

Terms of Reference for Artificial Wetland Expert

Design of an artificial wetland in Ahero



Ahero, Kisumu County, Kenya

Title	Design of an artificial wetland in Ahero
Location	Ahero, Kisumu County
Specialist(s)	Artificial Wetland Expert
Calendar time	November/December 2018
Inputs	International Artificial Wetland Expert (10 days)

Background

Ahero town is located 25 kilometers south-east of the county capital, Kisumu. It is part of Nyando District of what was formerly Nyanza Province. Nyando one of the seven sub-counties in Kisumu. Ahero comprises Kakola Ahero, Tura, South Kochogo, Kakola Ombaka, Kochogo Central, and Kochogo North Sub-locations. The town is segmented into 4 quadrants, dissected by the Nairobi-Kisumu highway East to West and by Nyando River North to south, and this creates one of the major structural elements that shape this town.

The Nyando River flows through central Ahero and helps irrigate its many paddies. The river, however, is not utilized for any water-based transport, and it is eroded and polluted by liquid and solid waste.

Ahero hosts an urban population of 7,891 and a total population of 61,556 (2009 census). The town will be defined a municipality when it reaches a population of 70,000. It is estimated that 63.7% of the population falls below the poverty line and that the dependency ratio is very high, 100:99.

During the process of developing the USR, the stakeholders group identified different challenges that they felt if and when addressed would make Ahero a good town. The lack of modern public sanitary facilities with accessible toilets to be used by traders, visitors and the residents was one of them. The town is also poorly lit, which contributes to the security issues as most residents are afraid of operating when it gets dark for fear of being mugged. Waste management, which include both solid and liquid waste, contributed to in part by the poor drainage system and lack of a waste management system has led to most water ending up in the Nyando River leading to pollution and contamination of the river which the residents use as their main source of water.

Ahero change project will focus on the following four components:

1. Reduced pollution load to Nyando River, this will involve construction of an effective wetland that treats surface run off water before being into the river
2. Improved waste management system and sanitation within the market and along River Nyando through installation of integrated waste collection bins in different parts of Ahero in addition to

this, a site will be set aside for Composting site of the organic waste from the litterbins & Material Recovery Facility

3. Improved access to recreational facilities and green spaces for all by setting aside space for a park with amenities that include an eatery, benches, canopies, lights, trees, shops
4. Improved livelihood opportunities will be achieved by building new stalls within the market as well as a general shade to be used by the traders within the market

Objective(s)

As part of component 1 the main objective of the assignment is to provide the detailed design of an artificial wetland to reduce pollution load into Nyando River in Ahero town in Kisumu County. The proposed solutions have to be sustainable and technically and economically (cost-effective) adoptable to Ahero.

It is important that the philosophy of SymbioCity in promoting sustainable urban development described above, is optimised and embodied in the various interventions that comprise the Change Project.

Method

The assignment will be carried out by an international artificial wetlands expert. It is critical that the assignment is undertaken in close cooperation with the Kisumu SymbioCity Pilot Coordinator / Working Group, Ahero stakeholders, contracted Specialist(s) and County Officers preparing other elements of the detailed design and the SymbioCity program officer. It is anticipated that the assignment will consider the following:

- influent water quality
- design flow,
- the required treatment target,
- the space availability,
- topography (height difference available across the wetland),
- seasonal variations including rainfall and temperature,
- availability of local materials,
- whether the system needs to be completely passive (no pumping or mechanical components) or can include some simple mechanical components to reduce footprint,

- flood extent etc.

Outputs

The consultants will be expected to deliver design drawings to include the following:

- Assessment of site hydrology and expected flow rates
- Assessment of expected pollutant load
- Site plan showing position of wetland together with inlet and outlet points
- Design drawings showing dimensioned cross-section details, outlet control structures, sediment and trash removal components.
- Specification of wetland filter media, lining and plants.
- Commissioning requirements (seeding and establishment of the wetland)
- Simple operation and maintenance guidelines (to demonstrate how the design takes this into account)
- Simple bill of quantities to enable contractors to provide informed quotes

Inputs / human resources required

The assignment will be carried out by an International Artificial Wetlands Expert. The work of the consultants will be guided by the Project Proposal for the development of Ahero and will have access to the Kisumu Working Group, Kenyan Technical Experts and the SymbioCity Programme Officer.

The consultant will have:

- Requisite professional University Bachelor's degree
- Having a professional practicing experience of not less than 5 years that has covered:
 - A broad range of development projects
 - Planning and design of artificial wetlands
- Demonstrated experience of at least two previous assignments of a similar nature
- Experience of working in Kenya or similar contexts will be a strong advantage
- Ability to collaborate and achieve agreed goals with other Technical Specialists
- Excellent communication skills oral and written

Time frame

The total duration will be 10 working days, carried out over a period of approximately 4 weeks from commencement to finalisation.

Management of the contract

The contract will be signed between the consultant and SKL international. The consultant will work closely with the SymbioCity Kenya Kisumu pilot coordinator and Program officer based in Nairobi.

Financial management of the contract will be done by SKL International.

Schedule of payments

Payments will be based on receipts of clearly defined deliverables:

- 40% on submission and clearance of a brief inception note and delivery of draft outputs
 - 60% on submission and clearance of final outputs.
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