THE REPUBLIC OF KENYA

LAWS OF KENYA

THE KARAI WETLAND CONSERVATION AREA ORDER, 2023

NO. 117 OF 2023

Revised and published by the National Council for Law Reporting
with the authority of the Attorney-General as gazetted by the Government Printer

www.kenyalaw.org

Kenya

Water Act

The Karai Wetland Conservation Area Order, 2023

Legislation as at 22 September 2023

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FRBR URI: /akn/ke/act/ln/2023/117/eng@2023-09-22

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The Karai Wetland Conservation Area Order, 2023 (Legal Notice 117 of 2023)

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WATER ACT

THE KARAI WETLAND CONSERVATION AREA ORDER, 2023

LEGAL NOTICE 117 OF 2023

Published in Kenya Gazette Vol. CXXV—No. 213 on 22 September 2023

Commenced on 22 August 2023

1. Citation

This Order may be cited to as the Karai Wetland Conservation Area Order, 2023.

2. Interpretation

In this Order, except where the context otherwise requires –

"**Act**" means the Water Act, 2016 (No. 43 of 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;

"**Protected Area**" means the area declared to be a protected area under paragraph 4 and is demarcated for protection and conservation within the Karai Wetland Conservation Management Plan;

"**Plan**" means the Karai Wetland Conservation Management Plan set out in the Second Schedule;

"**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 Protected Area;

"**soil and water conservation plan**" means soil and water Conservation Plan as defined in the Water Resources Regulations, 2021 (L.N. 170 of 2021); and

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

3. Application of the Order

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 Protected Area.

4. Declaration of protected area

(1) The Karai Wetland Conservation Area is declared to be protected area for purposes of the Act.

(2) The area declared in subparagraph (1) shall be as per the extent and description set out in the First Schedule and is demarcated for protection and conservation within the Karai Wetland Conservation Management Plan.

5. Karai Wetland Conservation Plan

(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 Protected Area.

