

GREATER ACCRA RESILIENT AND INTEGRATED DEVELOPMENT PROJECT

TERMS OF REFERENCE

FOR

Construction Supervision and Contract Management for Detention Ponds, Bridge Reconstruction and Drainage Works. Reference No. GH-MWH-369761-CS-QCBS

A. BACKGROUND AND CONTEXT

A.1 Introduction

The Odaw River Basin is one of the major urban drainage catchments in the Greater Accra Region of Ghana. Much of the catchment is built up and many of the streams are channelized. Flooding is a common occurrence in this urban catchment during the major and minor rainy seasons due to changes in the catchment characteristics over the years arising from increasing urbanization. A major disaster occurred on 3rd June 2015, when a fuel retail station at Odawna was gutted by fire amidst heavy flooding. The total post-disaster reconstruction cost was estimated at \$105 million.

The Greater Accra Resilient and Integrated Development (GARID) Project is the first in a series of projects designed to build the resilience of the national capital with the initial phase covering a five-year period from 2020 to 2025. The GARID Project has a development goal of improving flood risk and solid waste management in the Odaw River basin as well as improving access to basic infrastructure and services in the targeted communities within this drainage catchment.

The GARID project focuses on five components as follows:

- Component 1: Climate Resilient Drainage and Flood Mitigation Measures
- Component 2: Solid Waste Management Capacity Improvements
- Component 3: Participatory Upgrading of Targeted Flood Prone Low-income Communities and Local Government Support
- Component 4: Project Management
- Component 5: Contingent Emergency Response Component

The key implementing entities for these components are Ministry of Works and Housing (MWH); Ministry Sanitation and Water Resources (MSWR); and Ministry of Local Government Decentralization and Rural Development (MLGDRD).

A.2 Climate Resilient Drainage and Flood Mitigation Measures

A number of infrastructure investments are being implemented by the Ministry of Works and Housing under Component 1 of the GARID Project. The specific interventions include:

- Retention ponds at the Ghana Atomic Energy Commission (East and West sites);
- Repairs to identified damaged sections of the Odaw River main channel (Achimota)

- Lower Nima drain – (Paloma Bridge to Odaw River channel confluence)
- Kaneshie drains (Lot 1 & 2)
- Sand traps on the Odaw River main channel
- Rehabilitation of the Alajo community drainage network
- Replacement of vehicular and railway bridges at Dome, South Kaneshie and Abossey Okai and Odawna as well as 2 pedestrian bridges
- Construction of sand traps at critical intersections of the Odaw Drainage channel

Detailed engineering designs have been completed for the priority interventions at Achimota, Nima and Kaneshie interventions. Final engineering designs and bid documents are ongoing for all the other interventions listed above. This Terms of Reference (TOR) covers the design review, contract management and construction supervision for the aforementioned priority interventions.

The construction contracts will be based on Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer (“Red book”) Second edition 2017”, or later edition published by the Federation Internationale Des Ingenieurs – Conseils (FIDIC) [**International Federation of Consulting Engineers**].

The Client has awarded a contract for the dredging and clearing of the Odaw River main channel and some selected Tributaries. This is a four-year performance-based contract. This is under the supervision of Ghana Hydrological Authority.

There is also a Morphological Studies, Engineering Design of Coastal Protection Structures at the Odaw River Outlet, for which the GARID Project is implementing the design phase for the WACA Project.

B. OBJECTIVE OF CONSULTANCY ASSIGNMENT

The key objective of this assignment is **to undertake design review, construction supervision and contract management services for Civil Works under Component 1.**

C. APPROACH TO ASSIGNMENT

The **Client** for this consultancy is the **Ministry of Works and Housing**. The Client is hereby requesting technical and financial proposals from a suitably qualified and experienced engineering consultants to provide consultancy assignment comprising the following phases:

- a. Review of structural and hydraulic engineering design aspects of proposed civil works.
- b. Construction supervision of civil works.
- c. Post-construction services covering the defect liability period

The list of tasks and activities should not, by no means, be considered as the complete and comprehensive description of the Consultants’ duties. The Consultant is expected to critically review the Client’s requirements as stated in this document and recommend additional

innovative approaches and activities that are deemed essential to achieving the Client's stated objectives based on their professional experience and judgement.

