



**CONSULTANCY SERVICES
FOR HYDROGEOLOGICAL
STUDIES, DESIGN, BID
DOCUMENT PREPARATION
AND SUPERVISION OF
CONSTRUCTION OF
BOREHOLES AND ELEVATED
STEEL WATER TANKS IN
TANATHI WATER SERVICES
BOARD AREA**

**AWSB/WASSIP/ AF/ Comp.1/
CS-36/2013**

**ENVIRONMENTAL IMPACT ASSESSMENT
REPORT:
TANA ATHI WATER SERVICES BOARD P.O.
BOX PRIVATE BAG
KITUI**

FEBRUARY, 2014

**CONSULTANT'S NAME: JURASSIC
ENGINEERING AND
ENVIRONMENTAL SERVICES LTD.
IN ASSOCIATION WITH GROUND
WATER MAX LTD**



ENVIRONMENTAL IMPACT ASSESSMENT REPORT

for

PROPOSED BOREHOLE DRILLING

at

MASHURU TOWN AREA OF MASHURU DISTRICT, KAJIADO COUNTY

**PROPONENT: TANA ATHI WATER SERVICES BOARD
P.O. PRIVATE BAG,
KITUI**

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Date _____

For and on behalf of: TANA ATHI WATER SERVICES BOARD

Signature _____

Date _____

February 2014

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Acronyms

EMCA **Environmental Management and coordination Act**

EIA **Environmental Impact assessment**

NEMA **National Environmental Management Authority**

WARMA **Water Resources Management Authority**

WHO **World Health Organization**

O&M **Operation and maintenance**

TOR **Terms of Reference**

EXECUTIVE SUMMARY

The proposed project involves drilling of a borehole which will be equipped with a submersible pump driven by Electricity mains. The project is located within Mashuru area of Mashuru District, Kajiado County.

Currently the local community gets their water supply from seasonal river Eselenki which passes near Mashuru town, through traditional sand scooping open wells which are however due to their depths and loose sands are very dangerous when drawing the water as they can collapse. The open wells are even motorized and used for small scale intensive irrigation within the flood plain of the seasonal river. The open wells are prone to pollution and contamination. The water is traditionally fetched and then transported with jerry cans on donkeys.

The community also gets water from water trucking by **Tanaathi water services board.**

This has resulted in the local community looking for the drilling of the borehole as the best alternative water supply mostly for domestic and institutional purposes. The Environmental Impact Assessment (**EAI**) study has been found necessary for this borehole drilling project in order to incorporate environmental issues during implementation and operation. Environmental Impact Assessment for such projects is a requirement in Kenya under Environmental Management and Co-ordination Act (**EMCA**) 1999.

Other relevant legislations include the Water Act (2002) which provides for the management, conservation, use and general control of water resources. The public health Act regulates activities detrimental to the human health, physical planning Act and land planning Act which makes the necessary provision for development control. The important standards controlling environmental quality are the national standards and those developed by World Health Organization, **WHO** (1993).

The methodology used, involved the desk studies (scoping) and fieldwork. At the scoping stage the potential impacts relevant to projects of this nature were identified. At the field, the field observations, formal and informal interviews, discussions with the local community members were carried out. This provided an ideal opportunity to stimulate and create awareness of environmental concerns of various stakeholders. After considering the positive and negative impacts, **it has been concluded that no significant negative impacts which would occur in the area around Mashuru village through the implementation of this borehole drilling project.**

The accompanying mitigation measures, the Environmental Management Plan (**EMP**) and the consideration of basic principle of sustainable development will make the project viable and environmentally sustainable. The basic principles of development include environmental conservation, environmental quality, social issues and promotion of public participation in project planning.

Chapter 1

1 INTRODUCTION

1.1 Back Ground Information

The proponent **TANA ATHI WATER SERVICES BOARD** is a government parastatal whose main activity is to spearhead the provision of water in their counties of operation namely, Kajiado, Makueni, Machakos and Kitui.

