

REPUBLIC OF KENYA



MURANG'A COUNTY ASSEMBLY

THE FIRST ASSEMBLY

SECOND SITTING (2014)

**WATER, ENERGY, FORESTRY, ENVIRONMENT, NATURAL
RESOURCES AND COOPERATIVE MANAGEMENT COMMITTEE.**

REPORT ON:

THE PROPOSED NORTHERN WATER COLLECTOR TUNNEL PHASE 1

DECEMBER 22, 2014

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ABBREVIATIONS AND ACRONYMS

WEFENRCM	Water, Energy, Forestry, Environment, Natural Resources and Cooperative Management Committee
NCT1	Northern Collector Tunnel Phase 1
CCA	Clerk to the County Assembly
Hon	Honorable Member
CA	County Assembly
CAM	County Assembly Member
MCG	Murang'a County Government
ACA	Aberdare Conservation Area
AWSB	Athi Water Services Board.
E.I.A.	Environment Impact Assessment
NEMA	National Environment Management Authority

1.0 PREFACE

Mr. Speaker Sir,

On behalf of Members of the Water, Energy, Forestry, Environment, Natural Resources and Cooperative Management Committee and pursuant to **Standing Order No 183**, I beg to table, for adoption, the Committees report on the **Proposed Northern Water Collector Tunnel Phase 1 being undertaken by the Athi Water Services Board.**

This Committee was established pursuant to Standing Order No. 195 of the County Assembly and is tasked into dealing with all matters related to specific policies on natural resources and environmental conservation including soil and water conservation, distribution, management, regulation and forestry.

1.1 Committee Mandate

The Committee mandate includes all matters related to implementation of specific national government policies on natural resources and environmental conservation, including soil and water conservation and forestry and control of air pollution, noise pollution, other public nuisances and outdoor advertising, refuse removal, refuse dumps and solid waste disposal, water distribution, management, regulation; sewerage and sanitation services and all matters related to electricity and gas reticulation and energy regulation and cooperatives societies.

1.1.2 Committee Membership

The Committee consists of the following Members:-

- | | | |
|-----------------------------------|---|------------------|
| 1. Hon. Joseph Kimani Machiri | - | Chairperson |
| 2. Hon. Francis Kamande Kamau | - | Vice Chairperson |
| 3. Hon. Julius Maina Kimani | - | Member |
| 4. Hon. Rebecca Wanjiru Mwicigi | - | Member |
| 5. Hon. Moses Gachui Mungai | - | Member |
| 6. Hon. Peter Mweri Maina | - | Member |
| 7. Hon. Danson Mburu Muchoki | - | Member |
| 8. Hon. Agnes Ndunge Mutwiwa | - | Member |
| 9. Hon. Mary Njoroge Waithira | - | Member |
| 10. Hon. Caroline Wairimu Njoroge | - | Member |

1.2 Background

Records from the office of Director of Environments County Government of Murangá and which were presented to the Committee on December 3, 2014 indicate that Athi Water Services Board proposed to construct a dam at Ichiche by the name Maragwa Dam to supplement water supply to Nairobi and its satellite towns. An Environmental Impact Assessment (EIA) was undertaken for the proposed Maragua dam referenced EIA/5/2/803 and a feasibility study were undertaken.

The overall cost benefit analysis of the Maragua Dam option option was found not to be feasible. As a result, the Dam option was abandoned.

Athi water Services Board further proposed the extraction of underground water in Gatanga Sub-County and Ruiru in Kiambu County but the wells could not yield the required 140,000 cubic meters of water per day. Consequently this second option was also abandoned.

Finally, The Northern Water Collector Tunnel was proposed to be the most feasible option to supplement the water requirements of Nairobi residents. The project proposes to draw water from three main rivers namely;

1. River Irati
2. River Gikigie
3. River Maragwa.

These three rivers are the main tributaries of the Maragwa River which forms lifeline to the residents of Murang'a County with approximately 1 million people as per the Kenya Population and Health Census of 2009.