D. Scope of Services, Tasks and Expected Deliverables

D1 Design Review

The Consultant shall undertake a design review of the civil works packages listed under A.2 above. The scope of the design review includes but not limited to the following:

- Review of Detailed Engineering Design Reports and Annexes
- Review of Drawings – General, Hydraulic, Structural and Construction.
- Review of Bills of Quantities (BOQs) and Tender/Contract Documents
- Traffic Management – a review of proposed traffic management plans at the various project intervention sites and working areas. Recommend options should be compliant with the requirements of the relevant road sector agencies e.g. Department of Urban Roads (DUR) and the Department of Feeder Roads (DFR).

D2 Construction Supervision

The consultant shall execute continuous supervision of all works including the monitoring of work progress and adherence to specified work standards (quality control). Specifically, these services will include but not limited to:

- a. Providing Contractors with the necessary data points and bench marks for setting out the works; and subsequently checking and approving the detailed setting out;
- b. Checking and approving the contractors' work plans, method of construction and any revisions thereto, and implementation for the most efficient and expeditious methods of carrying out the works;
- c. Issuing all necessary instruction to contractors and continuously supervising the work to ensure that they are carried out in accordance with the contract documents;
- d. Carrying out during the execution of the works; inspection of all working areas in installations;
- e. Checking and approving materials used and examining contractors' installations, accommodation, construction equipment and laboratories to ensure that these conform to agreed specifications and proposals;
- f. Checking and approving all working drawings prepared by contractors;
- g. Responding to design queries and requests for information from the contractor;
- h. Checking contractors' work measurements and certifying payment claims;
- i. Negotiating with contractors any contractually permissible changes in price or rate for which the need may arise and making recommendations on these to the Client.
- j. Informing the Client of any problem which arise or might arise in connection with civil work contracts and making recommendations for their solution;

- k. Evaluating all claims during the contract periods for additional payments and time extensions submitted by contractors, and making recommendations on these to the Client in timely manner and with necessary justifications;
- l. Assisting the Client in any dispute during contract periods that may arise with contracts and giving all the elements on which the judgments are based;
- m. Ensure that the Contractor's ESHS performance is in accordance with good international industry practice and delivers the Contractor's ESHS obligations;
- n. Provide the Client with issues of grievances arising from the construction of the works affecting households and neighbouring community and those brought to their attention through the Online Grievance Redress Mechanism of the Client and similar medium, on timely basis.
- o. Coordinate and supervise all service/utility diversions, relocations and connections associated with the contract to facilitate timely completion of the contract by liaising with statutory authorities in charge of all utilities to ensure Contractor's compliance with all technical requirements for relocation of utilities affected by the works;
- p. Organise and preside over all monthly site meetings and technical meetings.
- q. Prepare and submit monthly progress reports and any other relevant documents. The report shall cover contract data, financial information, projected costs to completion, progress of works, contractor personnel, equipment on site, materials on site, ESHS issues, etc.;
- r. Maintain Project diary and Site Instruction Book.

D3 Post-Construction Services

The Consultant shall perform the following during this phase:

- a. Inspection of works before to the expiry of the Contractor's 12 months defects liability period, preparation of a final deficiency list, if required, supervision of remedial works and recommendation to the Client as to the date of the Final Inspection of Works;
- b. Carry out a final inspection of the works together with representatives of MMA, the Ministry of Works and Housing and the Contractor;
- c. Provide As-built drawings for the works.
- d. Preparation and issuance of Final Acceptance Certificate;
- e. Preparation of Final Payment Certificate.

