

THE WATER ACT

(No. 43 of 2016)

IN EXERCISE of the powers conferred by section 22(1) of the Water Act, 2016, the Water Resources Authority makes the following Order —

THE LARI SWAMP CATCHMENT PROTECTION AREA ORDER, 2023

1. This Order may be cited as the Lari Swamp Catchment Protection Area Order, 2023. Citation.
2. In this Order, except where the context otherwise requires — Interpretation.
“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 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 Lari Swamp Catchment Management Plan;
“Plan” means the Lari Swamp Catchment 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 a soil and water Conservation Plan as defined in the Water Resources Regulations, 2021; and

L.N 170 of 2021.

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

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 Protected Area.

Application of the Order.

4. (1) The Lari Swamp Catchment Protection Area is declared to be a protected area for purposes of the Act.

Declaration of protected area.

(2) The area 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 Lari Swamp Catchment Management Plan.

5. (1) The Plan shall, without prejudice to the provisions of the Regulations made under the Act, be the basis for protection, conservation and use of the water resources within the Protected Area.

Lari Swamp Conservation Plan.

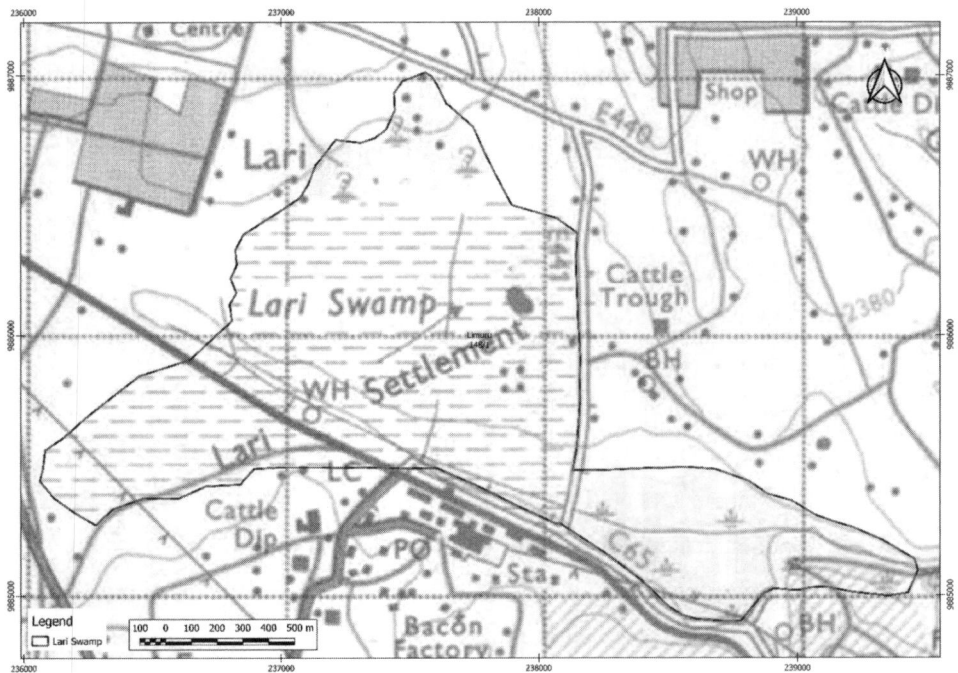
(2) The Authority shall place signboards and beacons in or near the Protected Area or in appropriate public places frequented by land and water users and at the Authority’s offices; displaying up-to-date information about the condition of the water resources of the Protected Area.

(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. 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.

Offence.

FIRST SCHEDULE
THE LARI SWAMP CATCHMENT PROTECTED AREA (p. 2, 4)



Note:

- (i) The Protected Area is commonly known as Lari Swamp and it traverses three locations namely Lari, Kirenga and Gituamba of Lari Sub-county in Kiambu County. The swamp can be seen off Nairobi – Nakuru Highway, a distance of 2.0 kilometres from Nyambari Town to the right and is accessible from Nyambari Town immediately past the police station, which is a distance of 2 kilometres from the highway.
- (ii) The swamp derived area is 2.447 km² or 244.66 Hectare as delineated from 1976 Map Sheet 148/1 for Limuru. The Swamp falls on Bathi River sub-catchment.
- (iii) Lari Swamp is the source of Ruiru River and an important water conservation area that constitutes ground water recharge area for Nairobi Aquifer Suite.