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

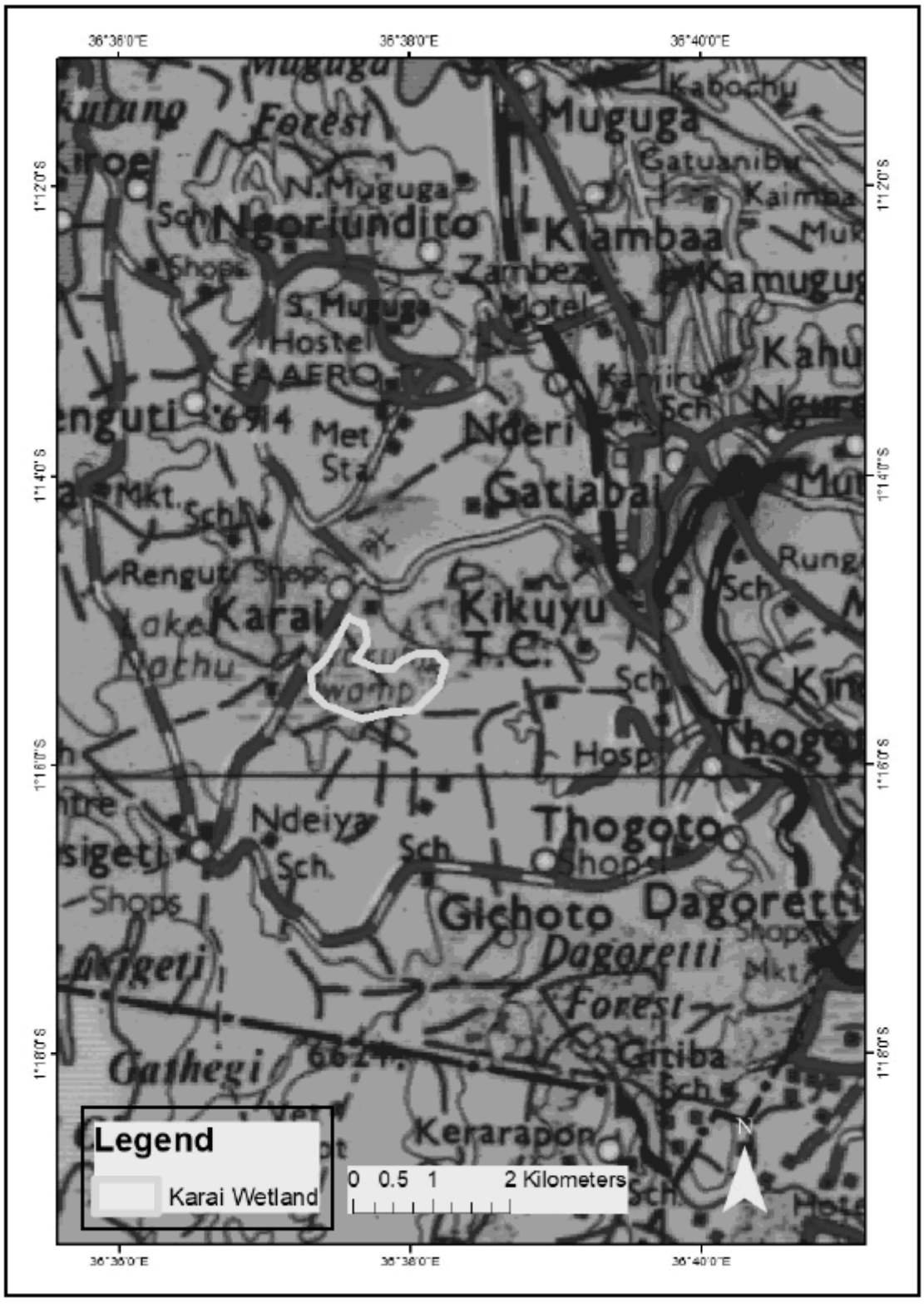
6. Penalty

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

FIRST SCHEDULE

THE KARAI WETLAND CONSERVATION AREA

[r. 2, 4]


36°36'0"E
36°38'0"E
36°40'0"E
1°12'0"S
1°14'0"S
1°16'0"S
1°18'0"S
Muguga
Forest
N.Muguga
Ngoriundito
Kiambaa
Kabochu
Gatuanibe
Kaimbaa
Zambezi
Motel
S.Muguga
Hostel
EAAERO
Kamugug
Kahu
Nderi
Gatiaba
Mkt.
Sch.
Renguti
Shops
Karai
Kikuyu
T.C.
Swamp
Hosp
Ndeiya
Thogoto
Gichoto
Dagoretti
Gathegi
Gitiba
Kerarapon
Legend
Karai Wetland
0 0.5 1 2 Kilometers
N

Note:

(i) The Conservation Area is commonly known as Karai Wetland and is spread within Karai Sub-location of Kikuyu Sub-county, Kiambu County. It is located about 35 km to the west of Kiambu town. The wetland covers an area of approximately 2.4 km^2 and is within the 3BA-sub-basin of Athi Basin Area.

(ii) Karai wetland is a significant ground water recharge area which falls within the upper Athi river basin area in sub basin 3BA. It is located west of Kikuyu Town in Kiambu County, Kikuyu Sub-county, Karai Location.

SECOND SCHEDULE

THE KARAI WETLAND CONSERVATION MANAGEMENT PLAN

[r. 2, 4, 5]

Part I – PREAMBLE

1.1 Citation

This Plan may be cited as the Karai Wetland Conservation Management Plan.

1.2 Acronyms

The following acronyms shall have the meanings as assigned below:

AEZ –Agro-Ecological Zone

ABA –Athi Basin Area

KFS –Kenya Forest Service

Km^2 –Square Kilometer

L.N. –Legal Notice

m.a.s.l. –meters above sea level

M^3/d –Cubic meters per day

M^3/s –Cubic meters per second

Mm^3 –million cubic meters

MoA –Ministry of Agriculture

MoL –Ministry of Lands

NEMA –National Environment Management Authority

NGAO –National Government Administration Officer

NLC –National Land Commission

°C –Degrees Celsius

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

ToR –Terms of Reference

WDC –WRUA Development Cycle

WRA –Water Resources Authority

WRUA –Water Resources Users Association

WRM –Water Resources Management.

