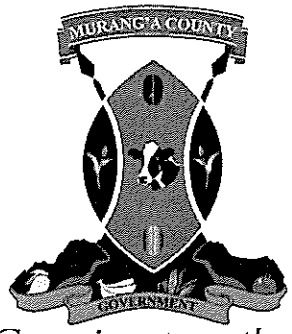
MURANG'A COUNTY GOVERNMENT



Growing together

Report of the Technical Committee on Northern Collector Tunnel Project

April 2015

PREAMBLE

Essential part of human development is equity. It will neither be desirable nor sustainable if increases in development are accompanied by rising inequalities ... and unsustainable patterns of consumption." - *The Human Development Report (UNDP, 2013)*

Northern Collector Tunnel in Context

Kenya increasingly faces the challenge of how to ensure access to adequate water resources for expanding populations and economy whilst maintaining healthy freshwater ecosystems and the vital services they provide. Increasingly common way to distribute water across the landscape is to transfer it from areas with perceived surpluses, to those with shortages[1] by means of inter and intra basin transfer. Water transfer schemes therefore are not entirely a new phenomenon

Inter-basin transfer or trans-basin diversion describe man-made conveyance schemes of water from one river basin where it is available, to another basin where water is less available or could be utilized for a priority human development. Justification for this kind of project has often been their potential economic and social benefits in more heavily populated areas, on the flipside concerns abound over decreased water present and future availability in the source areas and especially from increased water demand.

Be as it may, and since conveyance of water between natural basins are both a subtraction at the source and as an addition at the destination, they may also be seen as controversial due to their scale, costs and environmental or developmental impacts. In legal terms water and riparian rights are affected.

Owing to similar experiences, at national and international levels, it's now increasingly recognised that modifications made to river flows need to be balanced with maintenance of ecological and basic human services depending on the demand and availability of water. The river flows that are required to maintain these services are termed "Reserve Flows" generally defined as the level of in stream flows Compensation Flows necessary to provide for basic human use (domestic, irrigation and commercial) as well as the Environmental Flows required sustaining the river ecosystems. This requirement is more stringent when it comes to inter basin transfers

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Clean and adequate water for all is perhaps the most basic requirement for human survival; however its use has to be based on a strategy for optimal and equitable utilisation of water resources in Murang'a County and to other beneficiaries

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The Murang'a County Government recognises that while inter basin transfer, under certain circumstances, fulfil an important role (for example in supplying drinking water to population centres) the benefits of present large scale transfer scheme and others still on the drawing board is doubtful. In the past, Thika River transfer caused a disproportionate amount of damage in relation to the scheme benefits and social and economic impacts, especially for the donor basin.

[1] *Interbasin water transfers and water shortages, WWF, June 2007*

In the end, efficient management of water is extremely important in Kenya since water resources are very limited. Poor choices today could mean that targeted and local populations continue to suffer from inadequate and unreliable water supply. Allocation of water resources is the function of the Water Resources Management Authority but the right of Murang'a to fair share of water resources must be upheld.

The World Bank in its assessment of Third Nairobi Water Supply in 1989 identified this kind of supply approach as a short-term priority for supplying Nairobi and accordingly recommended that "long-term development plan to eventually provide water to the wider region" this plan and would appropriately include water conservation[2] measures at the destination that can make such water transfers less immediately necessary to alleviate water scarcity, delay their need to be built, or reduce their initial size and cost.