The proposed Tunnel shall eventually drain water into River Githika in Gatanga Sub-County which flows into Ndakaini Dam.

The Tunnel will cover 11.8 Km, 3 meter diameter, and proposed depths of between 20 mtrs -250 mtrs below the surface subject to the terrain. The tunnel is designed with adits, portals and drop shaft from Irati intake, wiers and intakes at Maragua, Gikige and Irati. The project envisions to extract **flood waters** from the said rivers. There will be an out fall and energy disipation structure at Githika River near Makomboki up stream of the existing Ndakaini Dam.

According to documents tabled to before the Committee the project is scheduled to be carried in five phases and which the Committee found will adversely affect the livelihoods of the people of Murang'a. The phases are as explained here below;

a) Phase I: (2012-2015) Exploration of Ground Water

This phase involved ground water exploration in the proposed Kiunyu in Gatanga Sub-County and Ruiru in Kiambu County well fields. The phase has already been completed.

b) Phase II: (2014-2017) Northern Collector Tunnel 1.

The phase comprises of the Northern Collector Tunnel which will divert **defined flood flows** from Rivers Maragua, Gikigie and Irati into Ndakaini dam. The Raw Water is proposed to upgrade the Nairobi City Water System.

According to documents availed to the Committee by the Management of the Athi Water Services Board, the tender for Construction of the Northern Water Collector Tunnel has already been awarded to Chinese Company known as China Ghezouba Construction Company Limited.

The Northern Water Collector Tunnel is a new raw water transfer which will be 3 m in diameter tunnel along the eastern fringes of the Aberdare Conservation Area approximately 60 Km North of Nairobi. The tunnel will transfer raw water from intakes at the Rivers Maragua, Gikigie and Irati to an outlet at the Githika River near Makomboki, upstream of the existing Ndakaini Dam in Gatanga and Kigumo Sub-Counties.

A design build package will be assembled for Water treatment plant at Kigoro in Gatanga Sub -County to fast track implementation of the project.

c) Phase III: (2017-2020) Maragua Dam and South Mathioya Collector Tunnel

This phase will involve the construction of South Mathioya Collector Tunnel, Maragua Dam Water Treatment Works at Ndunyu Chege in Kiambu and water transmission pipes. The additional works will extend the Tunnel in Muranga to approximately 25 km in length.

d) Phase IV: (2021-2026) Northern Collector Tunnel II

This phase will include:

1. Extension of Collector Tunnel I.
2. Expansion of water treatment plant at Kigoro.
3. Duplication of transmission lines from Kigoro to Kabete.
4. Ndurire transfer to Ruiru 2 Dam.

e) Phase V- (2026-2029) Ndarugu 1 System.

Much of the works in this phase are in Kiambu and will comprise of construction of:

1. Ndarugo Dam.
2. A water treatment plant.
3. Pumping stations and pipelines.

So far, The Committee was informed by NEMA that no approval of the project has been issued by the Water Resource Management Authority (WARMA). Licensing is issued after NEMA approval have been obtained, which the Committee was informed is still pending. National Environment Management Authority (NEMA) issues the license in accordance with the Environmental Management and Coordination Act of 1999 and the Environmental (Impact Assessment and Audit) Regulations, 2003.

3.0 PROBLEM STATEMENT

Whereas only 33% of the residents of Murang'a has access to clean drinking water(Kenya National Demographic and Health Survey, 2009), the proposed Northern Collector Tunnel 1 project intends to provide water to the residents of Nairobi by drawing the water from the Maragua Water Basin in the upper Aberdare Catchment Area in Murang'a County. Further, about **56.8%** of the population in Murang'a depends on unprotected springs, unprotected wells, streams and water vendors for domestic water as shown in the table below;

Distribution of Households by Main Source of Water	Murang'a County	National
Piped into Dwellings	4.4	6.9
Piped	19.6	23.1
Rain/Harvested	3.0	0.8
Borehole	6.1	11.0
Protected Wells	8.6	7.4
Protected Springs	1.4	7.0
Unprotected Wells	5.1	5.7
Unprotected Springs	2.8	4.4
Streams	45.6	21.6
Jabias	0.4	0.3
Water Vendors	1.8	6.5
Ponds	0.4	2.1
Dams	0.6	2.0
Lakes	0.1	1.1
Others	0.0	0.3

Source: Extract from the Kenya Demographic and Health Survey, 2009.

