LEGAL NOTICE NO. 106

THE WATER ACT

(*No*. 43 *of* 2016)

IN EXERCISE of the powers conferred by section 23(1) of the Water Act, 2016, the Water Resources Authority makes the following Order—

THE MANGUO SWAMP GROUNDWATER CONSERVATION AREA ORDER, 2023

Citation.

1. This Order may be referred to as the Manguo Swamp Groundwater Conservation Area Order, 2023.

Interpretation.

2. In this Order, except where the context otherwise requires—

No. 43 of 2016.

"Act" means the Water Act, 2016;

"association" means a water resources users association registered by the Authority in accordance with the Act;

"Authority" means the Water Resources Authority established under Section 11 of the Act;

"basin area" means the area designated by the Authority as a basin area under section 24 (1) of the Act;

"groundwater conservation area" means the area declared to be a groundwater conservation area under paragraph 4 of this Order;

"Plan" means the Manguo Swamp Groundwater Conservation Plan set out in the Second Schedule of this Order;

"riparian reserve" means land in respect of which management obligations are imposed on users or owners by the Authority due to its proximity to the groundwater conservation Area;

"soil and water conservation plan" means soil and water conservation plan as defined in regulation 2 of the Water Resources Regulations, 2021; and

L.N. 170/2021.

"sub-basin area" means the area designated by the Authority as a basin area under section 24(2) of the Act.

Application of the Order.

3. This Order shall apply to the National Government, national government entities, county governments, county government entities and any other person being a user of water resources and the riparian reserve of the Manguo Swamp Groundwater Conservation Area.

Declaration of groundwater conservation area.

4. (1) The Manguo Swamp Groundwater Conservation Area is declared to be a groundwater conservation area for the purposes of the Act.

(2) The area declared in sub paragraph (1) shall be as per the extent and description set out in the First Schedule and is demarcated for protection and conservation within the Manguo Swamp Groundwater Conservation Plan.

Manguo Swamp Groundwater Conservation Plan.

5. (1) The Plan shall, without prejudice to the provisions of the regulations developed under the Act, be the basis for protection, conservation and use of the water resources within the Manguo Swamp Groundwater Conservation Area.

(2) The Authority shall place signboards and beacons in or near the Groundwater Conservation Area or in appropriate public places frequented by land and water users and at the Authority's offices to display up-to-date information about the condition of the water resources of the Groundwater Conservation Area.

(3) The public notices shall contain information regarding the action required of water and land users to conserve and protect the water resources of the Groundwater Conservation Area.

Offence.

6. A person who contravenes this Order commits an offence and shall, upon conviction, be liable to a fine of twenty thousand shillings or to imprisonment for a term not exceeding six months, or to both such fine and imprisonment.

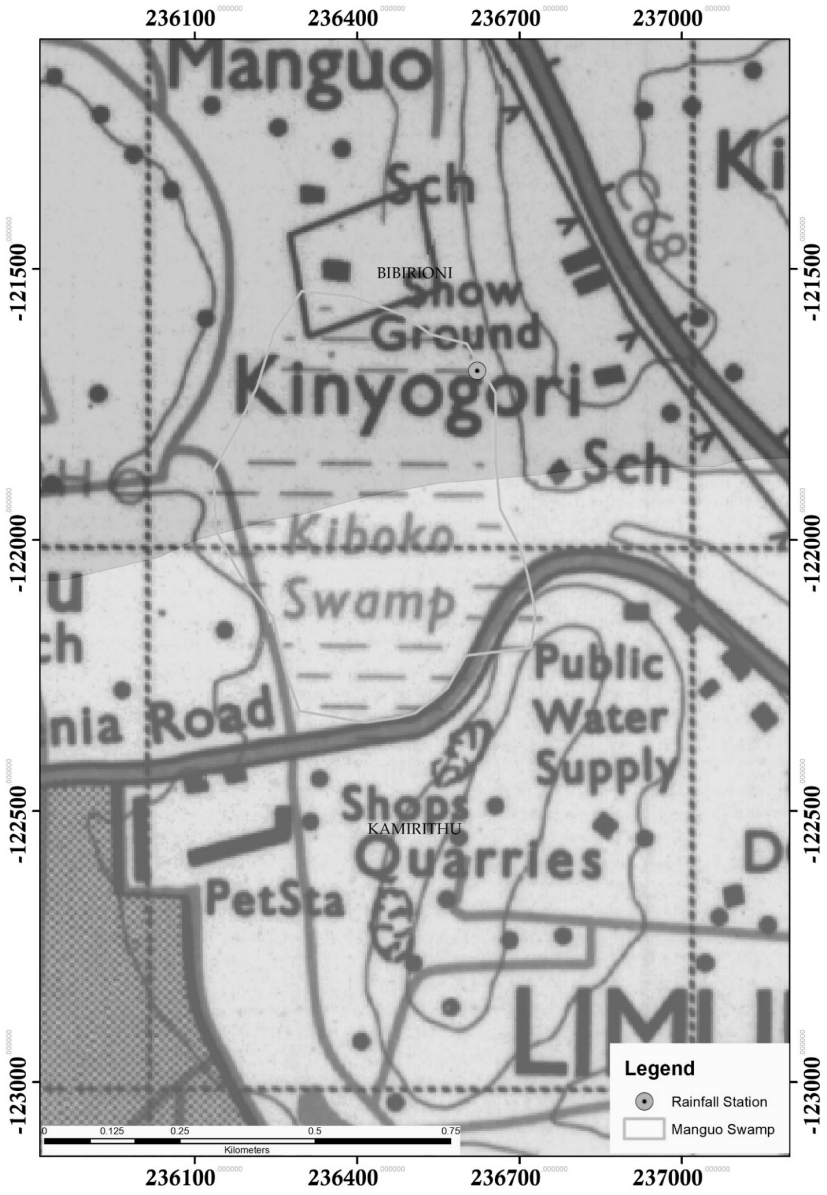
Revocation.