It imperative to note the following relating to NCT and in general of inter basin transfer schemes;

a) Weak governance would appear is symptomatic of inter basin transfer development[3], with poor to non-existent consultation with affected people commonly being witnessed and a lack of consideration at an appropriate management scale. This failure to look at the impacts of the NCT within the river basin management framework considerably elevates the risks of 'collateral damage' from the IBT. Through employing the management model of Integrated River Basin Management, government and society will be much better placed to make well informed decisions in relation to NCT project.
b) Principles of sustainable water resources management though have gained acceptances as means of coping with water scarcity, inequity, pollution and many other water problems and in the process, creating new structures and changing roles and responsibilities. In practice however, water sustainability concept espoused by Integrated Water Resources Management (IWRM) is viewed by many as somewhat nebulous, a catch all phrase lacking a roadmap for implementation. Holistic assessment of water in the context of river basin present the most sensible unit for implementing water management and allocation decisions, arising from the recognition that upstream/ downstream relationship and effects. This case is even more compelling when allocation entails an inter-basin water transfer.
c) The NCT project presents an opportunity to demonstrate commitment to sustainable use of water and Natural resources and to proof actual implementation of IWRM

In particular to:

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[2] ***Water conservation*** *encompasses policies, strategies and activities to manage fresh as a sustainable resource, to protect the water environment, and to meet current and future human demand. Population, household size, commercial industrial, agricultural growth and affluence all affect how much water is used and consequently increase pressures on natural water resources*

[3] *Interbasin water transfers and water shortages, WWF, 2007*

- Evaluate NCT project design outputs against water management objectives
- Assess benefits resulting from actions and plans
- Clarify consistency between project activities, outputs, outcomes against development goals and opportunity costs, and
- Ensure and demonstrate legitimacy of action and accountability by all stakeholders

This report provides comprehensive assessment of Northern Collector Tunnel in view of the primary importance of sustainable water supply to Nairobi City but equally important the unalienable rights of the people of Muranga to social-economic equity, statutory and patriotic duty to preserve water catchment and generally the environment.

The report not only highlight the potential negative impacts but suggest good practices, innovative approaches and promising commitments on basis of multi-sectoral and inter-agencies approaches and sustainable responses to water demand.

Finally, in this endeavour the Constitution of Kenya (2010) guarantees every Kenyan under section 42 the right to clean and healthy environment specifically *"to have the environment protected for the benefit of present and future generations through legislative and other measures" particularly those contemplated in Article 69"* appropriately as following;

69. (1) The State shall—

(a) ensure sustainable exploitation, utilisation, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;

(d) encourage public participation in the management, protection and conservation of the environment;

(f) establish systems of environmental impact assessment, environmental audit and monitoring of the environment;

(g) eliminate processes and activities that are likely to endanger the environment; and

(h) utilise the environment and natural resources for the benefit of the people of Kenya.

(2) Every person has a **duty** to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.

Signed for and on behalf of the Technical Committee:

Eng. Wangai Ndirangu — 24/04/2015

Chairman — **Sign** — **Date**

Ms Beatrice N. Kiarie — 24/4/2015

Joint Secretary — **Sign** — **Date**

Eng. Gabriel Kamau — 24/4/2015

Joint Secretary/
CO, Energy Transport & Infrastructure — **Sign** — **Date**

Eng. Amos Njoroge — 24/4/2015

CEC Member, Energy Transport and Infrastructure — **Sign** — **Date**

List of Plates

Executive Summary

The difference between what we do and what we are capable of doing would suffice to solve most of our problems

A.1 BACKGROUND

a) The Northern Collector Tunnel Phase-I is the second of sequenced projects under Water Supply Master Plan (2012-2035) to Nairobi City and Satellite towns. It is designed to convey 140,000 m^3/day during 90% of the year from Maragua, Irati and Gikigie rivers into Ndakaini Dam in Murang'a County and eventually to Nairobi.

b) The Government of Murang'a appreciates that water is a shared national resource with Nairobi and other counties, under certain circumstances cross basin transfers fulfil an important role, but in case of NCT-1 transfer scheme and others still on the drawing board it is doubtful. Moreover, previous transfer from Thika River caused a disproportionate amount of damage in relation to the scheme benefits and social and economic impacts, especially for the source catchment in Murang'a

c) Efficient management of water is extremely important in Kenya since water resources are very limited. Poor choices today could mean that targeted and local populations continue to suffer from inadequate and unreliable water supply. Allocation outside the County must uphold the right of Murang'a to fair share of water resources