SECOND SCHEDULE

(p.2, 4, 5)

THE LARI SWAMP CATCHMENT MANAGEMENT PLAN

PART I: PREAMBLE

- 1.1 This Plan may be cited as the Lari Swamp Catchment Management Plan. Citation.
- 1.2 The following acronyms shall have the meanings as assigned below: Acronyms.
- | | |
|-------------------|---|
| 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 This Plan shall apply in respect to the management and use of the Lari Swamp Catchment Protected Area. Application of the Plan.

- 1.4 The objectives of this Plan are to— Objectives.
- (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 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 The Lari Swamp (here after referred to as the “swamp”) traverses three locations namely Lari, Kirenga and Gituamba of Lari Sub-county in Kiambu County. The swamp is can be seen off Nairobi–Nakuru Highway, a distance of 2.0 kilometres from Nyambari Town to the right and is accessible from Nyambari Town immediately past the police station, which is a distance of 2 kilometres from the highway. Location and size of the Protected Area.
- 1.7 The swamp derived area is 2.447 Km² or 244.66 hectare as delineated from 1976 Map Sheet 148/1 for Limuru. The Swamp falls on Bathi River sub catchment. Watershed area.
- 1.8 WRA has taken into account of the considerations provided under the Seventh Schedule of the Water Resources Regulations, 2021. Criteria Adopted in Identifying Lari Swamp for Protection.

PART II: PROCEDURES TO BE APPLIED FOR THE MANAGEMENT OF THE LARI SWAMP CATCHMENT PROTECTED AREA

- 2.1 Lari Swamp’s estimate terrain elevation above sea level is 2348 metres, Latitude: -1°1'59.99" Longitude: 36°37'59.99". The physiography of the swamp is characterized by low lying terrain Physiography.

that is characterized by flat, low-lying terrain that is surrounded by higher ground. The swamp is the source of Ruiru River.

- 2.2 The climate of Lari Swamp is generally sub-humid, with average annual precipitation ranging from 800 to 1200 millimetres. The wettest months are typically April and May while the driest months are July through September. Temperatures are mild throughout the year, with average highs ranging from 24 to 28 degree Celsius and average lows ranging 14 to 17 degrees Celsius. Climate.
- 2.3 Continental Rains from July to September when the ITCZ is located north of the equator pulling winds from the than the Eastern part during this season. Short rains from October to November. Besides the seasonal changes brought about by the ITCZ, the local topography causes large variations in the climate. Rainfall.
- The Annual Rainfall table is contained under Annexure 2 of the Second Schedule.
- 2.4 There is both indigenous and exotic vegetation cover in this area, however vegetation in Lari Swamp is largely influenced by human activities. Most farmers practice mixed farming, the most dominant vegetation is food crops for both animal and human consumption, and woodlots. The most popular woodlot trees are the blue gums present in large quantities. Vegetation.
- 2.5 There is intense agricultural practise and settlements that has led to degradation of Lari Swamp Its riparian and catchment has been affected by cultivation, livestock grazing, harvesting of indigenous plants and the planting of exotic tree species that has resulted into reduced recharge into the ground, lowering of the water table and a decrease in the discharge of the Ruiru river that flows downstream out of the Lari Swamp. Vulnerability of the water resource.
- 2.6 Lari Sub-county has witnessed increase in population, decline in soil fertility this has made most farmers to move upland and encroach the swamp. Lari swamp areas is sub-divided into plots. Part of the swamp has been backfilled and proscribed activities are being carried out including building of permanent structures, dumping of soil, cultivating, planting of exotic trees. Ruiru River has been canalized.
- 2.7 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 water resource quality objectives and the current status of the 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. Initially, RQOs shall be determined at the nodes where the Reserve flows are being determined.

- 2.8 RQOs shall be determined at the nodes where the reserve flows are being determined.

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) Legal settlement in riparian areas and swamp and the land tenure around the swamp.
 - (e) Human activities in Lari Swamp affecting the role of swamp.
 - (f) Illegal and over abstraction
- 2.9 Sustainable regional water resources management of these units would require cooperation collaboration and synergy with the Kenya Forest Service, WRUA, the Kenya Wildlife Service, counties, user communities and other stakeholders.
- 2.10 The present aquifer classification system in Kenya is partly demand-oriented and partly geo-political and entails five classes:
- 2.10.1 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.
 - 2.10.2 MAJOR aquifers: High-yielding aquifers with good quality water.
 - 2.10.3 MINOR aquifers: Moderate-yielding aquifers with variable water quality.
 - 2.10.4 POOR aquifers: Low-yielding aquifers with poor to reasonable quality water.
 - 2.10.5 SPECIAL aquifers: Aquifers or parts of aquifers designated 'special aquifers' by the WRA.
- 2.11 Each is further defined in terms of its status, i.e.:
- 2.11.1 Satisfactory: No immediate stress, pressure or threat.
 - 2.11.2 Alert: Stress, pressure or threat identified or anticipated.
 - 2.11.3 Alarm: Water levels declining, water quality declining (stress, pressure or threat identified).