L.N. No. 221 of 2022.

7. The Manguo Swamp Groundwater Conservation Area Order, 2022 is revoked.

FIRST SCHEDULE

THE MANGUO SWAMP GROUNDWATER CONSERVATION AREA *(p. 4)*



NOTE:

1. The area declared as a protected area is commonly known as Manguo or Kiboko Swamp.

2. It is located in Kamirithu Sub-Location of Limuru Location, Limuru Sub-County, Kiambu County and within the 3BA sub basin of Athi Basin Area. The land area to be protected is approximately 0.334 km^2 (33.4 Hectares).

3. The area lies within the 3BA *(L.N. 235 of 2021)* sub basin and is the source of the Ithanji river, a tributary of Tigoni River. The groundwater conservation area is in the form of a basin-like depression with an outlet to the south-east into Ithanji River.

SECOND SCHEDULE

(p. 2, 4, 5)

THE MANGUO SWAMP GROUNDWATER CONSERVATION PLAN

PART I: INTRODUCTION

1.1 Citation

This Plan may be cited as the Manguo Swamp Groundwater Conservation Plan.

1.2 Acronyms

The following acronyms shall have the meanings as assigned below:

ABA	—Athi Basin Area
AEZ	—Agro-Ecological Zone
CGK	—County Government of Kiambu
GIS	—Geographical Information System
KFS	—Kenya Forest Service
Km^2	—Square Kilometer
KWS	—Kenya Wildlife Service
m.a.s.l	—Meters Above Sea Level
m^3/d	—Cubic Meters per day
MoALF	—Ministry of Agriculture
MoL	—Ministry of Lands and Physical Planning
MWRUA	—Mweteta Water Resources Users Association
NEMA	—National Environment Management Authority
NGAO	—National Government Administration Officers
NLC	—National Land Commission
°C	—Degrees Celsius
OND	—October- November-December
Q50	—Flow that is equaled or exceeded 50%of the time
Q80	—Flow that is equaled or exceeded 80%of the time
Q95	—Flow that is equaled or exceeded 95%of the time
RGS	—Regular Gauging Station
RQOs	—Resource Quality Objectives
SoK	—Survey of Kenya
ToR	—Terms of Reference
WDC	—WRUA Development Cycle
WRM	—Water Resources Management

WRA —Water Resources Authority

WRUA —Water Resources Users Association

1.3 Application of the Plan

This Plan shall apply in respect to the management and use of the Manguo Swamp Groundwater Conservation Area.

1.4 Goals

The overall goals of the management Plan are to ensure sustainable management and use of water resources within the Groundwater Conservation Area while promoting equitable sharing of water resources.

1.5 Background information

A catchment area is defined as the land from which water naturally flows into a water course. The status and conditions of a catchment determines the reliability, quantity and quality of its water yields. A catchment area acts like a water storage facility where during the rains, the vegetation cover allows the water ample time to percolate deep down and move as a sub-surface flow to recharge the rivers, springs and ground water storage in both shallow and deep aquifers. This sub-surface flow is slow resulting in rivers from a well-maintained catchment having higher base flows even during the dry season as well as good water yield from boreholes in the vicinity. In poorly maintained and degraded catchment, the rainfall results in the rapid surface run-off which is channeled into the river courses, resulting in flashfloods and high volumes of suspended solids. Since there is little storage in such a catchment, the rivers originating from such catchment will not be able to sustain their base flows during the dry season.