A.2 PROJECT VALIDATION

The Murang'a Leaders Forum convening in Golden Palm Hotel, Makuyu on January 21st 2015 noted that NCT project exerts considerable pressures on water resources and probably disadvantages Murang'a County. The forum resolved to appoint an Independent Technical Committee to examine pertinent issues arising, which include but not limited to ensuring that the project;

i) Does not adversely reduce or affect river flows and levels of the underground water level

ii) Does not result to any adverse ecological or micro-climatic effect on the environment.

iii) Does not adversely affect current and projected water and irrigation demands in the County

iv) Demonstrate in practical terms the benefits to Murang'a County and especially address the water needs of Murang'a people, and finally

v) Clarifies who should control benefits and how it is shared and priced

A.3 FINDINGS OF THE COMMITTEE

A.3.1. Limitation of Consultation process

During EIA consultation, repeatedly in public and other organised forums, the project proponents described an inaccurate situation, and suggested that only flood water will be tapped. The committee observed that;

i) Flood water is generally defined as flows more than Q80 while NCT-1 will abstract over Q95[4], which in the proponents own admission will results to conditions similar to flow during prolonged drought.
ii) Athi Water Services Board disregarded recommendations/caution of their own feasibility studies, indeed the public and stakeholders were not made aware of the precautions

Therefore, consultation process was technically flawed, hence misleading.

A.3.2 Compliance to statutory requirements

Athi Water Services Board awarded contract for construction work in September 2014, yet;

i) NEMA license was granted in February 2015; however conditions set out in the license have not been achieved to the best of information available to Committee.
ii) Application for water abstraction permit is still under process as at April 2015
iii) This action is goes against the provision under Section 42(1) of Environmental Management and Coordination Act and Water Act 27(1).

Consequently, and to this extent the committee finds that;

+ Project activities are in violation of established law
+ The project risks loss of public funds by contractual claims occasioned by delayed site possession or in event statutory authorization is not successful
+ Alternatively, the proponent considers these legal requirement ineffectual and mere formalities

A.3.3 Impacts on flows downstream and Ground water

Assessment of river hydrology finds that NCT-1 will result to significant reduction in downstream flows in the three rivers and unacceptable negative impacts downstream of the intakes;

[4] *Q95 refers normally encountered in dry seasons*

a) Project will have long-term impacts 336,877 people in Murang'a who use the three rivers

b) Combined normal flow (Q80) in the three rivers is 267,800 m^3/day while NCT **average** abstraction is 259,200 m^3/day, implying that NCT project will divert more than 97% of the river flow during 90% of the year

c) The upper catchment of Irati, Maragua and Gikigie contributes 64% of the low during dry season, meaning the downstream region is highly dependent on flows to be diverted for NCT

d) NCT abstraction as currently designed will result to 60% or approximately 216 days every year with zero or extremely low flow downstream.

e) If Reserve Flows are limited to the release of Q95 or even 2xQ95, no investment in flood storage (dam) along the Irati, Gikigie and Maragua Rivers will be possible and any existing systems will no longer be viable

f) Information available to the committee reveal that hydrogeological investigation has not completed however drawings evidence from similar projects tunnelling may result to changes in the underground drainage and drying of springs and river

A.3.4. Impacts on water demand and proposed developed in Murang'a

World Bank appraisal of Third Nairobi Water Supply Project in 1989 observed *"the need to safeguard the interest of the other water users outside the Nairobi area..."*

Water Act (cls 22) prescribe "... the nature and degree of water use authorised by a permit shall be reasonable and beneficial in relation to others uses..." and specifically provide that reserve flow as necessary to sustain basic human needs, ecosystem functions, lawful permitted uses downstream, safeguard existing investment.

a) Water allocation guidelines in first priority over water resources[5] have not been adhered to and existing demand has not been fully accounted.