The board has several areas earmarked for the provision of water and one of the areas is the water project to alleviate the problem of the safe drinking water shortage in the Mashuru town area.

The local community comprises of the Mashuru district headquarters, complete with the district hospital, several schools including Mashuru boy's secondary school.



Mashuru town which has several shops, schools, Health Centre and District headquarters of Mashuru District

The local Masai community whose economic mainstay is livestock keeping have cattle, goats, sheep and a few camels.

Lack of an elaborate water supply in the area has impacted negatively to the social economic status of the local community and business in Mashuru town.

The local community gets their water supply from sand scooping from seasonal river Eselenkei whose water is prone to pollution and contamination.

Therefore there is a serious need for the Mashuru town and the local community to have a reliable, clean and adequate water supply within the village. The client has therefore applied to drill a borehole to meet their domestic and institutional water requirements. It's a requirement under the Environmental Management and Co-ordination Act (1999) that such a project undergoes Environmental Impact Assessment which therefore the proponent commissioned the environmental expert to conduct the study.

The aim of EIA is to maintain a delicate balance between the human, social economic needs and environmental protection and to enhance sustainability of the available resources.

This EIA study is to enable the public, local county government, approving authority and the developer to properly consider the potential environmental consequences of this proposed project.

This EIA was conducted to assess any potential impacts (both positive and negative) that may arise from the proponent's proposed project of drilling a borehole to provide water to the local community whose water demand is about 30 cubic meters per day.

1.2 Terms of Reference

The environmental consultant as stipulated under the EMCA was commissioned by the proponent through **Tanaathi water services board** to undertake an Environmental Impact Assessment (EIA) study for the intended borehole drilling and to prepare a report for further examination by the National Environmental Management Authority (**NEMA**) and subsequent authorization to implement the proposed project.

The guidelines to conducting an EIA as per Environmental (Impact and Audit) regulations 2003 apply in the absence of any defined terms of reference between the proponent and the environmental expert.

1.3 Methodology

This was conducted in the following stages:-

- Scoping stage
- Field work/ Assessment stage
- Environmental Management and planning stage
- Public participation

1.3.1 Scoping Stage

The key issues identified include

- Impacts on water quality
- Impact on soil, land and biodiversity
- Impacts on health and safety
- Impacts on air quality
- Impacts on social economic activities
- Impacts on hydrology

1.3.2 Field Work Assessment

This involves field survey of the area, assessment of existing water supply with respect to demand, water quality, and current land use and site itself. Inspection of geological, landscape, soil characteristics and rock structure.

1.3.3 Environmental Management Planning

The general impacts of the proposed borehole drilling were evaluated and for the negative impacts, the ability of reducing or eliminating them were considered. This involved the development of suitable mitigation measures. The preparation of an Environmental Management Plan (**EMP**) to implement mitigation measures and monitoring recommendations has been prepared.

1.3.4 Public Participation

Public participation forms an important part of the Environmental management process for such projects and it is a requirement under Kenyan laws for their participation for this project. This was accomplished by the administration of structured questionnaires to the neighbors supplemented by formal and informal interviews. The public participation was to enlighten the neighbors on the upcoming project and also to get their opinions and concerns in regard to the project.

CHAPTER 2

2 ENVIRONMENTAL SETTING OF PROJECT SITE

2.1 Location

The proposed borehole site is located at approximate latitude 02° 07' 01" south and longitudes 37° 07' 53" East in Mashuru town area of Mashuru district in Kajiado County. The project area is generally used for livestock keeping especially cows and goats.

2.2 Physiography and Drainage

The project site lies at about 1319 meters above sea level. The ground landscape is undulating with smooth elevated ground.

2.3 Climate

The climate of the study area is arid and semi arid type in character with dry and wet periods.

The rainfall of the area is about 500 millimeters annually distributed in short and long rains of September to December and March to May respectively. Temperatures rise steadily to highs of about 35 degrees centigrade and to lows of about 16 degrees centigrade.