The Committee believes that the Construction of the Northern Water Collector Tunnel 1 will greatly deprive the residents of Murang'a County this precious natural resource resulting in an injustice as water is a basic human need and right to all citizens as per Article 69 of the Constitution 2010.

4.0 OBJECTIVES OF THE INQUIRY

The Committee set out the following objectives;

- 4.1 To establish the background and facts of the proposed project
- 4.2 To establish whether the provision of all relevant Laws have been met on the proposed project as per Article 69(1)(d) of the Constitution 2010
- 4.3 To understand whether the public has been fully involved and consulted as per Article 10(2) (a) of the Constitution 2010
- 4.4 To examine the Social, Economic, Environmental and Political impact of the project on the people of Murang'a
- 4.5 To come up with recommendations on the way forward

5.0 METHODOLOGY

In conducting its inquiry, the Committee used the following methodology;

5.1 Testimony of witnesses and relevant stakeholders

5.2 Scrutiny of relevant documents

6.0 OBSERVATIONS

6.1 Meeting with Mr. Ezra Ng'ang'a, the County Director of Environment and Natural Resources

The County Director of Environment and Natural Resources appeared before the Committee on December 3, 2014 and adduced the following evidence;

6.1.2 That the project has been proposed by Athi Water Services Board.

6.1.3 That the initial Environmental Impact Assessment report on the project was undertaken by Athi Water and Service Board (AWSB) in June 2014. The report then submitted to the National Environment and Management Authority (NEMA) and after evaluation NEMA recommended for further studies which was undertaken and resubmitted in November 2014. It's now awaiting licensing.

6.1.4 That the tunnel is expected to be 11.8 km long and 3 meters in diameter.

6.1.5. That on November 27 2014, the County Director of Environment and Natural Resources held a meeting with the County Commissioner and the County Executive Committee Member for Infrastructure, Energy and Transport and Resolved to hold a leaders forum to discuss the implementation of the project. The meeting has not been held to date.

6.1.6 That the Tunnel is expected to abstract water from Rivers Maragua, Gikigie and Irati in Murang'a County and convey it to Ndaka-ini Dam in Gatanga Sub-County.

6.1.7 That the tunnel is meant take in the flood water (**Flood Water in this case means the extra volume of water above the normal flow in the three proposed Rivers**).

6.1.8 That it was not clear to the Committee whether the National Environment and Management Authority has given the go ahead for the construction of the project.

6.1.9 That to check overflow of the water from the tunnel, the engineers has proposed to build manual and automatic gates at the intake.

6.1.0 That water needs assessment baseline survey needs to be carried out at different intervals along the whole stretch of the three Rivers to determine the volumes of water currently being abstracted for domestic, irrigation and other uses.

6.1.1 That there was a general concern as to whether the project would actually provide water to the community as proposed by Athi Water and Services Board.

6.1.2 That the tunnel is expected to be 20 - 250 meters below the ground in some areas depending

on the terrain

6.2 Meeting with Mr. Samuel Gichane, the County Water Engineer, Muranga County Government

The Muranga County Water Engineer appeared before the Committee on December 18, 2014 and adduced the following evidence;

- a) According to him, there has been minimal participation of the County Departments in charge of Water and Environment and Natural Resources by the Athi Water Service Board since the project was mooted.
- b) That the Murang'a County Government has not yet been provided with the project documents including the Master Plans and maps.
- c) That the proposed County Irrigation projects are located downstream of Maragua River and thus the proposed abstraction points proposed under the Tunnel Project could render them unfeasible. That as per the County Integrated Development Plan, 3no of Dams will be constructed in the Aberdare Forest in areas of Gatara, Wanjerere so that in 10 years' time 20,000ha of land in Murang'a will be under irrigation.
- d) That proposed project should take into account the water needs, food security, priority projects proposed under the County Government Development Plan.
- e) That the Tunnel should be replaced by Dams Constructed along each of the Rivers or at Maragua Dam since it will have lesser social and environmental impact.