The class of the water resource.

- 2.12 The Upper Athi sub-catchment which Lari Swamp falls under 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.
- 2.13 The land uses impacts on water resources in Lari includes water pollution due to agricultural chemicals and fertilisers used in farming, deforestation and soil erosion and changes in precipitation patterns due to climate change. Land uses and their potential impact on the water resources.
- 2.14 The swamp is continuously being degraded through land reclamation for subsistence agriculture, human settlement and set up of investments of varying scope and character agricultural activities and settlement.
- 2.15 The high demand for productive land across and the increasing population in Kenya is evident in Lari Sub-county. The following are characteristics in different sections of the swamp area:
- (a) Locals have title deeds and assert their land ownership.
 - (b) The swamp area is sub-divided into plots and boundaries erected in some sections.
 - (c) Ongoing and developed permanent structures.
 - (d) Draining of the swamp by digging of canals to reclaim land for agriculture.
 - (e) Grazing of livestock such as dairy cattle, lambs, goats.
 - (f) Growing of exotic trees species such as blue gum.
 - (g) Dumping of red soil to reclaim land for settlement.

PART III: MEASURES FOR PROTECTION, CONSERVATION AND REHABILITATION OF THE LARI SWAMP CATCHMENT PROTECTION AREA

- 3.1 The activities to be undertaken within the protected area are those with zero impact on its ecological status and integrity. Proscribed Activities.
- The following activities are hereby specifically prohibited in the protected area—
- (i) tillage or cultivation;
 - (ii) clearing of indigenous trees or vegetation;
 - (iii) building of permanent structures (especially boreholes and houses);
 - (iv) disposal of any form of waste;
 - (v) excavation of soil or development of quarries;
 - (vi) planting of exotic species that may have adverse effect to the water resource; and
 - (vii) land reclamation.

- 3.2 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—
- Conservation Plan.
- (i) demarcation of the wetland and its riparian zone and fence it off;
 - (ii) gazettement of the swamp as a protected water catchment area;
 - (iii) enforcement of the Lari Swamp management plan; and
 - (iv) control water resources abstraction from the swamp.

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. Each management programme is discussed in further detail under Plan contained under Annexure 3 of the Second Schedule.

- 3.3 The objective of the rehabilitation plan is to ensure the wetland achieves its optimal performance level. This will be achieved through—
- Rehabilitation Plan.
- (a) removal of all inappropriate/invasive species of plants;
 - (b) re-vegetation of the swamp with water friendly/native species of trees and vegetation; and
 - (c) development of alternative livelihoods to discourage farming within the swamp.

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

- 3.4 The objective of the monitoring plan is to collect and analyse catchment 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:
- Catchment and Water Resources Monitoring.

- (a) Upgrading of the Uplands rainfall station to a fully telemetric hydro-meteorological station to monitor precipitation, evaporation, humidity and temperature.

- 3.5 The objective of the management structure is to ensure that the Lari swamp catchment protected 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 42,450,000 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—
- Establishment and operationalization of management structure.

- (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 5 of the Second Schedule.

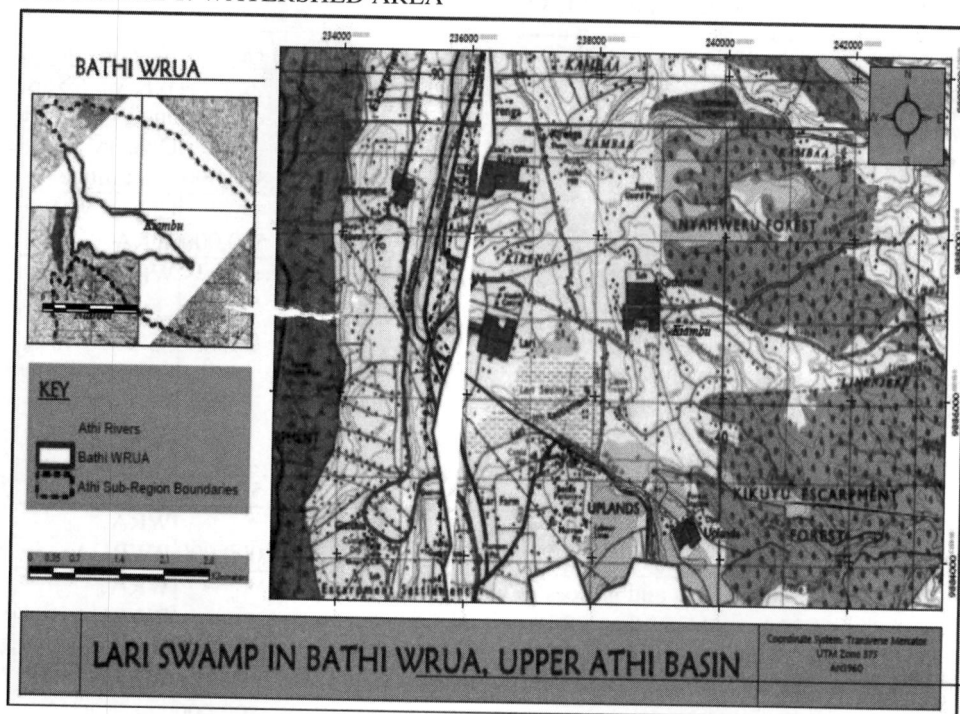
- 3.6 WRA as the agent of the National Government in the regulation of use and management of water resources, will be the coordinator of the committee. The members appointed to the Management Committee will serve on honorary basis as this will be a not for profit, non-commercial venture. The Committee 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 6 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