2.4 Geology

The geology of the study area is dominated by the metamorphic rocks. These rocks consist mainly of gneisses, schist and their weathering products of sandy sediments,

These basement rocks have undergone structural process of faulting, folding, shearing and cracking.

2.5 Hydrogeology

The occurrence of the ground water in the area is characterized by several factors including the presence of weathered zones, sandy deposits, fractured and other weak zones.

The presence of the local seasonal river Eselenkei is good for recharge to the groundwater.

These weak zones have become the avenues of groundwater. The depth of the weathered and fractured rock zone has gone up to 130 meters deep which makes it possible for the water to come from far as the weak zone is deep.

The rainfall which averages about 500 millimeters helps in replenishment of the groundwater.

2.6 Land Use

The project area is predominantly used for livestock keeping mainly cows and goats. However along the flood plain of the river Eselenkei, small scale irrigation mostly for home food security is carried out.

The area has tall acacia and other indigenous trees which are used locally in charcoal burning mostly for sale whereby accelerating the destruction of environment and therefore enhancing the rate of climatic change.

This should be discouraged in the project area and enforced through the local administration and other stakeholders.

The area is usually invaded by sand harvesters for sand to be used in the construction industry which has a direct environmental impact on the groundwater storage.

The above practices of charcoal burning and sand harvesting should be discouraged and effectively enforced through stake holders which includes provincial administration.

2.7 Flora and Fauna

The project area is sparsely populated and the flora and fauna found in the area is the indigenous vegetation cover which consists of tall acacia trees and shrubs.

However these tall acacia trees are being threatened by a charcoal burning activity which might wipe out these indigenous trees whose existence helps in restoring groundwater potential.

2.8 Ground water development in the area

There is only two boreholes which has been drilled in the general Mashuru town area.

This shows that groundwater in the area is not fully tapped and drilling this borehole will not have adverse impacts on the environment.

Chapter 3

3 LEGISLATIVE AND REGULATORY FRAME WORK

3.1 Regulatory Framework

The regulatory framework for conducting EIA is entrenched in the Environmental Management and co-ordination Act, 1999 (**EMCA**) which gives the general rules and regulations which gives the population the mandate to have a clean and healthy environment. The Act is the umbrella regulatory framework for the general environmental management. The Environmental (Impact and Audit) regulation Act 2003 stipulates the process of EIA and Environmental monitoring.

Section 58 of **EMCA** makes it a requirement for Environmental Impact Assessment of projects which have an impact to the natural surroundings to be carried out. It's from this provision **EIA** recommends that an environmental monitoring programme becomes a crucial component. **EMCA** established the National Environmental Management Authority (**NEMA**) which co-ordinates all environmental issues.

3.2 Institutional Framework

There are two major institutions for the purpose of administration of Environmental issues. They are the National Environmental Council (**NEC**) and National Environmental Management Authority (**NEMA**).

3.2.1 National Environmental Council (NEC)

The function of the NEC is to formulate national policies, goals and objectives and the determination of policies and priorities for the environmental protection. The NEC also co-ordinates all environmental stakeholders involved in environmental protection programmes.

3.2.2 The National Environmental Management Authority (NEMA)

The NEMA is the organization which is responsible for the administration of the Environmental Act. Its functions include:-

- Co-ordination of various environmental management activities.
- Research, investigate and carry out surveys in the fields of environment
- Enhance environmental education and awareness on the need of sound environmental management.
- The execution of Environmental Impact Assessment (EIA) and Environmental Audit (EA)

3.3 Environmental Legal Framework

The Kenya government provided a bill for the establishment of an appropriate legal and institutional framework for the management and protection of the environment. This was later enacted into law as the Environment Management and Co-ordination Act, 1999 (EMCA) and given presidential assent on January 6th 2000.

Outlined here below are some of the Acts relevant to the proposed borehole drilling project.