That the project will adversely affect the One Million Acre Irrigation Project along the Tana River Basin particularly the approximately 5,000 hectares proposed to be irrigated in Murang'a County.

- f) That the people of Murang'a, and the County Government should be involved in the project to ensure that it is aligned to the national and county government laws and plans.

6.3 OBSERVATIONS FROM ANALYSIS OF DOCUMENTS AND MEMORANDA FROM STAKEHOLDERS

6.3.1 Documents from Athi Water Service Board and National Environment Management Authority

Through analysis of documents provided by the Athi Water Service Board and the National Environment Management Authority, the Committee made the following observations;

- 6.3.2** The project is in its second phase and the following are the components of this phase;
 - a) Transfer of water from Maragwa, Irati and Gikigie River to Ndakaini Dam.
 - b) Construction of raw water gravity from Thika Dam to a proposed water treatment plant at Kigoro(6km downstream from Ndakaini Dam).
 - c) Construction of the Water treatment plant.
 - d) Construction of a 44Km treated water gravity main up to Kabete through Ngéthu.

- 6.3.3** The Committee observes that the advertisement which appeared in the Daily Nation of November 28, 2014 is null and void due to the following reasons;

- a) The advertisement purported to **rename** the National Environment and Management Authority **as** the National Environmental and Management Authority, an entity which does not exist in law. The correct name of NEMA is the **National Environment and Management Authority.**
- b) The advertisement under section 17(2)(a)(ii) of the Environmental (Impact Assessment and Audit) Regulations, 2003 was required to appear for **two successive weeks in a newspaper** that has a nation-wide circulation. The advertisement only appeared once in the Daily nation of November 28, 2014 and therefore did not comply with the Act.
- c) The notice to the public to submit their views on the project was not Gazetted in the Kenya Gazette as stipulated under Environmental (Impact Assessment and Audit) Regulations, 2003
- d) The proponents of the project did not put posters in strategic public places in the vicinity of the site of the proposed project to inform the affected parties and communities of the proposed project contrary to section 17(2)(i) of the Environmental (Impact Assessment and Audit) Regulations, 2003.
- a) No announcement regarding the project was made in both the official and the local Kikuyu language in a radio with a nation-wide coverage for at least one a week and for two consecutive weeks contrary to section 17(2)(iii) of the Environmental (Impact Assessment and Audit) Regulations, 2003.

The deadline for submission of comments had been set for December 28, 2014. This deadline stands void given the anomalies cited above. The Committee therefore recommends that the proponents and complies with all the NEMA regulations by advertising the project afresh.

- 6.3.4** So far, no approval of the project has been issued by the Water Resource Management Authority (WARMA) as its pending licensing by the National Environment Management Authority (NEMA) in accordance with the Environmental Management and Coordination Act of 1999 and the Environmental (Impact Assessment and Audit) Regulations, 2003.
- 6.3.5** Construction of the tunnel has commenced with the signing of the contract for construction to China Ghezouba construction Co on 1st September, 2014 at a tender sum of KShs.6.8 Billion Works of which are planned to be completed by December 2017.
- 6.3.6** According to documents tabled by the Athi Water and Service Board at a consultative meeting held on October 2, 2014 at Nokras hotel in Murang'a Town, the Athi Water Service Board through the Tana Water Service Board has proposed to construct some water schemes in Murang'a County that are unclear in terms of monies allocated to them. Some sources indicate Kshs 1. Billion and others 2.5 billion. Further, these schemes have not yet been negotiated for by all key stakeholders including the County Government of Murang'a.
- 6.3.7** The said water schemes proposes to rehabilitate and augment existing water systems in terms of distribution and not storage which is crucial in ensuring water security in the County and sustainability thereof of the said project.
- 6.3.8** The matter therefore needs to be deliberated with the County Government and consensus developed among the stakeholders. Murang'a County is home to two hydro power generation stations namely Wanjii and MESCO. However the Committee observes that the proposed project will reduce the water flow to Maragua River which will adversely affect power output levels to the National Grid as the two provide a combined output of 5KW of power.