D4 Environmental and Social Obligations

Ensure that the Contractor delivers its Environmental and Social (ES) obligations under its contract. This includes, but is not limited to the following:

- 1. review the Contractor's Environment and Social Management Plan (C-ESMP), including all updates and revisions at frequencies specified in the Contractor's contract (normally not less than once every 6 months);
- 2. review all other applicable contractor's documents related to ES aspects including the health and safety manual, security management plan and SEA prevention and response action plan;

3. review and consider the ES risks and impacts of any design change proposals and advise if there are implications for compliance with ESIA, ESMP, consent/permits and other relevant project requirements;
4. undertake, as required, audits, supervisions and/or inspections of any sites where the Contractor is undertaking activities under its contract, to verify the Contractor's compliance with ES requirements (including relevant requirements on SEA/SH);
5. undertake audits and inspections of Contractor's accident logs, community liaison records, monitoring findings and other ES related documentation, as necessary, to confirm the Contractor's compliance with ES requirements (including relevant requirements on SEA/SH);
6. determine remedial action/s and their timeframe for implementation in the event of a noncompliance with the Contractor's ES obligations;
7. ensure appropriate representation at relevant meetings including site meetings, and progress meetings to discuss and agree appropriate actions to ensure compliance with ES obligations;
8. ensure that the Contractor's actual reporting (content and timeliness) is in accordance with the Contractor's contractual obligations;
9. review and critique, in a timely manner, the Contractor's ES documentation (including regular reports and incident reports) regarding the accuracy and efficacy of the documentation;
10. undertake liaison, from time to time and as necessary, with project stakeholders to identify and discuss any actual or potential ES issues;
11. Provide to the Client grievance redress mechanism including types of grievances to be recorded and how to protect confidentiality e.g. of those reporting allegations of SEA and/or SH.

E. DURATION OF ASSIGNMENT

Design Review

The duration for the concurrent design review of 4 priority civil works packages will be one month.

The Consultant shall subsequently undertake design review of the other works package comprising the detention ponds, reconstruction of bridges, construction of sand traps, and Rehabilitation of the Alajo community drainage network.

Construction Supervision

The durations for the respective civil works packages are indicated in the Table 1 below.

Table 1 Estimated durations for the respective civil works

Civil Works	Expected Start Date	Estimated Construction Duration
Drainage Improvement Works to Odaw Channel at Achimota	October 2023	12 Months
Improvement Works at Nima Drain	October 2023	18 Months

Civil Works	Expected Start Date	Estimated Construction Duration
Improvement Works at Kaneshie Drain and Channel Lot 1	December 2023	18 Months
Improvement Works at Kaneshie Drain and Channel with reconstruction of South Kaneshie bridge. Lot 2	December 2023	18 Months
Reconstruction of Bridges at Dome Road, Abbosey Okai and Odawna Railway Bridge	March 2024	18 Months
Construction of Atomic East Detention Pond.	March 2024	18 Months
Construction of Atomic West Detention Pond..	March 2024	18 Months
Improvement Works at Alajo Drain.	March 2024	12 Months
Construction of Sand Traps	March 2024	6 Months

Post-Construction (Defects Liability Period)

The defects liability period for each of the works packages will be 12 months.

F. Reporting Requirements and Time Schedule for Deliverables

The list of deliverables and respective timelines are provided in Table 2 below.

Table 2 List of deliverables and corresponding submission schedules

Report	Time for Submission	Number of Hard Copies
Design Review		
Design Review Report	Week 4	5 hard copies and 1 soft copy on pen drive for each civil works package
Construction Supervision		
Monthly Progress Reports	Monthly	5 hard copies and 1 soft copy on pen drive for each civil works package
Works Completion Report	End of construction period	5 hard copies and 1 soft copy on pen drive for each civil works package

Report	Time for Submission	Number of Hard Copies
Post-Construction		
Defect Liability Report	Twelve months after construction completion	5 hard copies and 1 soft copy on pen drive for each civil works package

A detailed description of the required deliverables is provided in Table 3 below.