3.3.1 Environmental management and Co-ordination Act (EMCA) 1999.

Under the above Act it is stipulated in part II that every Kenyan is entitled to a clean healthy environment and is bound to safeguard it. In order to achieve this, **EIA/EA** Reports are prepared for both new and ongoing projects.

3.3.2 Water Act, 2002

The national monitoring on water resources is provided in part II, section 18, of the Act. Subsection 3 allows the water Resources Management Authority (**WRMA**) to demand from any person or institution, information, documents, samples or materials on water resources. These include the issues of land ownership, the organizations registration, and the impacts on existing structures, hydraulic regimes and potential characteristics of water resources.

Section 73 of the Act allows the group with a license or permits to supply water to make adequate provisions for the purposes of protecting against degradation of water resources.

3.3.3 Public Health Act (Cap 242)

It's stipulated in part ix, section 115 of the Act that no person/ institution shall cause nuisance or condition liable to injuries or dangerous to human health. Such nuisance includes the discharge of waste water into a side channel, water course or irrigation channel.

Under part xi, section 129, it stipulates that it is the responsibility of the local Authority to take all lawful, necessary and reasonably practicable measures for preventing any pollution dangerous to health of any supply of water which the public within its area has a right to use and does use for drinking or domestic purposes.

3.3.4 The penal code Act (Cap 63)

Under section 191 stipulates that if any person or institution who/which voluntarily corrupts or foils water for public springs or reservoirs, rendering it less fit for its ordinary use is guilty of an offence.

3.3.5 Environmental quality and discharge of surface water

The regulations and standards for environmental quality are found in the Environmental Management and Co-ordination Act 1999.

Part VIII of the Act refers to Environmental quality standards with section on pollution of water. There are also standards for waste, noise, radiation and gases.

3.3.6 Health And Safety

To safe guard health of the population, World Health Organization (WHO) drinking water quality standards are widely used, to determine water portability.

National Standards for water are outlined in the water Act (2002) and the public health Act (242).

3.3.7 Land use control

The land use control is critical in the provision of services such as water. This is catered for in the agriculture Act (cap 318), land Act (cap300) land control Act (302), physical planning Act (1996) and EMCA (1999) and deals with protection and conservation of environment. **When these Acts are employed in harmony, potential conflict of site selection for a water project by stakeholders is minimized.**

3.3.8 Physical Planning Act (Cap 286)

It is a requirement under the Physical planning act that such a project be subjected to the local county government policy requirements as regards to waste water disposal, proximity to the sewer lines etc.

CHAPTER 4

4 PROPOSED PROJECT DESCRIPTION

4.1 Nature and Description of Project

The proposed project would be electricity driven submersible pump equipped borehole using Electricity mains as the source of energy. It will be situated within Mashuru Town area of Mashuru District in Kajiado County. The specifications of the borehole are for the standard borehole according to Kenyan laws complete with casings and gravel park. .

4.2 Project Implementation

During implementation process of the proposed project, various inputs will be carried out to make the project a success. Accordingly there will be outputs arising from the inputs and which some will be beneficial to the environment. These will be discussed further under positive and negative impacts.

4.3 Cost of the project

The project involves drilling of the borehole with a rotary drilling rig complete with a compressor and other necessary accessories.

The commercial drilling rate per meter charged within the project area by commercial licensed drilling contractors is Kshs 12000 as the cased diameter of the borehole is 203 millimeters.

The recommended maximum depth of drilling by the proponent is 100 meters below ground level.

**Therefore the estimated cost of drilling the borehole is:
Kshs 100 x 12,000 = Kshs 1,200,000**

CHAPTER 5

5 DESCRIPTION OF ANTICIPATED ENVIRONMENTAL IMPACTS

5.1 Positive Impacts

5.1.1 Water Supply

The local community gets their water supply from sand scooping from the seasonal river Eselenkei and also from water trucking by the **Tanaathi water services board**.

These water sources are unreliable and inadequate and the former does not give safe drinking water.

The proposed borehole whose water will be portable will be reliable, clean and adequate for the local community's water requirements.