6.3.9 It's not clear which mitigation measures has been put in place to ensure optimal production of power from the two stations after the implementation of the project.

Memoranda by the Upper Maragua Water Resources Users Association

On December 16, 2014, the above Association wrote a memorandum to the County Assembly regarding the implementation of the Northern Water Collector Tunnel 1 in Kangema and Kigumo Sub-Counties by requesting the Assembly to intervene for total deferral of the project to a later date due to the following reasons;

- a) The site area the proposed Northern Collector Tunnel is at a very delicate drainage basin. It is situated about 1km down from Gatare forest which is part of the larger famous and important national water tower - the ABERDARES. The Environment Impact Assessment (E.I.A) conducted by the Athi Water Service Board failed to address itself to the issue of the dangerously depleted forest cover. Due to deforestation much of rain water at the Aberdares forest end up lost into rivers due to run-off. That is why after very heavy rains rivers over-flow with brown water and immediately water levels subsides as it goes downstream. With the required tree cover, rain water sinks into the ground slowly through a gradual stem flow. This encourages buildup of groundwater. However, the Environment Impact Assessment (E.I.A) conducted by the Athi Water Service Board didn't study this hydrogeological effect of the proposed Northern Water Collector Tunnel 1.
- b) The Members of the Association were also concerned that the proposed Northern Water Collector Tunnel will impact negatively on the flow, quantity, direction and pressure and depth of ground water.
- c) That is important for proponents of the project to undertake aquifer test to quantify the aquifers in terms of Hydraulic conductivity, Storability and Transimisivivity of the ground water before the Construction of the Northern Water Collector Tunnel. This is because the Aquifer is the source of water for the various tributaries downstream including boreholes Springs and wells.
- d) That the Construction of the Northern Water Collector Tunnel will adversely affect irrigation projects planned by the County Government of Murang'a.
- e) That they are in the process of making a proper Data Base of all water abstractors including those not licensed so as to establish the state of water abstraction and licensing.
- f) That in the meantime, Athi Water Service Board should explore other sources of water to serve Nairobi water needs including River Rupingazi in Embu county which has much more water and is ideal for the purpose as its about 800 feet above Nairobi and could therefore transmit water to Nairobi exclusively through gravity!

7.0 FINDINGS OF THE COMMITTEE

7.1 The Water abstraction issues.

Noting that rivers Gikigie and Irati are tributaries of Maragua river, data of the whole ecosystem (Maragua river basin) needs to be availed in terms of;

- a) The normal water level, volume of flood water and how much water is committed to hydroelectricity for Wanjii and MESCO power generating stations
- b) The amount of water committed for the lower Maragua projects within Muranga County
- c) The Amount of water extracted from underground aquifers including wells and springs

7.2 The Proposed Water Schemes in Murang'a County

- a) The committee is apprehensive of duplication of projects undertaken by different actors including the Constituency Development Fund, various self-help groups and the County Government.
- b) The Committee finds that the proposed water schemes are mostly targeting Mathioya, Kangema, Kigumo, Kiharu and Gatanga Sub-Counties. Therefore the project has neglected Makuyu, Ithanga, Kakuzi and Kandara and Kimorori yet they are the areas with the highest deficiency of water.
- c) The demarcated areas of priority for the schemes were not arrived at from a negotiated platform.

7.3 Lack of relevant documents and maps on the coverage of the project in terms of the area to be covered by the schemes and which was not availed to the Committee during its inquiry.

7.4 Hydro Power Generation

The Eastern Hydropower constitutes 60% of hydroelectric power generation in the country. Murangá is in the heart of this system; as such any interference of the water bodies thereof will consequently affect electricity production in the country and Kenya's overall economic development. If the country needs to make envisioned vision 2030, water and energy development are among the bulk of components for the above to be attained.

