

ASK THE EXPERTS vol. 6

**Valorising the end-products of domestic and industrial
wastewater treatment**

25.04.2023

Pilot project for wastewater treatment and reuse at Uhuru Park,
Nairobi / Kenya

Replication potential from Kenyan perspective



African Water and
Sanitation Association
Association Africaine de
l'Eau et de l'Assainissement



German Water
Partnership

Ruji Africa Limited



... is a privately owned Kenyan Company specializing in Water and Sanitation engineering and Construction

Vision to be the Market leader in providing sustainable cost effective, innovative Water and Sanitation solutions maintaining highest standards.

Adopts strategies and practices that aim to meet the needs of today's society without compromising future human and natural resources.

Builds partnerships with other stakeholders to enable us to bring to the forefront ideas and innovations for responsible resource management.

Team comprises Specialist Engineers, Quality Assurance Technicians Water and Sanitation Specialists and Professionals.

Water and Wastewater Situation in Nairobi



Nairobi has an estimated population of about 5M people (city proper), the metropolitan area 10.8 M (projected population for 2022).

Current water production is 500 000 m³/day against a demand of 800 000 m³/day

Sewerage coverage is only about 50%.

The City encounters great challenges in collecting wastewater and faecal sludge. Sanitation facilities and sewage disposal points are inadequate. The rural-urban migration leading to accelerated population growth exacerbates the challenge.

Rivers are highly polluted by direct discharge of wastewater from non-sewered industries, households, and many other institutions.

Current wastewater treatment systems are stabilization ponds and aerated lagoons coupled with constructed wetlands as well as conventional treatment systems.

Stabilisation ponds require large areas which are hardly available.

River pollution in informal settlements



Initiative and leadership on highest political level



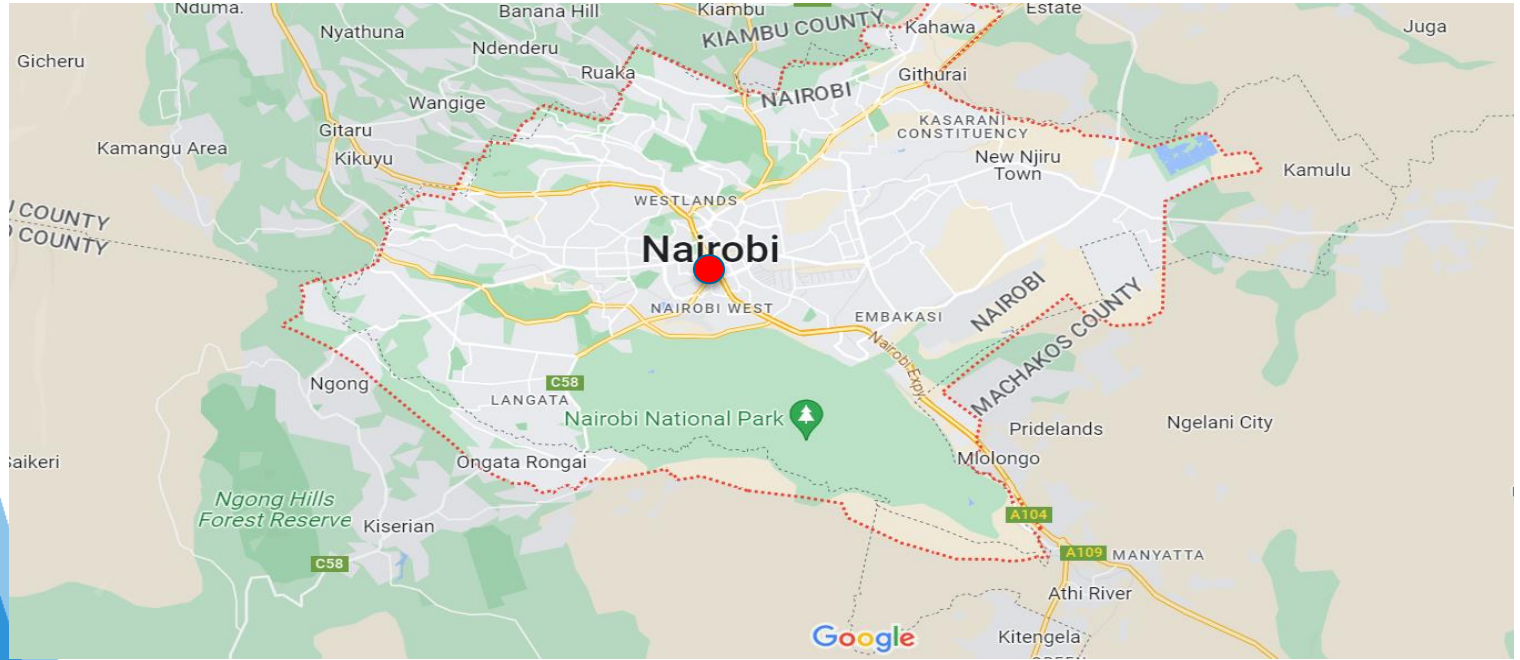
Kenyan and Estonian Presidents agreed on the pilot during a meeting. Initiative embraced by the President for Uhuru Park’s ongoing rehabilitation, supported by ‘Nairobi Metropolitan Services’ (under the Executive Office of the President – currently by Nairobi City County Govt).

