

GREATER ACCRA RESILIENT AND INTEGRATED DEVELOPMENT (GARID) PROJECT

TERMS OF REFERENCE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR ALOGBOSHIE COMMUNITY INFRASTRUCTURE UPGRADE

1. Background

The Greater Accra Region (GAR) has a long history of flood hazards with several devastating events recorded since the 1950s. Many such flood events have occurred in informal settlements which are located within the low-lying areas. Informal settlers constitute about 38.4 percent of AMA's population and are subject to at least one shelter deprivation in the form of lack of clean water and sanitation; insufficient living space; low-quality, unaffordable housing structures; and/or no security of tenure (Engstrom et al. 2017; United Nations-HABITAT 2008).

While the latest Accra Disaster Risk Management (DRM) - Poverty survey shows that the poorer and richer households were equally likely to be affected by the 2015 flooding, poorer households are unambiguously more vulnerable to floods than the rest of the population in the GAR. The urban poor in the GAR tend to reside in low-lying or unwanted areas, often informal settlements¹ associated with overcrowding; sub-standard housing; poor access to basic services; and high exposure to natural hazards, cholera, and fire events. There are also sizable Zongo² communities which are marginalized socioeconomically and spatially. Apart from poor dry weather access (that is, local roads and footpaths) to such communities, the provision of water and sanitation services to these areas is inadequate and unable to keep pace with demand. Although the Ghana Living Standards Survey (GLSS Round 7, 2019) estimates access to water in Greater Accra to be 82.2%, the service is usually unreliable, compelling residents to store water, dig their own wells or rely on vendors. Water vending is usually the last option for residents in Zongo communities, and they get to pay more for that. Access to basic sanitation and solid waste services is also a challenge. The Ghana Living Standards Survey (GLSS Round 7, 2019) also estimates that about 50.8 percent of households in the GAR share toilet facilities with other households, and these toilets are usually not the improved type (flush toilet or Kumasi Ventilated-Improved Pit). The current solid waste services do not provide adequately for informal settlements, hence the indiscriminate disposal of waste in open spaces and drains.

2. Overview of the GARID Project

The Government of Ghana has secured funding from the World Bank to finance the Greater Accra Resilient and Integrated Development (GARID) Project. The project aims

¹ Based on the United Nations-Habitat definition that there is at least one shelter deprivation in the form of lack of clean water and sanitation; insufficient living space; low-quality, unaffordable housing structures; and/or no security of tenure.

² Zongo is defined as a heterogenous community comprising various ethnic groups with different religions where the predominant religion is Islam, the predominant language is Hausa and; the community is characterized by poor living conditions (Zongo Development Fund Act, 2017 (Act 964)).

to improve flood risk management and solid waste management in the Odaw River Basin of the Greater Accra Region, and improve access to basic infrastructure and services in targeted communities within the Basin. The project will invest in flood mitigation measures within the Odaw River Basin of the Greater Accra Region for six years (2020-2025). It focuses on developing sustainable capacity for flood risk management and mitigating the flood risk for the 10-year flood within the Odaw River Basin. Additionally, the project will achieve flood mitigation by supporting reduction of solid waste entering the Odaw primary channel and key tributaries by improving Solid Waste Management (SWM) capacity. To ensure sustainable improvement of the living environment within highly vulnerable flood-prone low-income communities, the project will support participatory urban upgrading in three targeted communities located in high flood-prone areas.

The GARID project comprises five interrelated components (1) Climate Resilient Drainage and Flood Mitigation Measures, (2) Solid Waste Management Capacity Improvements, (3) Participatory Upgrading of Targeted Flood Prone Low-income Communities, and Local Government Support (4) Project Management; and (5) Contingent Emergency Response (CERC). These are further described below:

Component 1: Climate Resilient Drainage and Flood Mitigation Measures

This component is being implemented by the Ministry of Works and Housing (MWH), and includes structural improvements of drainage systems, and flood water management through upstream water conservation, development of flood retention areas, as well as improving early flood warning and response capacity in Greater Accra Region. Specific activities to be implemented under this component include:

- Improvements in urban drainage and flood management in Odaw drainage basin through dredging and de-silting of the Odaw channel;
- Improvement of drainage systems (i.e. widening of Odaw river outlet to the sea; lining of major drainage channels; and construction of selected secondary channels in the Accra Metropolitan Area);
- Development of flood water retention areas; and
- Improvements in flood response systems through better infrastructure for flood forecasting and warning systems.

