# WEST AKIM MUNICIPAL ASSEMBLY

## TERMS OF REFERENCE FOR PREPARING MUNICIPAL DRAINAGE MASTER PLAN

| Terms of Reference for Specialist/Consultant/Expert | |
|---|---|
| Position | Drainage Engineering Expert |
| Duty Station | West Akim Municipal Assembly (WAMA) |
| Duration | Six (6) calendar months |
| Expected starting date | October, 2024 |
| Expected end date | March, 2025 |

## 1.0 INTRODUCTION

The Government of Ghana has received funding from the World Bank towards the cost of implementation of the **Ghana Secondary Cities Support Program (GSCSP)** through the Ministry of Local Government Decentralisation and Rural Development (MLGDRD) and intends to apply part of the proceeds for consulting services**.**

**Programme Development Objectives**

The main Program Development Objective (PDO) of the GSCSP is to "improve urban management and basic urban services in participating Municipal Assemblies". To achieve this main objective, the Program, will focus on two results areas:

- Improved institutional performance of urban management, and
- Improved basic urban services in participating Municipal Assemblies (MAs).

**The proposed key PDO indicators are:**

- People provided with improved urban infrastructure/services under the GSCSP, (to measure improved service delivery)
- Composite annual average urban performance benchmarks percentage score by Program MAs - (to measure urban management).

**Capacity Support Grant (CSG):**

Through the GSCSP participating MAs will receive Urban Development Grants (UDGs) and Capacity Support Grants (CSGs). While UDGs will allow MAs to make investments in urban infrastructure and service delivery, CSGs will enable them to invest in institutional and capacity

development initiatives aimed at enhancing their urban management performance. This assignment falls under Capacity Support Grant for funding.

**Background**

Economic growth and rapid urbanization have been complementary processes, particularly in large Metropolitan and Municipal areas in Ghana. Perceived improvements in urban economic opportunities and the potential benefits of agglomeration have made cities attractive to migrants. More than 53 percent of Ghana's total population is living in urban areas and it is projected to reach 65 percent by 2030 by which time 22.6 million people will be living in urban areas. This phenomenon comes with its attendant challenges of high demand for land and increased pressure on urban infrastructure and services.

The Local Governance Act 2016, Act 936 as amended establishes the Metropolitan, Municipal and District Assemblies (MMDAs) as Planning Authorities. The Land Use and Spatial Planning Act, 2016 (Act 925), the National Environmental Sanitation Policy and The National Water Policy and Buffer Zone Policy 2013 also requires the integration of urban watershed management principles that incorporate drainage, sanitation, storm water management (SWM), and Disaster Risk Management (DRM) at the local level.

In line with the above, the West Akim Municipal Assembly intends to use part of its CSG under the Ghana Secondary Cities Support Program (GSCSP) to prepare a Drainage Master Plan for the Municipality to provide a sound basis for future progressive, continuous and sustainable improvement in the municipality.

The Assembly is requesting for technical and financial proposals from eligible consultants. The technical proposal should outline the understanding of the assignment, methodology for work approach, work plan and a corresponding budget.

## 2.0 OBJECTIVES OF THE ASSIGNMENT

The overall objective of the assignment is to prepare a Drainage Master Plan for West Akim Municipality which will guide orderly development of flood control facilities; improve the physical environment, whilst ensuring public safety and adequate flood protection of property.

The specific objectives of the assignment are as follows:

i. To formulate the long-term solution for the flooding, drainage and stormwater management problems in the existing built-up areas in order to reduce the adverse effects of flooding on people and property and to protect the existing and proposed development by implementation of an integrated stormwater management plan by providing an appropriate level of flood protection to community expectations.
ii. To optimise the effectiveness of the existing stormwater infrastructure network within the area taking into account environmental effects and public expectations.
iii. To control the excessive sediment in watercourses to acceptable levels through the use of wetlands, green buffer zones and other sediment control measures.
iv. To collect and convey stormwater from a catchment to its receiving water with minimal impact by managing and improving the quality of stormwater runoff from urbanized catchment and its pollution loads in order to reduce the adverse effects of non-point source contamination of the receiving water environment.

## 3.0 SCOPE OF SERVICES

The Consultant is expected to carry out the underlisted tasks:

**Core activity 1: Baseline study to obtain relevant data that feed into the master plan.**

Data collection is divided into desk work and field work. Desk work includes gathering of all published data including rainfall and stream flow records, land use maps, satellite images, and soil data. Related reports and studies should also be reviewed, including the existing Municipal plans, flood reports, and drawings. Field work is to complement data collection. The fieldwork provides additional data to those collected through desk work. These field works include stormwater asset inventory, water quality monitoring and sampling, geotechnical investigation, ground water monitoring and engineering survey supervision.