1.3 Application of the Plan

This Plan shall apply in respect to the management and use of the Karai Wetland Conservation Area.

1.4. Objectives

The objectives of this Plan are to—

(i) enhance implementation of existing regulations to protect the rights of all users;

(ii) promote water, use efficiency that is hydrologically and economically beneficial to domestic, agricultural, and industrial water users and the environment; and

(iii) identify funding sources to implement water conservation programs that help to enhance water resources;

1.5 Introduction and 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.

1.6 Wetlands are an important component of water balance within catchment areas in that they give rise to different hydrological functions. Wetlands located in flood plains play an effective role in flood mitigation as well as water storage. On the other hand, wetlands located at the foot of slopes or adjacent to rivers tend to contribute to flood peaks. Wetlands are also valuable for water quality improvement and shoreline erosion control as well as provision of habitat for different species of aquatic and terrestrial plants and animals. They also provide natural products, recreation, and aesthetics.

1.7 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.

1.8 Location and size of the Protected Area

The Karai Wetland Conservation area (hereafter referred to as the "wetland" is spread within Karai Sub-location of Kikuyu Sub- county, Kiambu County. It is located about 35 km to the west of Kiambu town. The wetland covers an area of approximately 2.4 km^2 and is within the 3BA Sub-basin of Athi Basin Area.

1.9 Karai wetland is a significant ground water recharge area which falls within the upper Athi River Basin area in Sub-basin 3BA. It is located west of Kikuyu Town in Kiambu County, Kikuyu Sub-county, Karai Location.

1.10. Watershed area

The wetland receives water from the surrounding higher grounds, and does not have visible outlet. Therefore, apart from the water that is lost through evaporation the rest is assumed to go into recharging

ground water aquifers. The area measures 2.4 km^2 out of the 858 km^2 catchment area of the whole 3BA sub basin in Athi Basin.

1.11 Criteria adopted in identifying Karai Wetland for protection

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 KARAI WETLAND CONSERVATION AREA

2.1. Physiography

Karai wetland is located within the western part of Kiambu County at an elevation of about 2015masl. The area is enclosed within gentle slopes of less than 10%.

2.2 Climate

The climate around Karai wetland is tropical with varying amount of rainfall during the year. The Maximum temperatures are between 23° and 28°C and the minimum temperatures are between 13° and l8°C. Mean monthly temperatures over 3BA sub basin are presented in Figure 3 below. From the analysis, the months hottest months coincide with the long rain season, March to May (MAM) and October to December (OND) short rain season while the coldest months are June to August.

Annexure 2 of the Second Schedule shows the monthly average temperatures within Karai Wetland.

2.3 Rainfall

Most parts of Karai area are hot and dry except for some parts of Gikambura and Renguti which are fairly wet and cooler. Rainfall varies between 200mm and 850mm per year, decreasing gradually from the eastern side towards the west, long rains are between March and May while the short rains are between November and December. The driest months coincide with the coldest periods (July to August) and the hottest months are January and February Annexure 3 of the Second Schedule shows the mean monthly rainfall and humidity at Karai Wetland.

2.4 Vegetation

The same area is currently characterized by clearing of indigenous vegetation and the planting of exotic tree species which has resulted into reduced recharge into the ground, lowering of the water table and a decrease in the wetland hydrological water balance.

2.5 Vulnerability of the water resource

Karai wetland falls under sub basin 3BA in upper Athi basin area and it is drained by several streams as shown in Figure 1 above.

There is no major river around the wetland, but several emanate downstream of the wetland. Therefore, the surface water monitoring network cannot be used to determine the hydrology of the wetland.

2.6 The encroachment and human activities within the wetland riparian through cultivation, clearing of indigenous vegetation and the planting of exotic tree species has resulted into reduced recharge into the ground, lowering of the water table and a decrease in the wetland hydrological water balance.