Catchment areas are thus a vital component in water resource management and they should be formally delineated, declared as protected areas by being gazetted as such, protected from encroachment and pollution and managed sustainably to maintain their ecological integrity.

1.6 Background Information on Manguo Swamp

The Manguo Swamp Groundwater Conservation Area is located within Kamirithu Sub-Location of Limuru Location within Kiambu County. The area on which the wetland lies measures approximately 33.4 hectares (0.334 square kilometres).

There has been sub-division of the land into several plots and individuals issued with title deeds.

The area lies within the 3BA sub basin and is the source of the Ithanji river, a tributary of Tigoni River. The protected groundwater conservation land under question area is in the form of a basin-like depression with an outlet to the south-east into Ithanji River. The swamp is currently partially covered by water in the southern part while the northern part has a very shallow water table and evidence of water coming onto the surface and flowing in a south-easterly direction to drain into the Ithanji River. An analysis of the drainage system in the neighborhood confirmed the area is one of the main sources of Ithanji River, a tributary of Tigoni River.

1.7 Location and size of the Groundwater Conservation Area

The Groundwater Conservation Area is commonly known as Manguo or Kiboko Swamp. It is located in Kamirithu Sub-Location of Limuru Location, Limuru Sub County, Kiambu County and within the 3BA sub basin of Athi Basin Area. The

boundaries of the Groundwater Conservation Area and its riparian reserve has been demarcated and pegged by the Authority.

1.8 Watershed area

The area that contributes surface run-off into the swamp has been delineated through the use of ArcSWAT software. The area measures 0.334 square kilometres (33.4 hectares) out of the 5.3 km^2 catchment area of the Ithanji River as set out in Figure 1 in the Annexure to this Schedule.

1.9 Criteria Adopted in Identifying Manguo Swamp for Protection

(L.N 170/2021)

WRA has taken into account of the considerations provided under the Seventh Schedule of the Water Resources Regulations, 2021.

PART II: PROCEDURES TO BE APPLIED FOR THE MANAGEMENT OF THE MANGUO SWAMP GROUNDWATER CONSERVATION AREA

2.1 Physiography

The Ithanji river catchment area elevation ranges from a low of 2260 m.a.s.l near the river's confluence with Tigoni River to a high of 2280 m.a.s.l at the outlet from the swamp. The catchment is oval shaped and extends upstream in north south direction with a length of 746 metres (see the map above).

The slope ranges between 1.2% to 8% with the steeper slopes found on the upstream part of the catchment. The catchment drains in an easterly direction, where it joins with the Tigoni River at the foot of the sub-catchment.

2.2 Climate

The mean monthly temperatures range between a low of 16.7°C in July to a high of 20.7°C in March.

The Tigoni sub catchment lies within the agro ecological zones (AEZ) IV that corresponds to woodland, it is either deciduous in subzone with unimodal rainfall as towards West Kenya and in Tanzania, or hard-leaved evergreen in bimodal rainfall subzones with two dry seasons as in East Kenya, where plants have hard or hairy leaves to avoid shedding them off twice a year. Generally, the area is characterized by moderate rainfall with annual rainfall of 1002.3 mm (Limuru DO's Office Rainfall Station No. 9136161).

April to June and October to December are wet or rainy seasons with maximas occurring in April and November respectively and with continental rains which are low occurring in between the two maximas.

Table 1 and the figure below it set out in the Annexure to this Schedule represent the mean monthly rainfall at Limuru DO's Office Rainfall station.

2.3 Vegetation

The Tigoni catchment in which the Manguo Swamp catchment lies exhibits is within an agricultural area with changed vegetation. The area is predominantly tea growing zone and the vegetation is adapted.

2.4 Land Uses and their potential impact on the groundwater conservation area Human Settlement:

The Tigoni sub catchment is within the jurisdiction of Kiambu County in a rural setting. The main land use in the area to the east of the swamp is large scale farming with the growing of tea being the main activity. Within the Limuru Town, the main

land use is commercial and residential development with minimal industrial activities. To the north of the swamp, the main land use is small scale holding practicing mixed farming with tea and subsistence crops and dairy farming being practiced.

The construction of buildings and an increase in the impermeable surfaces has resulted in an increased surface run-off which ends up in the swamp as well as into the rivers channels. The run-off carries pollutants from the surface as well as sediments which are deposited in the swamp thus affecting its functions as well as water quality.

Mushrooming of these structures will impact negatively on the ecosystem health of the swamp which will eventually result into its death and subsequent loss of ecosystem services.

2.5 Exotic species of plants:

There exists numerous exotic species of trees which are unsuitable in a water catchment area, including eucalyptus trees.