7.5 Agreements

The Committee was not informed of any negotiated legal agreements between the County Government and Athi Water Service Board in relation to implementation and management of the project throughout the projects life cycle. Further no agreements are there to show;

- a) Proposed reforestation programmes of the Aberdare Forest
- b) The number of licensed and unlicensed water schemes in the County
- c) The monitoring and evaluation criteria of the water being abstracted
- d) The system to be used for a regular Environment Impact Assessment, Environmental Audit and Environmental Monitoring in whole project cycle.

The fee per cubic meter of water abstracted by the tunnel to be paid by the Athi Water Services Board to Murang'a County Government.

7.6 Public Participation

Whereas there were attempts to get public views from some parts of Murang'a, no efforts were made to get views from most parts of the Murang'a including Makuyu, Ithanga, Kandara, Kambiti, Kakuzi and Kimorori which has severe water shortages

Key stakeholders were not consulted such as National irrigation Board, Tana and Athi River Development Authority which have massive irrigation projects including the Presidential 1 million Acre initiative in Murangá County which is expected to draw water from the same Maragua River Basin.

7.7 Conservation of the Aberdare Forest

The committee noted that though the project proposes to abstract water from the Aberdares there are no deliberate moves to conserve the catchment area. Further, there is zero budget allocation for this.

7.8 Water Storage and Conservation

7.9 Whereas the project proposes to harvest flood flows, there is no provision for storage of the same along the river basins and the catchment areas which are better than direct abstraction.

7.10 National Water Collector Tunnel.

The proposed 250 metre deep tunnel will affect the ground water system and earth formation bearing in mind Murang'a is a land slide prone area and other seismic forces Further there is no guarantee that this underground tunnel will not collect underground water including water from wells, boreholes and springs.

7.11 Monitoring and Evaluation

With the designs lacking and documents not availed. It is not clear the amount of "flood water" being abstracted from the rivers. The flood flow levels need to be clarified. The County Government agents should have unlimited access to the project documents and the tunnel once constructed to facilitate monitoring of the water quality and volumes among other parameters.

COMMITTEE RECOMMENDATIONS ON THE PROPOSED NOTHERN WATER COLLECTOR TUNNEL 1

Preamble

In view of the water crisis in Nairobi and its satellite towns, the committee has no objection to the Northern Water Collector Tunnel to provide Nairobi with Water as provided under vision 2030. However, the objective of the programme must be done with caution to ensure that;

- a) Water levels of Murang'a County is not affected
- b) The ground water levels of murang'a are not affected and the boreholes in the County are secured
- c) The irrigation and other water programmes planned for or envisioned for Murang'a are not negatively affected
- d) There is a tangible benefit to the people of Murang'a

8.1 Within 60 days, the County Executive Committee Member in charge of water should undertake a survey and verify the Social and Environmental Impact of the whole project in terms of;

- a) The water demands, potential and water balance in the whole river basin and the larger ecosystem.
- b) Analysis of the County's short and long term water demands in domestic, commercial and irrigation in the whole County

8.2 The Committee recommends that 40% of the treated water from the Northern Collector Tunnel shall be supplied to the people of Muranga as a condition precedent to the implementation of the project.

8.3 The current proposal to abstract 1.5 cubic meter/second or 140,000 cubic meters of water per day is unsustainable in view of the demand for water downstream. The Committee therefore recommends that the abstracted water should therefore be reduced by 50% in order to safeguard the environment and competing water demands.

8.4 The Committee recommends that public participation should be undertaken in relation to the proposed water schemes under the Northern Water Collector Tunnel Project. Further the County Government including the County Assembly should be consulted in developing this project.

8.5 The proposed water schemes should be aligned to the Murang'a County Water Master Plan and that priority of the proposed schemes should come from the public and aligned to the Muranga County Government Water Master Plan

8.6 That pursuant to Section 17 of the Environmental (Impact Assessment and Audit) Regulations, 2003, which was complied with by the Athi Water Service Board, the whole exercise of public participation and Gazetement should be repeated afresh.