- 3.7 The matrix contained under Annexure 7 of the Second Schedule shall be adopted for Monitoring and Evaluation to capture detail of the progress of implementation of the planned activities.

Monitoring and
Evaluation
Matrix.

ANNEXURE 1: WATERSHED AREA



ANNEXURE 2: ANNUAL RAINFALL AT LARI SWAMP

Table.1. Annual Rainfall and Humidity at Rumuruti

Station ID	Name	Area	%	Years of Data	Annual Rainfall (mm)
9136022	Uplands Lari Forest Station	31.65	18%	81	1409.8

ANNEXURE 3: CONSERVATION PLAN

Activity	Sub-activity	Time Frame	Cost (KSh.)	Responsibility
Demarcate the swamp and its riparian zone	Undertake cadastral survey of the area and place beacons along the boundary	1 month	800,000	WRA, SoK and Land Owners' Committee
	Develop the PDP for the demarcated swamp area	1 month	500,000	CGL, MoLS, WRA
	Liaise with NLC for Valuation and Compensation before revocation of the Title. Liaise with NLC for the revocation of any privately held title deeds and acquire a title deed (in trust) for the swamp	3 months	500,000	WRA, NLC
	Fence off the demarcated area	1 month	5,000,000	WRA, BWRUA
	Place signs and notices to warn the public that this is a protected area	Continuous	250,000	WRA, BWRUA
Gazette the Lari Swamp as a protected water catchment area	Assess the status of Lari Swamp	1 month	800,000	WRA
	Create awareness on the status of the swamp	Continuous	500,000	WRA, WRUA
	Develop guidelines and conservation plan through stakeholders' engagement	2023	5,000,000	WRA with all stakeholders
	Submit gazette instrument to the Cabinet Secretary in charge of water	2023	100,000	WRA
Enforce Lari Swamp management guidelines	Create awareness to stakeholders on the management guidelines and conservation plan	2023	1,000,000	WRA
	Enforce Lari protected area guidelines, management plan and relevant legislations	Continuous	5,000,000	WRA, National Govt
Control water resources abstraction	Enforce requirements for acquiring water use permits for any abstraction from the swamp as per the Water Act 2016 and Water Resources Regulations 2021	Continuous	1,000,000	WRA, WRUA
Sub-total			20,450,000	