Ruji Africa partnered with Spacedrip from Estonia in piloting an automated wastewater treatment and reuse system.

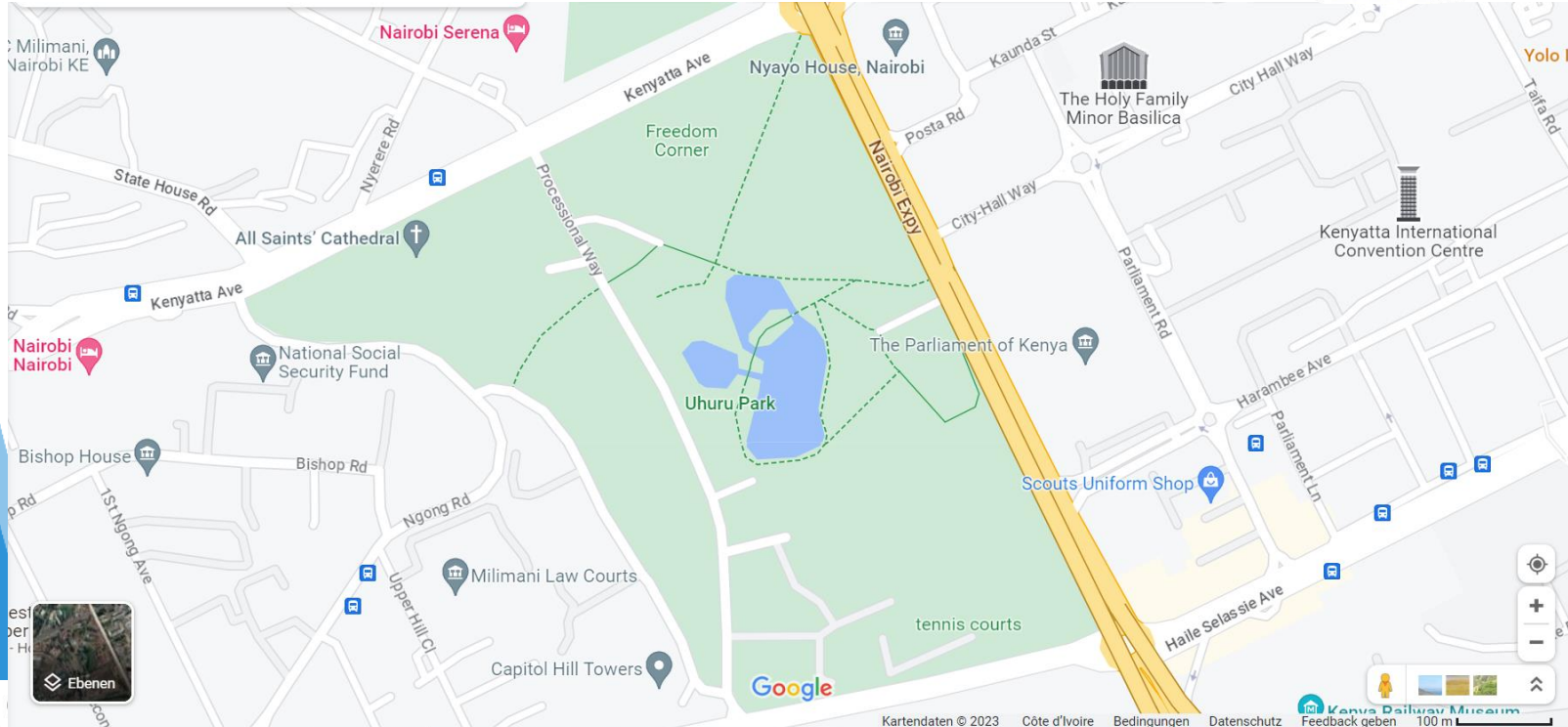
Aqua consult baltic designed the technology to connect with the Uhuru Park infrastructure and consulted during the commissioning and six-month operation of the plant – hand-over to Nairobi Water & Sewerage Company.

Environmental Impact Assessment – permit granted by National Environment Management Authority based on planned system performance. 5

Uhuru Park, Nairobi, Kenya



Uhuru Park, Nairobi, Kenya



Uhuru Park, Nairobi, Kenya



Benefits of the water reuse system



1. Small footprint – space availability no longer an issue
2. Treatment efficiency – no more pathogenic pollution and eutrophication
3. Inbuilt reuse capability – double value:
 - Valorising the treated effluent for flushing, irrigation, process water
 - reducing pressure on drinking water production (>50% savings!)

This technology can be implemented wherever there is no municipal sewer:

- Tourism and hospitality Industry
- Informal settlements
- Urban commercial and residential buildings
- Institutions
- Food processing and non-food industries

Way forward



Electricity demand is an issue – but can be addressed:

- Technically – by foreseeing control system autonomy by solar + battery
- Financially – saving bulk sewers = saving heavy cost and traffic chaos

This pilot is informing policy in the development of bylaws requiring:

- Tourism and Hospitality Industry
- Urban commercial and residential buildings
- Institutions
- Food processing and non-food industries

beyond a specific discharge quantity & quality and by a specific time to comply with treatment & reuse schemes (*...valorising the end-products!*)

Thank you for your attention!

Any Question?

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