5.1.2 Promotion of economic status of the community

The Mashuru town business community and the residents of the project area who are predominantly Masai will benefit economically through the provision of water by this borehole.

The masai are livestock keepers and the number of livestock decrease tremendously when they die partly due to lack of water and pasture.

Now with the drilling of the borehole the livestock numbers will multiply and increase and therefore directly enhance the economic status of the local masai people in terms of milk, meat and cash provision.

5.1.3 Good time Management

Much time has been wasted on the issue of water provision. Sometimes water is being ferried to the Mashuru town by Tana athi water tankers and local community fetch water far in the seasonal river Eselenkei.

All this time which was being used to bring water will be used for other needy issues.

5.1.4 Enhanced Health Standards

The provision of clean, adequate and portable water from the borehole will promote positively general health and hygiene of the whole local population.

5.1.5 Enhanced Co-operation and harmony

The water Act has provision for the owners of the boreholes to share water with the neighbors if the yield of the borehole can meet the extra water demand and if the neighbors do not have an existing water supply.

In the process of sharing this water resource commodity, in whatever arrangement, will enhance the cooperation among the local community and which can have a multiple effect and also stimulate cooperation in other fields beneficial to the local people.

5.1.6 Reduced Water Borne Diseases

It is a requirement under laws of Kenya that no well or borehole water should be used before a physical, chemical and bacteriological analysis of the water has been carried out. The proposed borehole water will reduce and has the capacity to end the prevalence and occurrence of the water borne diseases like typhoid.

5.1.7 Promotion of development

With the provision of water through the drilling of the borehole will stimulate people to come and invest in the area by opening schools, shops, hotels etc.

5.1.8 Promotion of education

The development of this borehole will supply water to Mashuru town schools and thus reduce the time taken to fetch water far and this time will be used in other educational advancement activities.

5.1.9 Enhanced security

As the areas are fairly bushy, fetching water in the sand scooped traditional wells in the seasonal rivers through thickets and bushes attracts security concerns. This will be a thing of the past as the water will be brought near their homes and institutions.

5.2 Negative Impacts

5.2.1 Operation and Maintenance (O and M)

The borehole is expensive to maintain and operate and will increase contributions towards maintaining the new water supply.

However these costs will be minimal compared with the present time wasting and more expensive water supply.

5.2.2 Dust

The borehole will be drilled by a rotary rig and some dust is expected. However with necessary mitigation as outlined in the Environmental Management Plan (EMP), this impact will be minimized. Drilling and subsequent finishing of the borehole will be for a short time about 7 days, all works.

5.2.3 Soil Disturbance

There will be ground excavation and production of soil and cuttings on the ground. However the hole drilled will be only 8 inches (**203** mm) in diameter and the walls of the borehole will be stabilized by installation of casings. The area to be occupied by the borehole will be small about 1 meter square. This will be a small space in relation to the ground space available in the project village.

5.2.4 Waste and Disposal

After the water is struck and the drilled water starts to flow, it will dictate good water disposal methods of channels and trenches. These trenches will be backfilled after the drilling operations are completed.

5.2.5 Oil Spillage

With mitigations as outlined in the EMP, the impacts of the above will be minimized.

5.2.6 Noise

Mitigation as outlined in the EMP has to be followed to the correct standards to avoid any health risk both to the workers and also to the local community.

5.2.7 Risks of accidents

Vehicles and machinery will be moving in and out of the borehole drilling site which poses risks to pedestrians. However this will be for a short period of about 7 days.

5.2.8 Security

The borehole drilling process and equipments might attract people of ill motive like stealing. However this will be mitigated by hiring security guards or policemen.