2.6 Vulnerability of the water resource

Tigoni River has a Regular Gauging Station 3BA17 located at coordinates E036.724444, S01.158333 (37M 0246722, 9871868) at an elevation of 1890 m.a.s.l and approximately 13 km downstream of the Manguo Swamp. The station is rated and has daily discharge data for the period from the year 1939 upto 1991 though with gaps in between.

In terms of geology, the area is covered by the Kerichwa Valley Tuffs which are well exposed in the Tigoni stream that flows through the area (Gregory, 1921p 164) and were designated by Shackleton (1945) to include a group of trachytic tuffs and agglomerates in the Nairobi area younger than the Nairobi Trachyte. These tuffs overlie the Nairobi Trachyte.

The ground water system feeds into the surface drainage system of the Tigoni River through the numerous springs that exist in the area.

The encroachment on the Manguo Swamp riparian and catchment land through construction of buildings and the planting of exotic tree species has resulted into reduced recharge into the ground, lowering of the water table and a possible decrease in the discharge of the Tigoni River.

In order to have a clear understanding of the water resources availability in the Tigoni catchment, the available data has been used and collated with the existing daily discharge data of 3BA17 gauging station within the 3BA sub basin.

Figure 2 set out in the Annexure to this Schedule shows the flow duration analysis for Tigoni river at RGS 3BA17.

2.7 The water resource quality objectives

Section 20 of the Act requires the Authority to prescribe the criteria for classifying water resources for the purposes of determining water resources quality objectives for each class of water resource.

The Resource Quality Objectives represent the desired status of the resource, covering all aspects of quantity, quality, timing and aquatic biota. The RQO's are different for different classes of water resource. The objectives generally relate to the

extent to which the water body is allowed to be adversely impacted by water use with respect to its natural state. Conceptually the RQO's provide a "target" condition of the resources. Management decisions should be made such that the condition of the resource is progressively trending towards the RQO. The status of the resource is a measure of how far the condition of the resource is from the RQO.

Tigoni sub-catchment can be classified as of high Commercial importance. The area has predominantly urban and/or industrial agglomeration areas including their peripheral areas, which could be commercial. This category targets at ensuring quality of water resources to develop economy and prosperity in urban areas/industrial centres.

Sustainable water resources management in the sub catchment will focus on cooperation with the commercial stakeholders, hence the need to have the interests of residents, industrialists and business community taken into account.

2.8 The class of the water resource

The present aquifer classification system in Kenya is partly demand-oriented and partly geo-political and entails five classes:

2.8.1 STRATEGIC aquifers: aquifers used to supply significant amounts/proportions of water to an area where there are no alternatives, or where alternatives would take time and money to develop.

2.8.2 MAJOR aquifers: high-yielding aquifers with good quality water.

2.8.3 MINOR aquifers: moderate-yielding aquifers with variable water quality.

2.8.4 POOR aquifers: low-yielding aquifers with poor to reasonable quality water.

2.8.5 SPECIAL aquifers: aquifers or parts of aquifers designated 'special aquifers' by the WRA.

2.9 Each classification is further defined in terms of its status, i.e.:

2.9.1 Satisfactory: no immediate stress, pressure or threat.

2.9.2 Alert: stress, pressure or threat identified or anticipated.

2.9.3 Alarm: water levels declining, water quality declining (stress, pressure or threat identified).

2.10 The Tigoni sub-catchment

The Tigoni sub-catchment can be classified as "Alert" as the available water is at times not of adequate quality to meet the demand. The water is of relatively good quality in the upper parts of the river but deteriorates as the river flows downstream due to pollution.

PART III: MEASURES FOR PROTECTION, CONSERVATION AND REHABILITATION OF THE GROUNDWATER CONSERVATION AREA

3.1 Authorised and prohibited Activities

The activities to be undertaken within the groundwater conservation area are those with zero impact on its ecological status and integrity.

The following activities are hereby specifically prohibited in the groundwater conservation area:

(a) tillage or cultivation;

(b) clearing of indigenous trees or vegetation;

(c) building of permanent structures (especially boreholes and houses);

(d) disposal of any form of waste;

(e) excavation of soil or development of quarries;

(f) planting of exotic species that may have adverse effect to the water resource;

(g) land reclamation.

3.2 Conservation Plan

The objective of the conservation plan is to protect the long-term environmental sustainability of the catchment for enhanced water resources yield and maintain its ecological functions in terms of flora and fauna.

In the development of the management programmes, care has been taken to ensure that there are explicit and logical links between the vision statement, management objectives, and the management strategies to achieve the objectives.

The catchment protection activities planned to be undertaken shall include those set out in Table 3 in the Annexure to this Schedule.