Table 3 Content of deliverables

Report	Content
Design Review	
Design Review Report	<p>This report shall include findings and recommendations of the following:</p> <ul style="list-style-type: none"> ▪ Detailed Engineering Design Reports and Annexes ▪ Drawings – General, Hydraulic, Structural and Construction. ▪ Bills of Quantities (BOQs) and Tender/Contract Documents ▪ Traffic Management Plan
Construction Supervision and Defects Liability	
Monthly Reports	<p>The key issues that will be addressed in the monthly reports will be the progress of the work, the work program, compliance with Environmental, Social, Health and Safety [ESHS] requirements, challenges and their resolution, unresolved issues, contract management and the control and approval of the Contractor's expenses as well as the description of the works.</p>
Works Completion Report	<p>The Consultant will submit a final report no later than one month after the Completion Certificate is issued. The report shall contain at least:</p> <ul style="list-style-type: none"> ▪ Copies of requests for issuance of a takeover certificate; ▪ A list of approved As-Built Design submitted by the Contractor showing all the modifications to the main design elements or surveyor of performed works; ▪ Quality assessment of materials and workmanship; ▪ Data on the technical difficulties encountered and how they were solved; ▪ Dam safety Report for the detention ponds. ▪ Comment on the As-Built Design ▪ List of Instructions for Use and Maintenance ▪ Final Report on Contractor's ESHS performance (Code of conduct, compliance with EMP, EIA, consent/permits and other relevant project requirements.

Report	Content
Post-Construction	
Defects Liability Report	This report will contain all the details of remedies performed by the Contractor to correct the observed defects and failures noted, including all ESHS issues that occurred during the Defects Liability Period. It should also include dam safety report on the safety of the detention ponds. This report is to be submitted no later than 2 weeks after the issuance of the end of the Defects Liability Period.

F1. Environmental and Social Reporting

The Consultant shall:

- (a) immediately notify the Client of any failure by the Contractor to comply with its SEA and SH obligations;
- (b) immediately notify the Client of any allegation, incident or accident, which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Client’s Personnel, Contractor’s Personnel or Experts. In case of SEA and/or SH, while maintaining confidentiality as appropriate, the type of allegation (sexual exploitation, sexual abuse or sexual harassment), gender and age of the person who experienced the alleged incident should be included in the information. The Consultant shall provide full details of such incidents or accidents to the Client within the timeframe agreed with the Client.
- (c) immediately inform and share with the Client notifications on ES incidents or accidents provided to the Consultant by the Contractor, and as required of the Contractor as part of the Progress Reporting;
- (d) share with the Client in a timely manner the Contractor’s ES metrics, as required of the Contractor as part of the Progress Reports.

G. Team Composition and Qualification Requirements for the Key Experts

Key professional staff critical to the performance of the services for specific stages of the assignment are listed in Table 4 below. The total work load for this consultancy assignment for key and non-key staff is estimated to be 160 man-months.

Consultant shall not propose alternative Key Experts. Only one CV shall be submitted for each Key Expert position. Consultant will be assessed on the participation by nationals of the Client’s country among proposed Key Experts. The Consultant and its Experts are responsible for meeting all tax liabilities arising out of the Contract.

In addition to providing dates, name of employing organization, titles of positions held, types of activities performed and location of the assignment, the Consultant’s Experts must provide contact information of previous clients and employing organization(s) who can be contacted for references.

Consultant’s Experts must be available to undertake the assignment in case of an award. Any misstatement or misrepresentation will lead to disqualification by the Client.

Table 4 Staff requirements

Description	Key/Non-Key Staff
Design Review	Team Leader Quantity Surveyor Geotechnical Engineer Hydraulics Engineer Structural Engineer Geodetic Engineer Dam Safety Engineer Railway Engineer Environmental Specialist Social Specialist
Construction Supervision	Team Leader Quantity Surveyor Materials/Geotechnical Engineer Hydraulics Engineer Structural Engineer Geodetic Engineer Dam Safety Engineer Railway Engineer Environmental Specialist Social Specialist Resident Engineers Clerks of Works (4 No.)
Post-Construction (Defects Liability Period.	Resident Engineer Quantity Surveyor Clerk of Works (4 No.)