2.7 Karai Wetland falls within the headwaters of sub basin 3BA which is the source of many rivers in upper Athi basin. The wetland is not protected and has attracted a lot of human activities that include cultivation, introduction of exotic species as well as human settlement over the years. This unsustainable approach to the wetland use is threatening its survival and potential as a ground water recharge area.

2.8 The water resource quality objectives and the current status of the water resource

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. RQOs shall be determined at the nodes where the Reserve flows are being determined.

2.9 The focus for water resources management is the protection of the natural ecological characteristics for ecological, recreational and development of tourism with economic importance. Key water resources issues include:

(a) Water scarcity.

(b) Catchment degradation.

(c) Erosion.

(d) Encroachment of water bodies and land tenure around the swamp.

(e) Human activities affect the wetland.

(f) Social conflicts due to over abstraction.

2.10 Sustainable regional water resources management of these units would require co-operation collaboration and synergy with the Kenya Forest Service, WRUA, the Kenya Wildlife Service, Counties, user communities and other stakeholders.

2.11 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:

2.11.1 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.

2.11.2 MAJOR aquifers: High-yielding aquifers with good quality water.

2.11.3 MINOR aquifers: Moderate-yielding aquifers with variable water quality.

2.11.4 POOR aquifers: Low-yielding aquifers with poor to reasonable quality water.

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

2.12 Each is further defined in terms of its status, i.e.

2.12.1 Satisfactory: no immediate stress, pressure or threat.

2.12.2 Alert: Stress, Pressure or threat identified or anticipated.

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

2.13 The area can be classified as "Alert" as the available water is at times not of adequate quantity and quality to meet the demand.

The water availability is relatively good in terms of quantity and quality in the upper parts of the river but deteriorates as the river flows downstream due to pollution.

2.14 Land uses and their potential impact on the water resources

The area around Karai wetland is predominantly rural settlement with the main land use being cultivation and rearing of livestock.

2.15 The potential impacts on the water resources as a result of human acts includes—

(a) Encroachment: People have encroached water catchment areas within the wetland.

(b) Overexploitation of available resources: The population in the area has been rapidly growing over the years. This leads to excessive pressure on available natural resources that includes the wetland leading to potential water use conflicts.

(c) Soil Erosion: Following uncontrolled farming and other human activities around the wetland, soil erosion leads to loss of top soil cover.

(d) Deforestation: The wetland vegetation, the immediate catchment areas as well as the wider catchment has been depleted due human activities. Forests have been cleared to give way for farmlands, settlements as well as charcoal burning and timber; and

(e) Water Pollution: Due to excessive economic activities around the wetland and within the sub-basin lake, the water has been polluted. The farms in the surrounding area use agro-chemicals which eventually find their way into the water bodies and leading to pollution. Other pollutants include solid waste that is washed into the rivers by runoff water during rains.

Part III – MEASURES FOR PROTECTION, CONSERVATION AND REHABILITATION OF THE KARAI WETLAND CONSERVATION AREA

3.1. Proscribed Activities

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

The following activities are hereby specifically prohibited in the protected area—

(viii) tillage or cultivation;

(ix) clearing of indigenous trees or vegetation;

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

(xi) disposal of any form of waste;

(xii) excavation of soil or development of quarries;

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

(xiv) land reclamation.

3.2. Catchment Protection Plan

The objective of the protection plan is to protect Karai Wetland by encouraging activities that enhance both water quality and quantity while discouraging activities that cause the catchment degradation and promoting beneficial land and water management practices. This will be achieved through—

(a) sensitization on catchment management;

(b) revegetation of the catchment area by indigenous and water friendly plant propagation and exotic species control;

(c) water storage enhancement to ease pressure on use of the wetland such as Rain water harvesting tanks;

(d) regulating activities that may lead to pollution and destruction of the eco-system (Charcoal burning, grazing, cultivation);

(e) controlling abstraction limits and observing of safe yields; and

(f) controlling encroachment and cancellation of illegal titles.

This plan is discussed in further detail under Annexure 5 of the Second Schedule.

