission
P.O. Box 24569, 00502 Karen, Nairobi
Mobile No.: +254 716 276 376
East Africa Region

Signature
Date:

Witness:
Tana River County Secretary

TANA RIVER COUNTY GOVERNMENT
COUNTY SECRETARY
P. O. Box 29 HOLA

Signature
Date: 7/8/2014

Witness:
Tana River County Deputy Governor

HON. ABDI R. MOHAMED
DEPUTY GOVERNOR

Signature
Date: 7/8/2014

Appendix F: Project cost

Present the total budget for the application period per year

A summary of the cost estimate for TWSP for the period 2013-2017 is shown in the table below. The costs have been divided into project revenues, and project costs which is further divided into capital expenses and operating expenses. The total cost estimate for the period 2013-2017 is estimated to 172 960 792 KES. The estimate has used an annual inflation rate of 3.5% for most activities. The detailed cost estimate showing the breakdown on the various activities is enclosed as attachment 3.

Description	**2013 KES**	**2014 KES**	**2015 KES**	**2016 KES**	**2017 KES**
Project Revenues					
NORAD Grant	% - Norway?	% - Norway?	% - Norway?	% - Norway?	% - Norway?
NLM contribution	% - Norway?	% - Norway?	% - Norway?	% - Norway?	% - Norway?
SUM	***31 201 416***	**33 799 361**	**34 518 956**	**36 477 560**	**36 963 497**
Project costs					
Capital expenses	13 582 000	12 591 810	13 128 900	14 132 950	14 158 800
Operating expenses.	17 619 416	21 207 551	21 390 056	22 344 610	22 804 697
SUM	***31 201 416***	**33799 361**	**34 518 956**	**36 477 560**	**36 963 497**
Project Result	**0 KES**	**0 KES**	**0 KES**	**0 KES**	**0 KES**

Table: Summary of costs and revenues for the TWSP

The projects indicated are for the 2015, and are expected to approximately cost a total of KES 34,518,956.00 as shown in the table above, which translates to an EIA license fee of approximately KES 34,519.00 (based on the 0.1% of the project cost).