The minimum requirements for key staff for the assignment are provided in Table 5 below.

Table 5 Academic qualification and professional experience requirements

Key Staff	Academic Qualifications	Minimum years of work experience	Relevant Professional Experience
Team Leader	MSc degree Civil Engineering or related field	15 years	<p>Team Leader must have experience in leading complex multi-disciplinary teams in similar assignments. Team Leader on at least 3 donor funded urban drainage infrastructure projects of similar size over the last 10 years.</p> <p>Knowledge of international Forms of Contract (FIDIC) is essential.</p> <p>Fluency in the English language.</p> <p>Must be a member of a recognized professional body.</p>
Quantity Surveyor	BSc degree in Quantity Surveying or Building Economics, Costing, Quantity Engineering or equivalent	15 years	<p>Should possess not less than 10 years experience in the preparation of Bills of Quantities for building structures, storm drains of which not less than 5 years should have been in project implementation and supervision. Must demonstrate experience on at least 3 urban drainage infrastructure projects of similar size over the last 10 years.</p> <p>Knowledge of international Forms of Contract (FIDIC) is essential and familiarity with managing contracts in Ghana is required.</p> <p>Fluency in the English language.</p> <p>Must be a member of a recognized professional body</p>
Geotechnical Engineer	MSc degree in Civil Engineering or related field	15 years	<p>Must demonstrate experience on at least 3 urban drainage infrastructure projects of similar size over the last 10 years.</p> <p>Must demonstrate experience in the use of industry standard geotechnical analysis and design software.</p> <p>Must demonstrate experience in overseeing sampling and material testing for large urban infrastructure projects</p> <p>Fluency in the English language.</p>

Key Staff	Academic Qualifications	Minimum years of work experience	Relevant Professional Experience
			Must be a member of a recognized professional body
Hydraulics Engineer	MSc degree in Civil Engineering or related field	15 years	<p>Must demonstrate experience on at least 3 urban drainage infrastructure projects of similar size over the last 10 years.</p> <p>Must demonstrate experience in the use in flood modelling software including HEC-HMS, HEC-RAS.</p> <p>Fluency in the English language.</p> <p>Must be a member of a recognized professional body.</p>
Structural Engineer	The Structural Engineer should be qualified and competent chartered or registered Civil Engineer with a first degree in Civil Engineering or equivalent and MSc degree in Civil Engineering or related field	15 years	<p>Should be a recognized Civil Engineer and should have not less than 10 years' experience in the design of civil works of which 5 years should have been in project implementation and supervision. Should be familiar with the governing structural design codes being used in Ghana and the technical specifications and materials. Must demonstrate experience on at least 3 urban drainage infrastructure projects of similar size over the last 10 years.</p> <p>Must demonstrate experience in the use of industry standard bridge analysis and design software.</p> <p>Fluency in the English language.</p> <p>Must be a member of a recognized professional body.</p>
Geodetic Engineer	BSc degree in Geodetic or Geomatic Engineering or related field	15 years	Should have at least 8 years of professional experience in geotechnical analysis for the design and construction purposes in the building and drainage sector. Must demonstrate experience on at least 3 urban drainage infrastructure projects of similar size over the last 10 years. Must have experience in construction