3.3 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. This will be achieved through—

(a) enhancing implementation of existing regulations to protect the rights of all the wetland users; and

(b) identify funding sources to implement water conservation programs that help to enhance wetland water resources.

The Conservation Plan is contained under Annexure 4 of the Second Schedule.

3.4 Catchment Protection Plan

The objective of the catchment monitoring plan is to collect water resources data and maintain a comprehensive database on the Karai wetland and its catchment that provides information on water levels and quality of the wetland by carrying out the following—

(a) establishing a water quality and pollution control plan;

(b) water sampling and analysis; and

(c) establish a water resources database.

The Catchment Monitoring Plan is contained under Annexure 6 of the Second Schedule.

3.5. Establishment and operationalization of management structure

The objective of the management structure is to ensure that the Karai Wetland Conservation Area is managed in a sustainable manner with the involvement of all stakeholders under the leadership and coordination of WRA - ABA This plan envisages a budget of Kes 5,000,000 to implement it in the medium term (approximately 5 years). The management will need to raise the funds through various activities and events. This will be achieved through—

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

(b) development and implementation of resource mobilization strategies to raise funds for the management and conservation of the protected area.

Operationalization of the management structure shall be as set out under Annexure 7 of the Second Schedule.

3.6 Monitoring and Evaluation Matrix

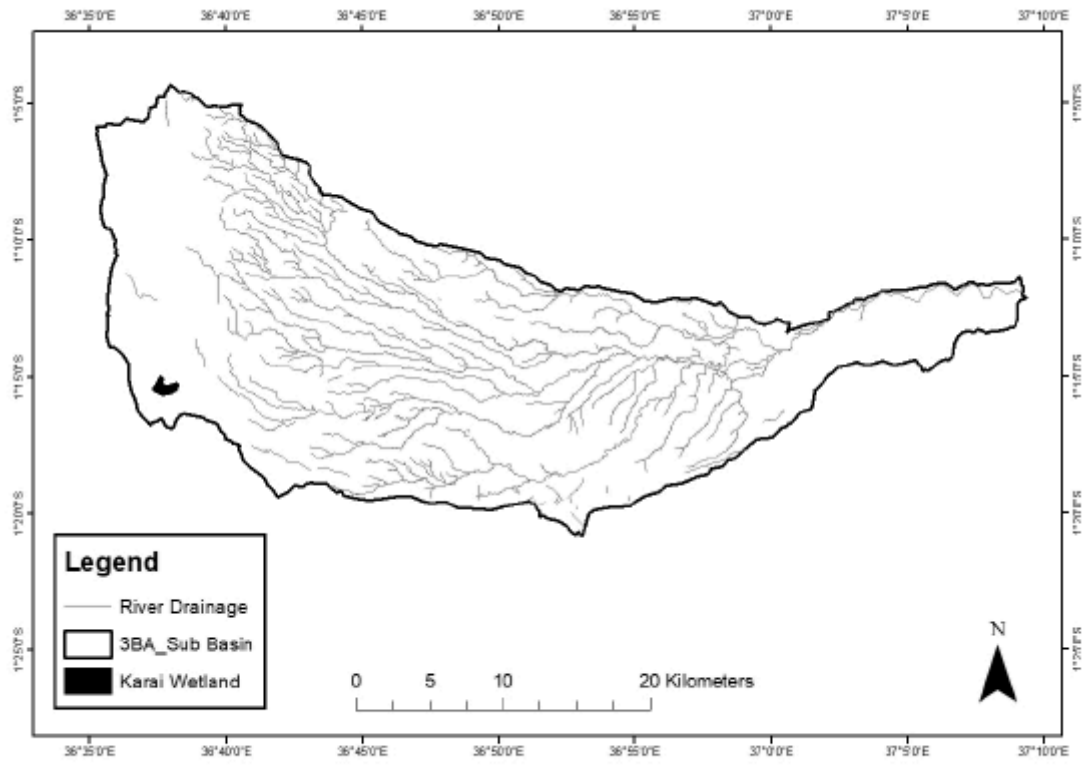
WRA as the agent of the National Government in the regulation of use and management of water resources, will be the coordinator of the committee. The members appointed to the Management Committee will serve on honorary basis as this will be a not for profit, non-commercial venture. The

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.