CHAPTER 6

6 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The **EMP** establishes objectives especially ensuring mitigation measures and monitoring requirements as outlined in this report are followed during implementation. The aspect of what to do and what time it should be done correctly to avoid environmental damage. The environmental Management procedures and techniques to conserve the environment should be done as tabulated here below-

Table 6.1 Environmental Management / Monitoring Plan

IMPACT	PROPOSED MITIGATION MEASURES	RESPONSIBILITY FOR INTERVENTION/ MITIGATION	MONITORING PROCEDURE	FREQUENCY OF MONITORING	BUDGET FOR MITIGATION COST(Kshs)
Soil Erosion	-Proper drilling procedures. -Refilling of excavated areas.	Contractor	Supervision	-Inspection -No soil erosion expected.	3000
Air Pollution	- Ensure good working exhaust systems. - Provide dust masks to drilling personnel.	Contractor		Through out drilling period.	15000
Oil and Grease	-Proper storage of oil. -Good disposal of used oil -Servicing of vehicles in the garage.	Contractor		Through out drilling period.	5000
Noise Pollution	-Provide sound reduction equipment to workers. -Training of machine operators -Personnel to wear Ear muffs -Sensitize community of drilling duration.	Contractor/proponent		Through out drilling period.	6000
Water Source	- Avoid leaving any foreign object into the borehole.	Contractor/Proponent		Construction stage.	2000
Public health and occupational	-Ensure waste water management. -Provide overall,	Contractor/Proponent		Daily	30000

<p>safety.</p> <p>Approval of project</p>	<p>helmets, safety boots earmuffs, nose masks and gloves to workers. -Provide warning signs. -Welding gear provision -Provide a standby vehicle as an ambulance incase of an emergency.</p> <p>-Provide first aid kit -Have contacts especially mobile ones for police.</p> <p>-Ensure acquisition of drilling permits from Water Resources Management Authority (WRMA) - Ensure NEMA approval.</p>	<p>Proponent</p>		<p>Inspection</p>	<p>30000</p>
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7. CONCLUSIONS/RECOMMENDATIONS

7.1 CONCLUSION

The Proponent who is implementing this borehole project is very Much aware of environmental issues pertaining to the development of this borehole project.

The borehole will go along way into promoting the economic activities of the Mashuru town business community and also promoting the standard of living of the local Masai community who reside in the general Mashuru town environs.

The borehole will also stimulate other services that are lacking in the Mashuru town and the Mashuru village in general like schools and food security good farming methods.

The borehole will also promote the general health and sanitation standards of the local population.

The positive impacts that will occur as a result of the implementation of this borehole project will include provision of clean, adequate, reliable and portable water close to the homes of the local population. Some of the negative impacts occurring due to the implementation of this borehole project include increased ground water abstraction, increased maintenance costs, increased waste water disposal and others.

These will have insignificant long term impacts on the environment provided that all the recommended mitigation measures are implemented.

7.2 RECOMMENDATIONS

This EIA study recommends future monitoring of water quality and water level monitoring in the borehole for environmental auditing.

That diligence on the part of the contractor and proper supervision of the drilling process by the engineer is crucial for mitigating the predicted negative impacts.

Consequently therefore it is the opinion of the consultant that the few anticipated negative impacts can be readily mitigated and the proposed borehole water project does not pose any threat to the environment.

REFERENCES

Government of Kenya (GOK):- The Environmental Management and coordination Act, 1999, Government printer

Government of Kenya (GOK):- The Environmental (Impact assessment and Audit) Regulations 2003.

Government of Kenya (GOK):- The Public Health Act chapter 242

Government of Kenya (GOK):- The Water Act 2002, Government printer.

Government of Kenya (GOK):- The physical planning Act Cap 286

Groundwater Max ltd, 2013:- Hydro geological investigations for Tanaathi water services board in Mashuru town area of Mashuru district, Kajiado County.

ENVIRONMENTAL IMPACT ASSESSMENT QUESTIONNAIRE

PROPOSED BOREHOLE DRILLING AT..... MASHURU TOWN.....