Component 2: Solid Waste Management Capacity Improvements

Activities under component 2, being implemented by the Ministry of Sanitation and Water Resources (MSWR), are community-focused, comprising about 90 communities which have been selected for the participatory upgrading works as well as investment in drainage and sanitation. Sub-activities under this component include:

- Improving community-level solid waste management through provision of waste bins and skips and technical services for solid waste collection;
- Community mobilization and awareness raising;
- The application of a results-based incentive approach to enhance waste management and good sanitation practices; and

- Improving solid waste management capacity in Greater Accra by identifying, assessing and improving waste collection, treatment and disposal facilities.

Component 3: Participatory Upgrading of Targeted Flood Prone Low-income Communities, and Local Government Support

This component is jointly implemented by Ministry of Works and Housing (MWH) and Ministry of Local Government, Decentralization and Rural Development (MLGDRD) working in collaboration with the relevant Metropolitan, Municipal and District Assemblies (MMDAs). MWH will: identify highly flood-prone informal settlements and Zongos to benefit from participatory community upgrading; i.e., basic infrastructure upgrade and services as informed by geospatial and social vulnerability diagnostics; undertake Community engagement and technical advisory services. MLGDRD will facilitate Metropolitan Governance and Operation and Maintenance Improvements, which includes the following;

- ✓ Establishing and institutionalizing inter-jurisdictional coordination among local governments
- ✓ Assessing and improving O&M of drainage infrastructure at the local level
- ✓ Providing annual local capacity support grants as incentives to the participating local governments.

Component 4: Project Management

This component is supporting project management activities of implementing entities and preparatory studies for subsequent phases of the GARID project.

Specifically, this component supports activities including:

- Technical assistance, equipment, training and operating costs for the Project Coordination Unit (PCU), Project Implementation Units (PIUs) in implementing agencies, and Municipal Planning and Coordination Unit (MPCUs) in MMAs;
- Establishing and implementing a comprehensive monitoring and evaluation (M&E) system;
- Training of the implementing agencies in environmental and social management, grievance redressal, procurement and financial management.

The Component also supports planning for the next project phase through technical assistance, feasibility studies and preparation of detailed designs for implementation and other studies identified and agreed during implementation.

Component 5: Contingent Emergency Response Component (CERC)

The CERC was designed to allow for the rapid reallocation of funding between project components, following an emergency. Following the outbreak of COVID-19 pandemic, the government and the World Bank duly activated CERC and allocated some funds from GARID towards strengthening the government's response to the disease in the country.

3. Proposed Interventions - Participatory Infrastructure Upgrading in Alogboshie, a Flood Prone Low-Income Community

The proposed interventions in Alogboshie include the following:

- i. Access roads. Where adequate road corridor exists, access roads proposed for rehabilitation or construction shall be single carriageways which conform to one of the following Department of Urban Roads standard typical lane widths of
 - 3.5m - 3.65m for primary and secondary roads
 - 3.0m -3.5m for secondary, town or residential and service road in town

The roads shall have shoulders or pedestrian walkways of width 2.0 - 2.5m. The pavement structure for the roads shall comprise natural gravel sub-base and basecourse/crushed stone base layers with a final wearing course of double bituminous surface dressing. Asphaltic concrete wearing course could be considered on main roads. The roads shall have concrete U-shaped roadside drains to allow for their effective drainage unless otherwise depicted by topography of the adjoining surrounding areas.

- ii. Reconstruction of drains in the neighbourhood. Drains would be constructed in concrete with reinforcement, where necessary, due to the depth and /or existing soil conditions. Secondary and tertiary roadside drains would be U-shaped drains. They would be covered and have openings with removable cover slabs to facilitate maintenance. Culverts crossing roads will either be precast concrete ring pipes with surrounding concrete or reinforced concrete box culverts. Piped culverts are, however, preferred due to their ease and shorter duration required for construction.
- iii. Area/street lighting. Two options for consideration are:
 - To continue with the general practice, i.e. to, as much as possible, utilize existing electric poles along the roads for street lighting as well as provide additional poles where necessary. Standard luminaries, as per Electricity Company of Ghana's specifications, on a bracket are provided to be installed on the poles and connected to the electrical power supply network with switching control using photocells.
 - Provision of solar powered area/street lighting. This requires provision of special galvanized steel or aluminium poles designed to hold both the lamp as well as the solar panel. This is more expensive but also a more reliable option to ensure lighting even when there are electrical power outages.
- iv. Water Supply. The existence of Ghana Water Company Limited (GWCL) pipe network, although their coverage is limited in certain sections of the community, means the networks could be extended to these sections. Where accessibility to extend GWCL pipe network is problematic, then provision of boreholes would be considered. However, prior to their siting, hydrogeological studies would be undertaken to ensure good yield and salinity issues avoided as much as possible.