***Activities:***

a. Map all catchment and watershed areas within the municipality using relevant maps, including topographic sheets and aerial photographs.
b. Consult relevant institutions, e.g. MA, DUR, AESL Hydro, and NADMO to review, validate, and/or update above information.

c. Conduct ground validation and field surveys, including topographic surveys to capture relevant data and information on the catchment basins and drainage channels within the municipality. This shall include but not limited to information on catchment characteristics; type, dimensions and condition of drains; assessment of flood vulnerability and disaster risk.
d. Based on the above, prepare a drainage inventory report or drainage profile database for the municipality

**Core activity 2: Hydrological analysis for estimation of run-off**

Carry out hydrological analysis to calculate the peak discharge for return periods of 2, 5, 15 and 25 years within the catchment area (indicate preferred method for run-off estimation)

**Core activity 3:Hydraulic analysis to design drains and drainage structures**

***Activities:***

a. Carry out hydraulic analysis and preliminary design using appropriate design software to calculate flows from each catchment area and design drainage channels that are capable of containing calculated flows for the different return periods and development scenarios. Simulate the flow regimes to facilitate investigation and advice on optimal proportion of developed space for flooding.
b. Calculate extreme flows anticipated to cross the main and secondary roads to facilitate future design of culverts or bridges.
c. Outline designs and prepare costs for schemes required to satisfy design criteria for both existing and proposed development scenarios
d. Make recommendations towards the development of a drainage master plan

**Core activity 4: Development of drainage master plan (structural and non-structural)**

Prepare a drainage master plan. This should include an outline of the Municipality's existing drainage network, as well as existing and future drainage facility needs and needed improvements (in hardware and software) to accommodate future development.

The Drainage Master plan should inter alia:

i. Provide recommendations for interventions in the drainage systems

ii. Prioritize for short-term (<1 yr), medium-term ( 1-2 yrs) and long-term (> 2 yrs) interventions
iii. Identify responsibilities and recommend effective policy and institutional arrangement for implementation of plan
iv. Identify areas at risk and adaptation measures
v. Recommend and inform the design of the drainage systems for specific areas
vi. Provide recommendations for enhancement of functionality and develop annual maintenance regime
vii. Provide recommendation for the improvement of the non-structural topics

**Core activity 5: Preparation of detailed designs for prioritized interventions**
The Drainage Master Plan will prioritize the interventions in the area covered by West Akim MA

## 4.0 OUTPUTS AND DELIVERABLES

The following outputs and deliverables are expected to be handed over to the Assembly by the end of the assignment:

- Inception report
- Preliminary report
- Draft Municipal Drainage Master Plan
- Financing and Implementation Arrangements
- Final draft Municipal Drainage Master Plan
- Completion report.

## 5.0 FACILITIES TO BE PROVIDED BY CLIENT

All related documents and data on the assignment in the custody of the MA departments and other institutions and communities in the Municipality shall be at the disposal of the consultant. Other staff of the West Akim Municipal Assembly will be released for the assignment upon request.

## 6.0 REPORTING SCHEDULE

The reporting schedule will be as follows:

| Reports | Time for Submission | Number of Copies |
|---|---|---|
| Inception Report | 2 weeks after signing of contract | 2 hard copies & soft copy on pen drive |

| | | |
|---|---|---|
| Preliminary report | $1\frac{1}{2}$ months after commencement | 2 hard copies & soft copy on pen drive |
| Draft Municipal Drainage Master Plan | $3\frac{1}{2}$ months after commencement | 2 hard copies & soft copy on pen drive |
| Financing and Implementation Arrangements | $4\frac{1}{2}$ months after commencement | 2 hard copies & soft copy on pen drive |
| Final draft Municipal Drainage Master Plan | $5\frac{1}{2}$ months after commencement | 2 hard copies & soft copy on pen drive |
| Completion Report | 6 months after commencement | 2 hard copies & soft copy on pen drive |

## 7.0 PAYMENT ARRANGEMENTS

Project cost should include VAT and other taxes. Payment releases shall be as follows:

- 20% - Upon submission of Inception Report.
- 30% - Upon submission of Preliminary report
- 20% - Upon submission of Draft Municipal Drainage Master Plan
- 10% - Upon submission of Financing and Implementation Arrangements.
- 10% - Upon submission of Final Draft.
- 10% - Upon submission of Completion Report.

## 8.0 STAFFING

It is estimated that the assignment will span a period of six (6) months but the Consultant could indicate his assessment of time inputs required. The Consultant may also indicate additional staffing required to execute the assignment.

It is envisaged that key staff in the following discipline would be required: Drainage Engineering Expert who is a Master's a Degree holder with at least ten (10) years post-qualification experience and working experience in local governance issues or first Degree with at least fifteen (15) years post-qualification experience.