ENVIRONMENTAL IMPACT ASSESSMENT QUESTIONNAIRE:

The proponent DISTRICT WATER OFFICER intends to drill one production borehole at a parcel of Land LR no 14/10/10/10/24 in MASHURU area MASHURU district. For the purpose of DOMESTIC USE. In efforts towards ensuring safe sustainable environment, National Environmental Management Authority (NEMA) works in consultation with all stake holders. Your views are crucial to enable NEMA to make an informed decision in either approving and/or recommending remedial measures in development of the project.

Kindly fill in the following questionnaire;

1. Name..... EDWARD KORUKO.....
 2. Position..... NEIGHBOUR.....
 3. Are you aware of the proposed bore hole drilling project?
Yes NO
 4. Are you familiar with activities involved in bore hole drilling?
Yes NO
 5. If Yes in 4 above, do you expect any interference to your premises as a result of implementation of the proposed bore hole drilling?
Yes NO
 6. If yes, briefly explain.....
N/A
 7. Are you aware of any similar project (bore hole) in the neighbouring premises?
Yes No
 8. If yes in seven above please give brief details (the owner, distance from the Proposed drilling site).....
N/A
 9. Do you have any objection to the proposed borehole drilling?
Yes No
If yes state the reason(s).....
N/A
- SIGNATURE/STAMP:..... [Signature].....
ID NO:..... 9680010.....
TEL/CELL NO:..... 0722165649.....

Thank you for participating in protecting our environment.

ENVIRONMENTAL IMPACT ASSESSMENT QUESTIONNAIRE

PROPOSED BOREHOLE DRILLING AT..... MASHUURU TOWN

ENVIRONMENTAL IMPACT ASSESSMENT QUESTIONNAIRE:

The proponent... DISTRICT WATER OFFICER Intends to drill one production borehole at a parcel of Land LR no: KAL/KAP/REG/10/24 in MASHUURU area MASHUURU district. For the purpose of In efforts towards ensuring safe sustainable environment, National Environmental Management Authority (NEMA) works in consultation with all stake holders. Your views are crucial to enable NEMA to make an informed decision in either approving and/or recommending remedial measures in development of the project.

Kindly fill in the following questionnaire;

1. Name..... CHARIT SARUNI
2. Position..... DEPUTY PRINCIPAL
3. Are you aware of the proposed bore hole drilling project?

Yes NO

4. Are you familiar with activities involved in bore hole drilling?

Yes NO

5. If Yes in 4 above, do you expect any interference to your premises as a result of implementation of the proposed bore hole drilling?

Yes NO

6. If yes, briefly explain.....

..... N/A

7. Are you aware of any similar project (bore hole) in the neighbouring premises?

Yes No

8. If yes in seven above please give brief details (the owner, distance from the Proposed drilling site).....

..... N/A

9. Do you have any objection to the proposed borehole drilling?

Yes No

If yes state the reason(s).....

..... N/A

SIGNATURE/STAMP:..... CS

ID NO:..... 22563241

TEL/CELL NO:..... 0720008708

DEPUTY PRINCIPAL
MASHUURU SEC. SCHOOL
P. O. Box 138-01100
TEL: 020-3518369
KAJIADO

Thank you for participating in protecting our environment.

ENVIRONMENTAL IMPACT ASSESSMENT QUESTIONNAIRE

PROPOSED BOREHOLE DRILLING AT MASHURU TOWN

ENVIRONMENTAL IMPACT ASSESSMENT QUESTIONNAIRE:

The proponent DISTRICT WATER OFFICER intends to drill one production borehole at a parcel of Land LR no: KA/VA/001/02/1 in MASHURU area MASHURU district. For the purpose of DOMESTIC USE. In efforts towards ensuring safe sustainable environment, National Environmental Management Authority (NEMA) works in consultation with all stake holders. Your views are crucial to enable NEMA to make an informed decision in either approving and/or recommending remedial measures in development of the project.