b) Current water demand in Maragua catchment doesn't accommodate abstraction of river flows lower than Q35 and Q10 in 2030 unless storage is incorporated

c) Should the project proceed as designed ,

[5] *See Prioritisation of Water Allocation for NWMP 2030 in National Water Master Plan 2030 (page EX-15), Water Allocation guidelines (2.3.1)*

i) Only 8600m^3/day out of 267,800 m^3/day normal flow will remain in the river to cater for 162,543 m^3/day of water demand in the Maragua catchment. This will result in serious shortages and possible users conflicts in Murang'a

ii) Existing and planned irrigation schemes will be unfeasible. The annual loss to Murang'a County in foregone irrigation is estimated at Kes 2.3 billion

iii) Intakes to Murang'a Town, Kandara Water Supply will not have sufficient water. Affected areas and centres include_Maragwa Town, Murang'a Town, Kangema, Kahuro, Kangare, Gacharage, Ichichi, Kaharati , Kenol/Makuyu

iv) NCT abstraction will lead to loss of up to 14 MW installed in Wanjii and Mesco HEP stations, in addition will render on-going projects for example Ikumbi minihydro unfeasible.

A.3.5 Ecosystem and Conservation

The conservation of the Aberdare Catchment Area and sustainable utilization of its resources contribute significantly to the local and national economy. Uncontrolled utilization of the Eastern Aberdares ecosystem without conservation will have devastating impacts to large parts of Central and Eastern Kenya and the capital City of Nairobi. Protection of the Abedare Catchment Aberdare is key pillar to realizations of vision 2030 to providing better support to the economic pillar flagship projects

The Committee thus observed;

a) Diversions from Maragua, Irati and Gikigi will result in long-term effects that are both severe and unacceptable. By opting for Q95, project proponents overlooked grave ecological impacts and consequences it portends
b) The Final ESIA Report was less comprehensive than preliminary ESIA and generally circumvented many pertinent issues
c) Meagre 0.074% of project budget is set aside mitigation measures identified in the environment management plan, but mostly none.
d) The NCT will result in 3.7% reduction in the flow reaching Masinga Reservoir and therefore a reduced flow in the Tana River cascade.

A.3.6 Framework for Resources and benefits sharing

The Nairobi Urban Infrastructure Development Strategy NIUPLAN, in the part dealing with water supply emphasized that "...*Water resources and the facilities are located outside Nairobi City. Thus, an agreement of (these) Counties on the development of water supply facilities for Nairobi City is*

indispensable[6]. This was echoed Eng. Michael Ngari, Chief Officer Water, Energy and Natural Resources representing Nairobi City County in Nokras ESIA consultation that the project is.... *not just for Nairobi but for the good of the people in Murang'a*. To that extent, the need for consultation between Murang'a and beneficiaries counties is not in question. However;

a) Project planning has not been demonstrated specific and tangible benefits to the people of Murang'a, nor has there been any consultation with Murang'a taken place to determine nature, size and priority areas of benefit interventions.
b) Murang'a water and sanitation (Kshs.800mi), Gatanga (Kshs.500mi) and Gatango (Khs. 170mi) are not spin off benefits from NCT Phase I, but independent projects with separate budgets under WASSIP-Additional Funding.
c) Despite the NCT abstraction benefiting from soil and water conservation the Murang'a County will remain uncompensated for their effort in this responsibility

A.3.7 Lessons from the past

Drawings lessons from Third Nairobi Water (Ndakaini dam) Project, there is an alarming repeat of principal issues which had led to dismal outcomes;

i) Ineffective and generally inadequate consultation with affected people on critical issues had resulted in resistance and litigation.
ii) Important sub-surface conditions have not been investigated.in particular, it is surprising that geotechnical investigation for project located almost entirely underground had not been exhausted by time Contract was awarded.
iii) Experts review was made after final design by which time their recommendations could not be incorporated, similar, NCT expert and statutory reviews relating to environment and water abstraction.