8.7 The Committee recommends that the proponents of the project should ensure that the down flow will not affect the optimal abstraction of water by domestic and industrial schemes down stream

- 8.8** The Committee recommends that the Northern Water Collector Tunnel project sets the compensation flows in such a manner to ensure there will be minimal Impact on the Hydro power generation as well as the other downstream River Schemes for domestic use, irrigation and other uses
- 8.9** Within 60 days the County Executive Committee Member in charge of Water should enter into negotiations with the Athi Water Service Board and develop binding agreements on the following issues;
- a) Reforestation and conservation of the Aberdare water tower
 - b) Payment of an amount not less than Kshs 1 per cubic meter of water abstracted from this project
 - c) Mode of monitoring and evaluation of the project impact on social and environmental matters in the affected areas
 - d) Environmental Impact Assessment Survey for the water schemes to be implemented under the project within Muranga including the allocation of a clear budget and implementation plan.
 - e) Unlimited access to the Tunnel by the relevant County Government officials and its agencies to ensure compliance with the agreements, National and County Laws.
- 8.10** That the Athi Water Service Board immediately convenes a meeting of Key stakeholders of this project to deliberate on its implementation. The key stakeholders should include the County Assembly, the County Executive, Tana and Athi River Development Authority, Kenya Power Generation Company (KENGEN), National Irrigation Board, Ministry of Environment and Ministry of Interior and Coordination of Government among others
- 8.11** The Committee recommends that the project provides for resources and develops a work plan for rehabilitation, reforestation and restoration of the Aberdare forest which is the Catchment area for the Northern Water Collector Tunnel
- 8.12** The design and construction of the Northern Water Collector Tunnel should mitigate against disturbances caused in the underlying rock systems along the tunnel to avoid possible landslides and other seismic movements
- 8.13** That the design and construction of the Northern Water Collector Tunnel should ensure that no underground water penetrates into the tunnel.
- 8.14** The committee strongly recommends that the Athi Water and Service Board reconsiders construction of the project by substituting the tunnel with Dams along the proposed Rivers. It's the view of the committee that Dams will have lesser adverse Social and Environmental Impact as compared to the tunnel.
- 8.15** The committee recommends that all water schemes intended to be implemented by the Northern Water Collector Tunnel should be in tandem with the County Water Master Plan.
- 8.16** The Committee recommends the County shall have unlimited access to the tunnel to undertake environmental Impact Assessment Surveys, Environmental Audit and other

Hydrological surreys

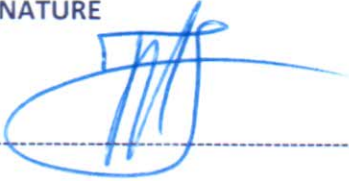




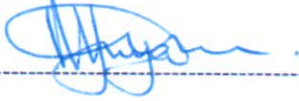

- 8.17** In view of the above the Committee recommends that the implementation of the whole project be suspended until all matters raised in this report are fully addressed and complied with.

9.0 CONCLUSION

The Committee wishes to record its appreciation to the Speaker and the Clerk to the County Assembly for facilitating the operations of the Committee to gather its evidence during the inquiry. Further the committee wishes to thank the Clerk to the Committee for his dedication and commitment to duty that made the work of the committee and production of this report possible.

10.0 COMMITTEE ADOPTION OF REPORT

The following Members of the Committee adopted the Report

NAME	SIGNATURE	DESIGNATION
1. Hon. Joseph Kimani Machiri		Chairperson
2. Hon. Francis Kamande Kamau		Vice-Chair
3. Hon. Moses Gachui Mungai		Member
4. Hon. Peter Mweri		Member
5. Hon. Danson Mburu Muchoki		Member
6. Hon. Caroline Wairimu Njoroge		Member
7. Hon. Agnes Ndunge Mutwiwa		Member
8. Hon Mary Waithira Njoroge		Member
9. Hon. Julius Maina Kimani		Member
10. Hon. Rebecca Wanjiru Mwicigi		Member