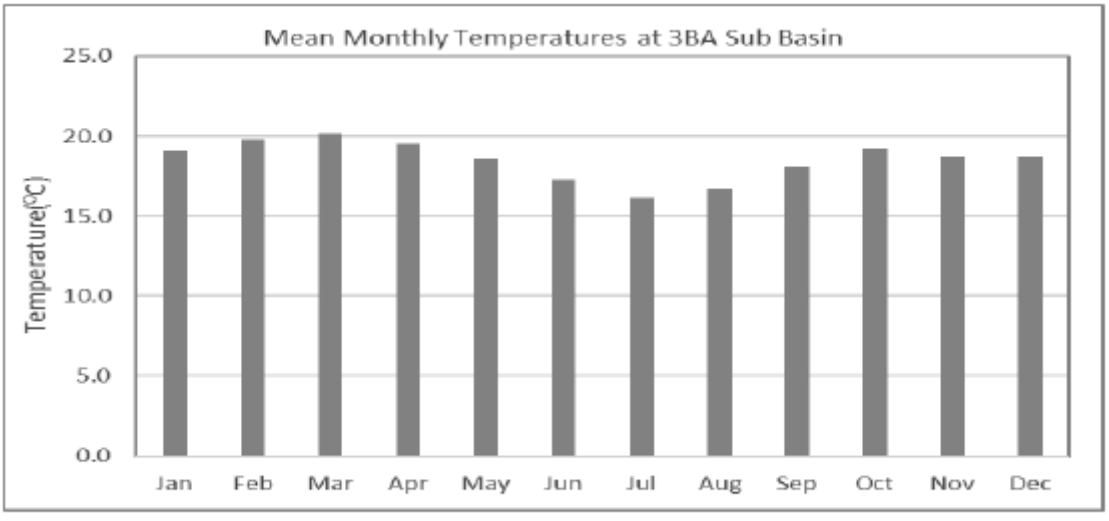
The linkages between various stakeholders are represented under Annexure 8 of the Second Schedule. The arrows indicate the direction of flow of information. The dotted lines indicate WRUA can also communicate directly to communities and vice versa.

The matrix contained under Annexure 9 shall be adopted for Monitoring and Evaluation to capture detail of the progress of implementation of the planned activities.

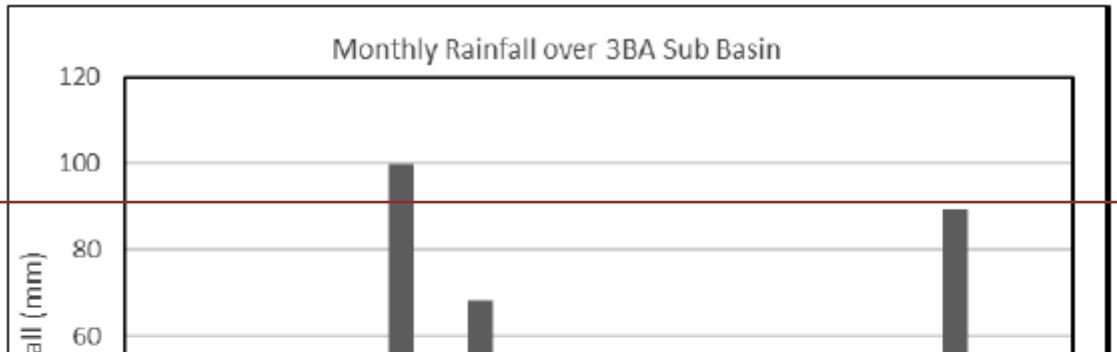
ANNEXURE 1: WATERSHED AREA



ANNEXURE 2: MEAN MONTHLY TEMPERATURES AT 3BA SUB BASIN



ANNEXURE 3: MEAN MONTHLY RAINFALL AT 3BA SUB BASIN



(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.

ANNEXURE 9: 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						