ANNEXURE 4: REHABILITATION PLAN

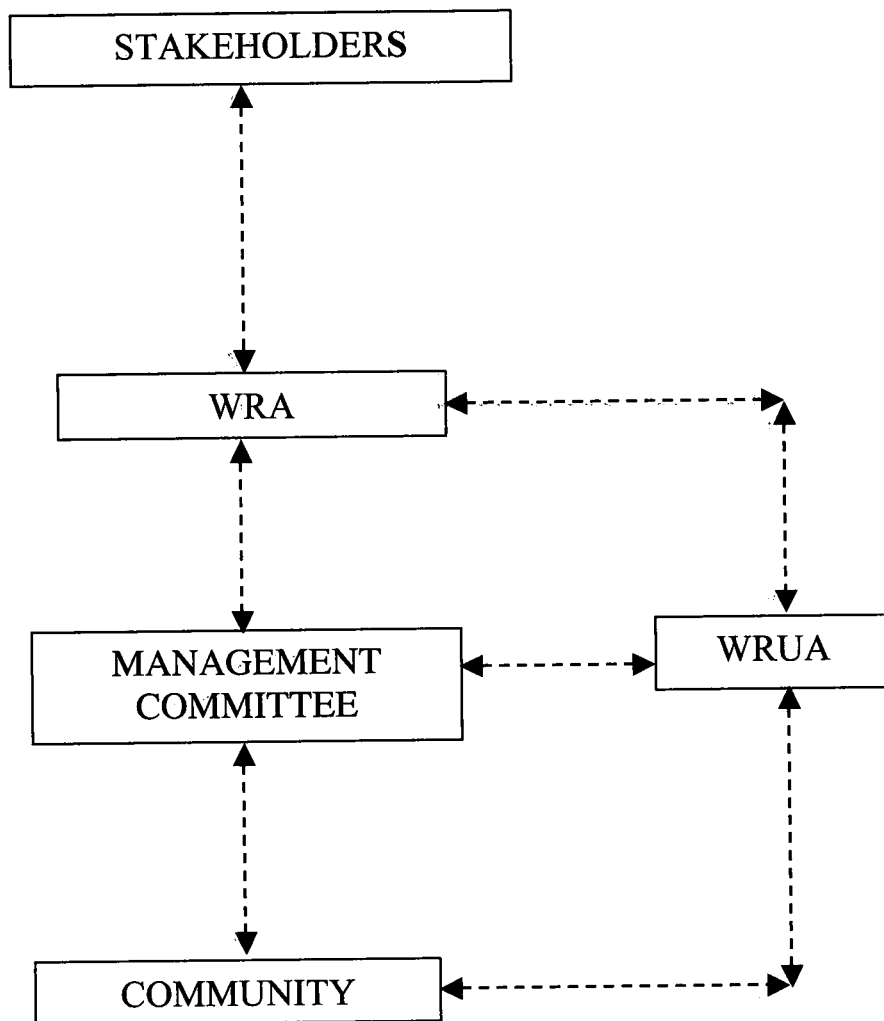
Activity	Sub-activity	Time Frame	Cost (KSh.)	Responsibility
Removal of all inappropriate/invasive species of plants	Identify and remove inappropriate and invasive tree species from the swamp	1 year	2,500,000	WRA, KFS, NGAO, WRUA
	Exotic species control	Continuous	500,000	WRA, KFS, WRUA
Re-vegetation of the wetland with water friendly/native species of trees and vegetation	Establish indigenous plants nursery	Continuous	1,000,000	WRUA, WRA
	Grow live fence on the boundary of the swamp	Continuous	3,000,000	WRA, KFS, WRUA
	Planting and growing of propagated seedlings (Watering and tending)	1 year	5,000,000	WRUA
Development of alternative livelihoods to discourage farming within the swamp	Identification and Development of proposals for alternative livelihoods (eco-tourism, bee-keeping, agro-forestry, etc);	1 year	10,000,000	WRA, WRUA
Sub-total			22,000,000	

ANNEXURE 5: MANAGEMENT STRUCTURE

Activity	Sub-activity	Time Frame	Cost (KSh.)	Responsibility
Setting up the management structure	Appoint one Member from each of the following stakeholders: ▪ Kenya Forest Service ▪ National Government Administration in Kiambu ▪ National Environmental Management Authority; ▪ Ministry of Agriculture; ▪ The Bathi WRUA;	3 months		WRA
	Terms of References (ToR) will include but not limited to: ▪ To manage the catchment prudently on behalf of other stakeholders ▪ To submit quarterly reports to WRA – Athi on all planned and implemented activities; ▪ To develop by – laws and submit a copy to WRA – Athi for approval before implementation	Continuous		WRA, WRUA
	Mandate and responsibilities: ▪ Promote the conservation and protection of the catchment ▪ Promote equitable distribution of the resources within the catchment ▪ Promote socio-economic and environmental sustainability of the catchment	Continuous		WRUA, WRA
	▪ Mapping of stakeholders and potential donors; ▪ Development and marketing of resources mobilization strategies;			
	The sources of funds for the committee may include:	Continuous	5,000,000	WRA

	▪ Bee keeping ▪ Tree Nursery; ▪ Eco-tourism; ▪ Sponsors/development partners Well-wishers ▪ WRA/WRUA - (WDC); ▪ Cultural/sports events			
Sub-total			5,000,000	

ANNEXURE 6: 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.

ANNEXURE 7: MONITORING AND EVALUATION TEMPLATE

<i>Activities</i>	<i>Implementation Schedule</i>		<i>Status (% Completion)</i>	<i>Planned Cost KSh.</i>	<i>Total Expenditure to date</i>	<i>Source of Funds</i>	<i>Output</i>	<i>Comments</i>
	<i>Start Date</i>	<i>End Date</i>						

Made on the 17th July, 2023.

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