3.4 Rehabilitation Plan

The objective of the rehabilitation plan is to ensure the groundwater conservation area achieves its optimal performance level. This will be achieved through:

(a) removal of all inappropriate/invasive species of plants;

(b) re-vegetation of the riparian zone with water friendly/native species of trees and vegetation;

Rehabilitation activities are particularized under the Rehabilitation Plan set out in Table 4 in the Annexure to this Schedule.

3.5 Catchment Monitoring Plan

The objective of the monitoring plan is to collect water resources data and maintain a comprehensive database on the groundwater conservation area that provides information on water levels and quality of the spring's water.

Planned catchment monitoring actions include:

(iv) establish a water quality and pollution control plan.

(v) water sampling and analysis.

(vi) establish a water resources database.

The particulars of the Catchment Monitoring Plan are set out in Table 5 in the Annexure to this Schedule.

3.6 Establishment and operationalization of management structure

The objective of the management structure is to ensure that the protected area is managed in a sustainable manner with the involvement of all stakeholders under the leadership and coordination of WRA. This will be achieved through:

(iii) setting up the management structure with defined ToRs and mandates;

(iv) development of resources mobilization strategies to raise funds for operations, maintenance and conservation of the protected areas.

Operationalization of the management structure shall be as set out in Table 6 in the Annexure to this Schedule.

3.7 Catchment and Water Resources Monitoring

The objective of the monitoring plan is to collect and analyse Manguo Swamp and water resources data to provide information on water discharge, water quality and catchment health as a response to human activities within the neighbourhood. This will be achieved through:

(i) re-establish the regular gauging station 3BA17 on Tigoni river to monitor water quantity and quality;

(ii) re-stablish a full hydro-meteorological station within the Tigoni river sub-catchment (Limuru DO's Office – Station No. 9136161) to monitor precipitation, evaporation, humidity and temperature; and

(iii) establish water quality monitoring stations within the groundwater conservation area.

The linkages between various stakeholders are contained in Figure 3 set out in the Annexure to this Schedule.

3.8 Monitoring and Evaluation Matrix

The matrix contained in Table 7 in the Annexure to this Schedule shall be adopted for Monitoring and Evaluation to capture details of the progress of implementation of the planned activities.