- v. Provision of recyclable waste buy-back centres. These are centres where people will send polythene packaging materials from their homes for sale to plastic recycling plants, and
- vi. Liquid waste management. Sanitation/toilet options being considered are the following: Pour flush toilet, Bio-digester toilet, ECOSAN waterless toilet, Kumasi Improved Pit Latrine (KVIP), Septic tanks and Enviro Loo toilet.

Figure 1 shows the existing situation and the model of some of the proposed improvements for Alogboshie upgrading.



Figure 1: Sample of Proposed Improvements under Alogboshie Upgrading

Alogboshie, in Okaikwei North Municipality, is a small community of 13,200 people, spread over an area of about 18 ha. It was selected based on: (a) vulnerability to flooding, (b) income levels (with priority given to areas where the poorest reside), (c) access to basic services, and (d) demonstration effects, i.e. ability to show tangible results for public support and replication. In addition to Alogboshie, two other communities - Nima and Akweteyman - were also selected for intervention. They are subject to separate ESIA and are not part of this TOR.

4. Rationale and Objective of the Assignment

The proposed interventions are likely to have significant environmental and social impacts; it is therefore mandatory for an Environmental and Social Impact Assessment (ESIA) to be carried out in compliance with Environmental Assessment Regulations, 1999 (LI 1652). The construction and use of the interventions also trigger the World Bank Safeguard Policy on Environmental Assessment (OP4.01), which requires the conduct of an Environmental and Social Impact Assessment (ESIA) as well as the World Bank's Safeguard Policy on Involuntary Resettlement (OP 4.12).

In conformance with the aforementioned WB environmental and social policies for investment projects, an Environmental and Social Management Framework (ESMF) and a Resettlement Policy Framework (RPF) were prepared and disclosed prior to project appraisal to manage potential environmental and social risks associated with the proposed interventions. These safeguards documents provide guiding principles, processes and procedures to be followed to ensure that environmental and social risks and impacts associated with subproject activities are adequately addressed.

Pursuant to Ghanaian laws, World Bank policies and provisions of the ESMF, an Environmental Impact Statement (EIS) is required to understand the potential implications, alternatives and mitigations to consider, to ensure sound decision-making, and to enhance development outcomes of the subprojects, and to obtain the EPA Environmental Permit for the works. The EIS is a pre-condition for permitting of works and designed to assess major project impacts, consider alternative project designs, and to outline and implement measures for mitigating anticipated project impacts.

Along with the ESIA process, and specific to the requirements of World Bank's policy on Involuntary Resettlement (OP 4.12), the MWH is contracting another consultancy service to prepare a Resettlement Action Plan (RAP), which will be implemented to mitigate the impacts of involuntary resettlement on the local population and other affected entities.

The main objective of this assignment is therefore to undertake an ESIA of the proposed interventions and produce an Environmental and Social Impact Statement (ESIS). The ESIA will provide decision makers at the MWH, EPA and the World Bank with sufficient information to determine, on environmental and social grounds, the acceptance, modification or rejection of the planned interventions for authorization, financing and implementation.

The ESIA will be undertaken alongside detailed engineering design (DED) of the infrastructural interventions under Component 3. It will be essential for the Consultants for the ESIA and the technical engineering design to liaise with each other to ensure

that the ESIA is informed by the designs and vice versa. There will be the need for an intensive information flow between the ESIA and the engineering design studies.

The ESIA Consultant should be aware that in addition to the DED Consultancy for the infrastructure interventions under Component 3, several other Consultancies such as for Component 2 (improving solid waste collection in all Odaw communities, except for the 3 Communities which are part of this assignment) and Component 1 (Drainage and flood management improvements within the Odaw Basin) may also be ongoing. Depending on the timing of these Consultancies, they may provide related background information.