Kindly fill in the following questionnaire;

1. Name..... District Water Officer Mashuru
2. Position..... N.F.T.C. Mashuru
3. Are you aware of the proposed bore hole drilling project?
Yes NO
4. Are you familiar with activities involved in bore hole drilling?
Yes NO
5. If Yes in 4 above, do you expect any interference to your premises as a result of implementation of the proposed bore hole drilling?
Yes NO
6. If yes, briefly explain.....
N/A
7. Are you aware of any similar project (bore hole) in the neighbouring premises?
Yes No
8. If yes in seven above please give brief details (the owner, distance from the Proposed drilling site).....
N/A
9. Do you have any objection to the proposed borehole drilling?
Yes No
If yes state the reason(s).....
N/A

SIGNATURE/STAMP: [Signature]

ID NO: 25233301

TEL/CELL NO: 0776 779 568



Thank you for participating in protecting our environment.

ENVIRONMENTAL IMPACT ASSESSMENT QUESTIONNAIRE

PROPOSED BOREHOLE DRILLING AT..... MASHURU TOWN

ENVIRONMENTAL IMPACT ASSESSMENT QUESTIONNAIRE:

The proponent DISTRICT QUARTER OFFICER, Intends to drill one production borehole at a parcel of Land LR no: 125/1/ANENCE/24 in MASHURU area MASHURU district. For the purpose of In efforts towards ensuring safe sustainable environment, National Environmental Management Authority (NEMA) works in consultation with all stake holders. Your views are crucial to enable NEMA to make an informed decision in either approving and/or recommending remedial measures in development of the project.

Kindly fill in the following questionnaire;

- 1. Name MUSAFA KETERE
- 2. Position NEIGHBOUR / BENEFICIARY
- 3. Are you aware of the proposed bore hole drilling project?

Yes NO

- 4. Are you familiar with activities involved in bore hole drilling?

Yes NO

- 5. If Yes in 4 above, do you expect any interference to your premises as a result of implementation of the proposed bore hole drilling?

Yes NO

- 6. If yes, briefly explain.....

..... N/A

- 7. Are you aware of any similar project (bore hole) in the neighbouring premises?

Yes No

- 8. If yes in seven above please give brief details (the owner, distance from the Proposed drilling site).....

..... N/A

- 9. Do you have any objection to the proposed borehole drilling?

Yes No

If yes state the reason(s).....

..... N/A

SIGNATURE/STAMP:..... [Signature]

ID NO:..... 12648885

TEL/CELL NO:..... 0721335769

Thank you for participating in protecting our environment

HEADTEACHER
MASHURU PRI. SCHOOL
DATE 1-9-2013

ENVIRONMENTAL IMPACT ASSESSMENT QUESTIONNAIRE

PROPOSED BOREHOLE DRILLING AT MASHURU TOWN

ENVIRONMENTAL IMPACT ASSESSMENT QUESTIONNAIRE:

The proponent DISTRICT WATER OFFICER intends to drill one production borehole at a parcel of Land LR no. V51/KM/21/01/02/24 in MASHURU area MASHURU district. For the purpose of DOMESTIC USE. In efforts towards ensuring safe sustainable environment, National Environmental Management Authority (NEMA) works in consultation with all stake holders. Your views are crucial to enable NEMA to make an informed decision in either approving and/or recommending remedial measures in development of the project.

Kindly fill in the following questionnaire;

1. Name ELLY S. KORINKO
2. Position NEIGHBOUR
3. Are you aware of the proposed bore hole drilling project?
Yes NO
4. Are you familiar with activities involved in bore hole drilling?
Yes NO
5. If Yes in 4 above, do you expect any interference to your premises as a result of implementation of the proposed bore hole drilling?
Yes NO
6. If yes, briefly explain N/A
7. Are you aware of any similar project (bore hole) in the neighbouring premises?
Yes No
8. If yes in seven above please give brief details (the owner, distance from the Proposed drilling site) N/A
9. Do you have any objection to the proposed borehole drilling?
Yes No
If yes state the reason(s) N/A

SIGNATURE/STAMP: [Signature]
ID NO: 11127557
TEL/CELL NO: 072718943

Thank you for participating in protecting our environment.