ANNEXURE

FIGURE 1: WATERSHED AREA

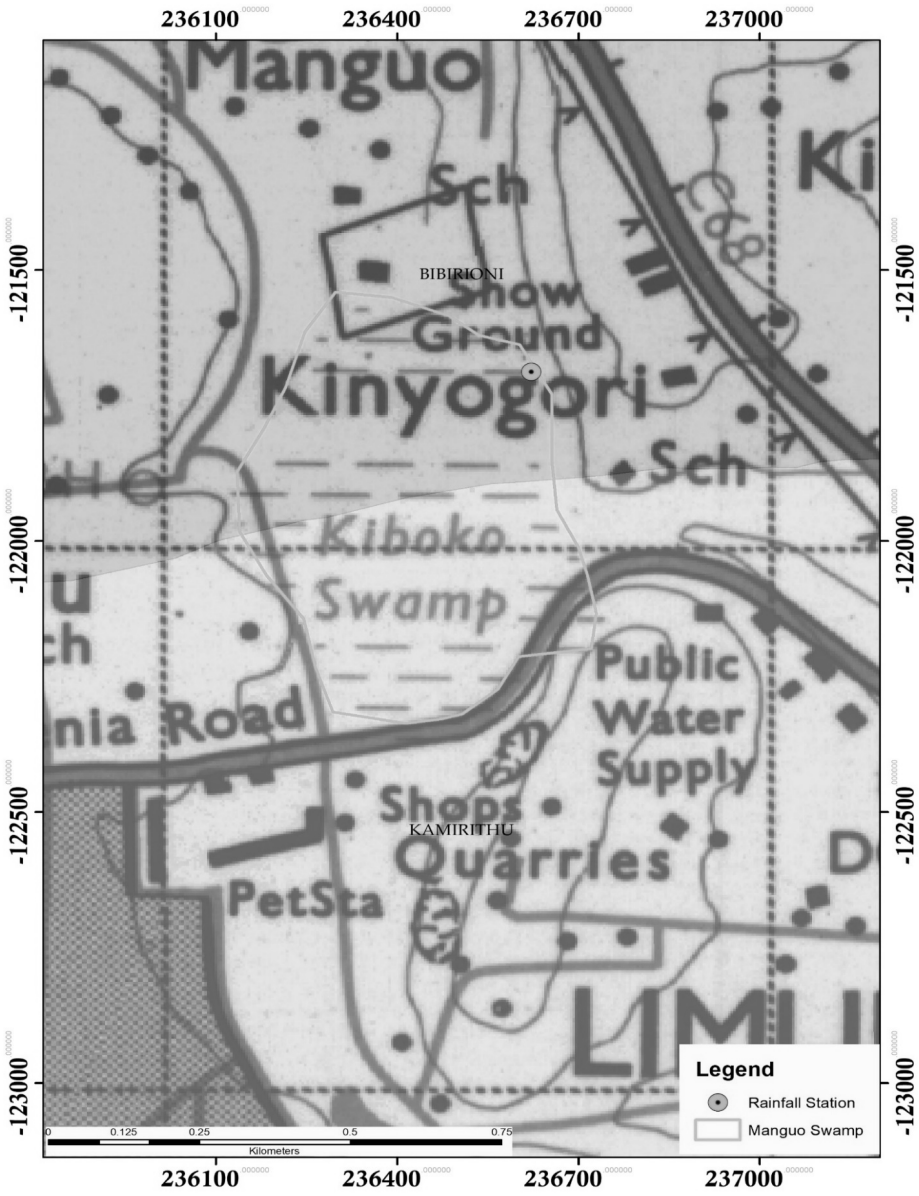
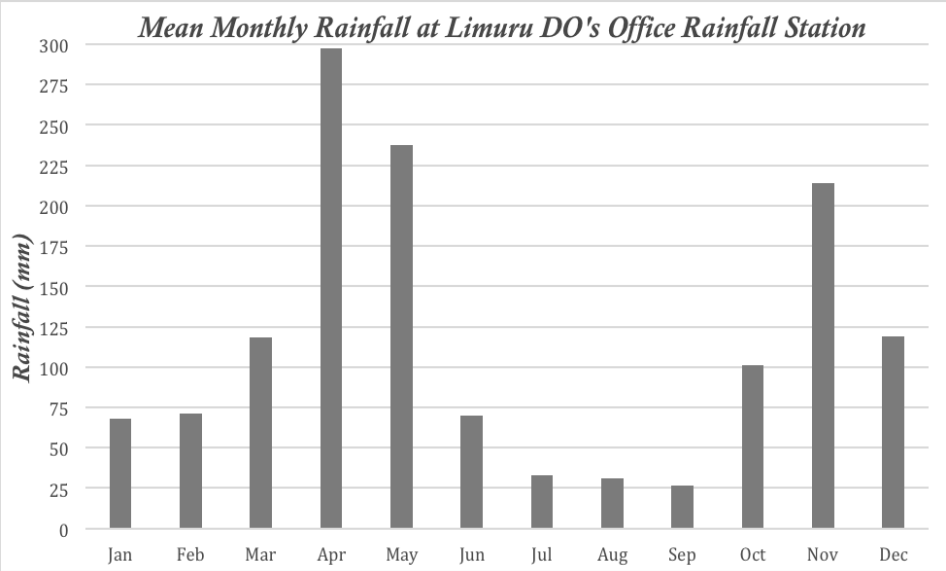


TABLE 1: MEAN MONTHLY RAINFALL

Month	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Total*
Rainfall (mm)	67.8	71.1	118.4	297.5	237.8	69.8	33.2	30.8	26.7	100.9	214	118.9	1386.9



Mean Monthly Rainfall at Limuru DO's Office Rainfall Station

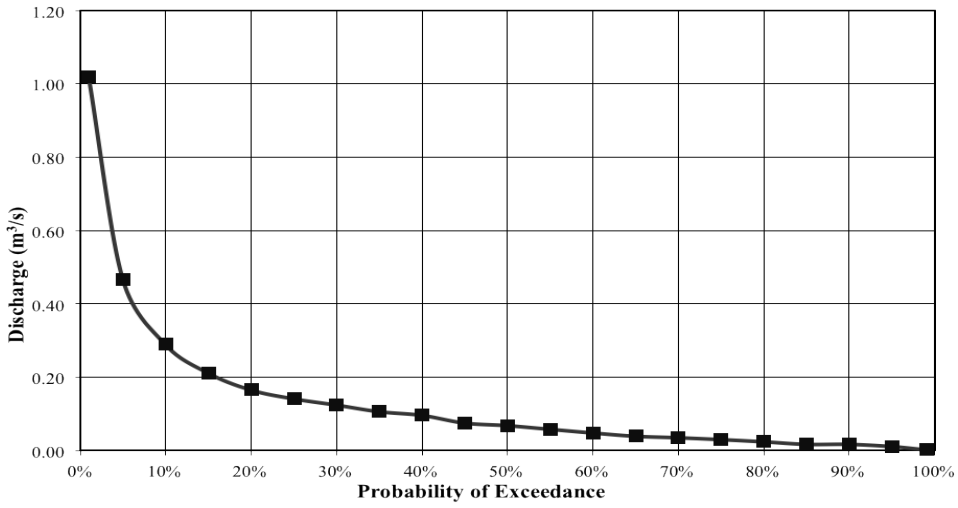
TABLE 2: SURFACE WATER AVAILABILITY FOR TIGONI RIVER