Key Staff	Academic Qualifications	Minimum years of work experience	Relevant Professional Experience
			<p>supervision of storm drainage and large hydrological structures.</p> <p>Fluency in the English language.</p> <p>Must be a member of a recognized professional body.</p>
Dam Safety Engineer	MSc degree in Civil Engineering or related field	15 years	<p>Must demonstrate experience in the design and construction supervision of at least 3 earth fill/concrete dams and ancillary structures for flood protection size over the last 10 years.</p> <p>Familiarity with World Bank good practice requirements for dam safety is required.</p> <p>Fluency in the English language.</p> <p>Must be a member of a recognized professional body.</p>
Railway Engineer	MSc degree in Civil Engineering or related field	15 years	<p>Must demonstrate experience on at least 3 railway infrastructure projects of similar size over the last 10 years.</p> <p>Fluency in the English language.</p> <p>Must be a member of a recognized professional body.</p>
Environmental Specialist	MSc degree in environmental engineering, environmental science or related field	12 years	<p>Must demonstrate experience in Environmental, Social, Health and Safety [ESHS] oversight on at least 3 infrastructure projects of similar size over the last 10 years.</p> <p>Must have experience in construction supervision of infrastructure works in built low income urban area.</p> <p>Knowledge of World Bank environmental safeguards requirements is essential</p> <p>Experience in working in sub-Saharan Africa.</p> <p>Fluency in English language is essential.</p>

Key Staff	Academic Qualifications	Minimum years of work experience	Relevant Professional Experience
			Must be a member of a recognized professional body.
Social Development Specialist	MA/MPhil Sc degree in sociology, social sciences or related field science or related field	12 years	<p>Must demonstrate experience in Environmental, Social, Health and Safety [ESHS] oversight on at least 3 infrastructure projects of similar size over the last 10 years.</p> <p>Must have experience in construction supervision of infrastructure works in built low income urban area.</p> <p>Knowledge of World Bank social safeguards requirements is essential</p> <p>Fluency in English language and local languages is essential.</p> <p>Must be a member of a recognized professional body.</p>
Resident Engineer	MSc degree in Civil Engineering or related field	15 years	<p>Must demonstrate experience as a Resident Engineer on at least 3 urban drainage infrastructure projects of similar size over the last 10 years.</p> <p>Must have experience in supervising complex multi-disciplinary contracts in drainage and similar assignments.</p> <p>Knowledge of international Forms of Contract (FIDIC) is essential.</p> <p>Fluency in the English language is essential.</p> <p>Must be a member of a recognized professional body.</p>
Clerk of Works	BSc degree in Civil Engineering or related field	12 years	<p>Must demonstrate experience as a Clerk of Works on at least 3 urban drainage infrastructure projects of similar size over the last 10 years.</p> <p>Knowledge of international Forms of Contract (FIDIC) is essential.</p> <p>Fluency in English language and local languages is essential.</p>

H. Client's Input and Counterpart Personnel

The Consultant is expected to work in close collaboration with the Ministry of Works and Housing, represented by Ghana Hydrological Authority (GHA) for the design review phase and construction supervision of the assignment. The Client would make available to the Consultant relevant documents for the assignment including the following:

- Final Detailed engineering Design Reports, Drawings and Tender documents.
- Environmental and Social Impact Assessment Reports for Structural Interventions in Odaw Basin.
- Resettlement Action Plan Reports for Structural Interventions in Odaw Basin.
- GARID Project, Environmental and Social Management Framework, and
- GARID Project, Resettlement Policy Framework.
- Environmental and Social Impact Assessment (ESIA) report for the Performance-based dredging part.

The following logistics shall be made available to the consultant for the construction supervision phase of the assignment:

- Site office as may be required by the respective contracts.;
- Maintenance of all site offices and structures during contract period and defect liability period;
- Furniture, office and surveying equipment at each of the project locations;
- Maintenance of furniture, office and survey equipment at each of the project locations during contract period and defect liability period;
- Provision, maintenance, servicing and fuel for the all vehicles allocated to the Consultant during contract period and defect liability period:

Additionally, provision has been made to cover the cost of the following activities as directed by the Consultant at each of the project locations:

- Testing of materials;
- Monthly progress photographs;
- As-Built Drawings;
- Video coverage for works;
- Sub soil investigations;