There is serious doubt on the genuine intent by the proponent to incorporate recommendations of statutory reviews or at least it subjects Government of Kenya to disadvantage owing to potential variation of scope and claims for contractual delays.

[6] Final Draft Report on *Integrated Urban Development Master Plan for the City of Nairobi in the Republic of Kenya pg 8-7, 2014*

A.4 CONCLUSION AND RECOMMENDATIONS

A.4.1 Conclusion

i) The water supply master plan has completely overlooked water needs for Muranga County and other permitted users

ii) The continuing northwards encroachment of rivers in Murang'a for water supply to Nairobi is not sustainable. Both present and future abstractions will critically alter environment and river flows to the detriment of welfare of Murang'a County

iii) Proposed sources in Muranga may last only for the next 15 years up to 2030 while population in Nairobi and Muranga continue to grow. Strategic intervention is required to avert otherwise inevitable future crisis

A.4.2 Consequently the Committee recommends as follows;

A.4.2.1 **Project not to proceed pending revision of NCT design and Masterplan:**

Northern Collector Tunnel and Water Supply Master plan for Nairobi and Satellite Town are re-designed in view of hydrology and successive supply of water demand in Murang'a County explore alternatives sources for Nairobi and ensure measures for efficient water use pursuant to Water Act 32 (b) as perquisite for further new abstractions.

A.4.2.2 NCT to abstract flows level lower than Q50

i) To mitigate the risk of low and zero flow downstream of NCT intakes, the abstraction Minimum Reserve flow shall not be less than Q50

ii) Athi Water Services Board and water supply undertakers in the beneficiary areas cooperate with Murang'a County Government for development of multi-purpose water storage as minimum requirement for any abstraction and continued utilization of water resources in Muranga beyond 2015

iii) Detailed investigation to be undertaken before construction to establish wider changes and impacts on groundwater drainage

iv) Revise intake design to provide upstream by-pass for compensation

A.4.2.3 Statutory approvals and licensing to be completed:

i) The Murang'a County Government petitions NEMA for review of EIA license owing to many pertinent issues still unresolved and flaws in the consultation process

ii) The Murang'a County Government petitions Water Resources Management Authority to object issuance of water abstraction permits until abstraction survey and water demand is validated

A.4.2.4 Full involvement of Murang'a County in design review and project oversight

a) Athi Water services Board and County Government of Muranga establish a Technical Committee to oversee the re-design, implementation of mitigation measures, baseline monitoring during implementation and operations of NCT and Community water project

b) Athi Water services Board to ensure that contract for the construction phase include reference to supervision by the Technical Committee.

A.4.2.5 Soil and Water Conservation Plan to be developed:

i) The proponent to cooperate with Muranga County, Kenya Forest Services, NEMA, Water Resources Management Authority to develop comprehensive watershed management plan complementing existing strategies and to benefit both upstream and downstream

ii) County assembly to enact County laws on water, soil and conservation which at least include conservation or ecosystem services levy

iii) The project activities will upgrade existing and establish regular river monitoring systems for daily reporting of flows

A.4.2.6 Framework of resources and benefits sharing

i) **Formation of Bulk Water Company:** The County Government initiate determined steps to promote the formation of bulk water supply to own and develop bulk water infrastructure in Muranga and to transmit water to users in and outside the County.

ii) **National Law on water and Natural Resources Benefits Sharing:** Urge County legislators in Senate and in Parliament to proactively support fast-track conclusion of the Water Bill in Parliament and the Natural Resources Benefits Sharing Bill in the Senate.

Part I: Overview

Nairobi accounts for about 60% of Kenya's GDP, but the energy, water and some raw materials used to drive economic activities in the City and environs are derived from the Aberdare ecosystem. The conservation of the Aberdare Catchment Area and sustainable utilization of its resources are therefore crucial if Nairobi is to continue with this significant contribution to the National economy