		Allocation	*Allocated*	*Balance*
Q95	Reserve	1,037	0	1,037
Q80	Normal Flow	1,123		1,123
Q50	Flood Flow	3,802		3,802

Mean	6.265
Standard deviation	14.215

Probability of non-exceedance	Probability of exceedance	Flow	Flow	Available for allocation	Days	Total volume	Volume per year
%	%	m^3/s	m^3/day	m^3/s	nos	Million m^3	Million m^3
99%	1%	1.020	88,128		3.65	0.32	17.3
95%	5%	0.468	40,435		18.25	0.74	17.0
90%	10%	0.290	25,056		36.50	0.91	16.2
85%	15%	0.212	18,317		54.75	1.00	15.3
80%	20%	0.166	14,342		73.00	1.05	14.3
75%	25%	0.142	12,269		91.25	1.12	13.2
70%	30%	0.125	10,800		109.50	1.18	12.1
65%	35%	0.107	9,245		127.75	1.18	10.9
60%	40%	0.097	8,381		146.00	1.22	9.8
55%	45%	0.076	6,566		164.25	1.08	8.5
50%	**50%**	**0.069**	**5,962**	**3,802**	**182.50**	**1.09**	**7.5**
45%	55%	0.059	5,098		200.75	1.02	6.4
40%	60%	0.049	4,234		219.00	0.93	5.4
35%	65%	0.040	3,456		237.25	0.82	4.4
30%	70%	0.036	3,110		255.50	0.79	3.6
25%	75%	0.031	2,678		273.75	0.73	2.8
20%	**80%**	**0.025**	**2,160**	**1,123**	**292.00**	**0.63**	**2.1**
15%	85%	0.018	1,555		310.25	0.48	1.4
10%	90%	0.018	1,555		328.50	0.51	1.0
5%	**95%**	**0.012**	**1,037**	**0.000**	**346.75**	**0.36**	**0.5**
1%	99%	0.003	259		361.35	0.09	0.1

FIGURE 2



Flow Duration Analysis for 3BA17

TABLE 3: CATCHMENT PROTECTION ACTIVITIES

Activity	*Sub-Activity*	*Timeframe*	*Cost*	*Responsibility*
Groundwater conservation area protection and riparian pegging.	Undertake cadastral survey of the area and place beacons along the boundary.	1 Month	750,000	WRA, SoK.
	Develop the PDP for the demarcated groundwater conservation area.	1 month	1,000,000	NCC, MoLS, WRA.
	Liaise with NLC for the revocation of any irregularly issued title deeds for the groundwater conservation area and facilitate compensation (under compulsory acquisition processes prescribed in law) for titles determined as regularly acquired.	3 Months	1,000,000	WRA, NLC.
	Fence off the demarcated area.	1 Month	3,000,000	WRA, MWRUA.
	Place signs and notices to notify the public of the protected area and sanctions in the event of breach.	Continuous	250,000	WRA, MWRUA.
Enforce the Manguo Swamp Groundwater conservation Plan.	Create awareness to stakeholders on the groundwater conservation area plan.	2022	1,000,000	WRA.
	Enforce groundwater conservation plan and relevant legislations.	continuous	1,000,000	WRA, National Government.
Sub-Total			8,000,000	

TABLE 4: REHABILITATION PLAN

Activity	*Sub-Activity*	*Timeframe*	*Cost*	*Responsibility*
Removal of all inappropriate/invasive species of plants.	Identify and remove inappropriate and invasive tree species from the wetland.	3 months	300,000	WRA, KFS, NGAO, MWRUA.
	Exotic species control.	Continuous	200,000	WRA, MWRUA.
Re-vegetation of the riparian zone of the wetland with water friendly/native species of trees and vegetation.	Establish indigenous plants nursery.	Continuous	2,000,000	MWRUA, WRA.
	Grow live fence on the boundary of the wetland.	Continuous	1,000,000	WRA, KFS, MWRUA.
	Planting and growing of propagated seedlings (Watering and tending).	1 year	540,000	MWRUA.
Sub-Total			4,040,000	

TABLE 5: CATCHMENT MONITORING PLAN

Activity	*Sub-activity*	*Timeframe*	*Cost*	*Responsibility*
Re-establish RGS3BA17 on Tigoni river.	Identify an appropriate site and install station.	3 months	200,000	WRA
	Identify, train and engage a gauge reader.	Continuous	600,000	WRA, MWRUA
	Collect and analyse hydromet data.	Continuous	0	WRA
Establish a full hydro-meteorological station.	Identify an appropriate site to install station.	Continuous	0	MWRUA, WRA
Establish water quality monitoring stations within the groundwater conservation area.	Identify appropriate sites for water quality sampling.	3 months	1,000,000	WRA, MWRUA
	Determine the parameters to be analysed for the samples.	3 months		
	Carry out water quality sampling, analysis and disseminate results.	Quarterly	2,000,000	WRA

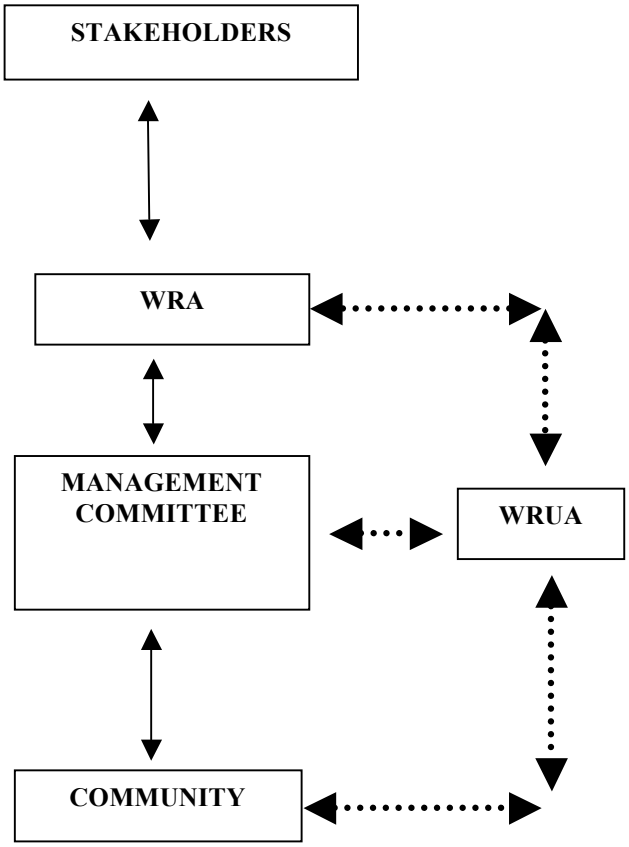
Activity	*Sub-activity*	*Timeframe*	*Cost*	*Responsibility*
	Procure, install and commission the equipment.	Continuous	1,000,000	WRA
Sub-Total			3,900,000	

TABLE 6: MANAGEMENT STRUCTURE

Activity	*Sub-activity*	*Timeframe*	*Cost*	*Responsibility*
Setting up the management structure.	Appointment of one Member from each of the following stakeholders: 1. Kenya Forest Service; 3 Public Health Department, Kiambu County; 4 National Government Administration in Kiambu County; 5 National Environmental Management Authority; 6 Ministry of Agriculture; or 7 Mweteta WRUA.	3 months	300,000	WRA
	Terms of References (ToR) will include but not limited to: (i) to manage the catchment prudently on behalf of other stakeholders; (ii) to submit quarterly reports to WRA - ABA on all planned and implemented activities; and (iii) to develop by - laws and submit a copy to WRA – ABA for approval before implementation.	Continuous	0	WRA, MWRUA.

Activity	*Sub-activity*	*Timeframe*	*Cost*	*Responsibility*
	Mandate and responsibilities: (a) promote the conservation and protection of the catchment. (b) promote equitable distribution of the resources within the catchment. (c) promote socio-economic and environmental sustainability of the catchment.	Continuous	0	MWRUA, WRA.
	The sources of funds for the committee may include: (i) Bee keeping; (ii) Tree Nursery; (iii) Eco-tourism; (iv) Well-wishers/Donors; (v) WRA/WRUA - (WDC).	Continuous	5,000,000	WRA
Sub-Total			5,300,000	

FIGURE 3: REPORTING LINKAGES FOR THE MANAGEMENT COMMITTEE



Note:

(i) The arrows indicate the direction of flow of information. The dotted lines indicate WRUA can also communicate directly to communities and vice versa.

(ii) WRA as the agent of the National Government in the regulation of use and management of water resources, will be the coordinator of the committee. The members appointed to the Management Committee will serve on honorary basis as this will be a non-profit, non-commercial venture. The Committee will be required to solicit for funding from well-wishers and other sources to supplement the income that may be derived from activities permitted in a protected area.

TABLE 7: MONITORING AND EVALUATION TEMPLATE

Activities	*Implementation Schedule*		*Status (% completion)*	*Planned Cost Ksh.*	*Total expenditure to date*	*Source of funds*	*Output*	*Comments*
	Start date	End date						

Dated the 14th June, 2023

MOHAMED M. SHURIE,
Chief Executive Officer,
Water Resources Authority.