The ESIA shall be prepared to a level of detail specific enough for incorporation into a tender package for potential construction works, to allow these activities to be adequately priced and become part of the successful bidder's works contract. The aim is to integrate environmental and social considerations into the design and foster on the ground implementation of sustainable measures during execution of the proposed investments.

Specific objectives of the assignment are to:

- a. Identify and assess potential environmental and social impacts that are likely to emanate from the construction/provision of the various interventions;
- b. Analyze alternative sites, infrastructure and interventions that may pose less environmental and social damage than the proposed interventions;
- c. Recommend feasible and cost-effective measures and processes to mitigate or enhance potential adverse and positive environmental and social impacts that could emanate from implementation of the subproject;
- d. Prepare an Environmental and Social Management and Monitoring Plan (ESMMP)/Environmental and Social Management Plan (ESMP) for mitigating the potential environmental and social impacts of the proposed interventions and for monitoring the effectiveness of the mitigation measures, and
- e. To integrate environmental and social considerations into the technical engineering designs of the interventions and foster on the ground implementation of sustainable measures during execution of the proposed investments.

The Government, through the MWH, intends to engage the services of a qualified and experienced consulting firm (hereinafter referred to as "the Consultant") to carry out the ESIA of the proposed participatory urban upgrading works as detailed out in the preceding paragraphs and prepare the ESIS. The purpose of this TOR is to provide the terms and conditions to guide the Consultant in the conduct of the ESIA.

5. Scope of the Assignment

The ESIA shall be undertaken in accordance with the requirements of Ghana's Environmental Assessment Regulations, 1999 (LI 1652) and the Ghana EIA Procedures as well as the World Bank Group's Environmental Health and Safety Guidelines (EHSB). The key stages in Ghana's EIA procedures are presented below and these will inform the scope of works for the consultancy:

- Registration of the project with EPA;
- Scoping study of the project and preparation of a scoping report, and
- Environmental and Social Impact Assessment (ESIA) of the project and preparation of Environmental and Social Impact Statement (ESIS).

5.1 Registration of the subproject with EPA

Prior to the study, the Consultant will work with the MWH/GARID Project Coordinating Unit (PCU) to facilitate the registration of the proposed subproject by filling and submitting an Environmental Assessment Registration Form to EPA. This will pave the way and begin formal engagement with the EPA on the environmental permitting process.

5.2 Scoping study of the project and preparation of a scoping report

The first stage in the ESIA process involves a scoping study. The purpose of the scoping study is to gain an overall understanding of the biophysical and socioeconomic baseline situation and provide an overview of the range, depth and trend of issues to be subsequently studied in detail during the main ESIA. Specifically, the Consultant shall be expected to:

- Collect information on baseline bio-physical and socio-economic conditions and developments in the community which would aid the prediction of impacts. The proposed methods and approach to data collection should be clearly described, including all field studies that will be conducted during the ESIA to establish the baseline biophysical and human environments and to aid in the identification and assessment of potential environmental and social impacts;
- Identify and consult all relevant stakeholders in the area of influence of the proposed interventions, including
 - Government Ministries, Departments and Agencies (MDAs);
 - Metropolitan/Municipal Assemblies;
 - Potential project affected persons and businesses;
 - Landowners;
 - Owners of potential project affected properties;
 - Utility companies, and

- Non-Governmental Organisations (NGOs)/Community-Based Organizations (CBOs).

Based on the stakeholder identification, the Consultant will develop methods/approaches to engage and communicate effectively with the stakeholders. The Consultant shall liaise with MWH and agree on the approach and the information that will be disclosed about the investments, in order to manage expectations of residents of the community. The Consultant will prepare a record of stakeholder interests, concerns, comments and suggestions in the form of an Issues and Response Report, which will accompany the Scoping Report and serve as a guide for continuous consultation during the preparation of the ESIA. A Stakeholder Engagement Plan (SEP) will also be prepared for implementation during the ESIA phase to facilitate a comprehensive engagement of relevant stakeholders. The consultant shall comply with all national, WB and WHO COVID-19 prevention and management protocols throughout the ESIA process.

- Identify the most relevant and significant environmental and social issues of concern out of a myriad of issues with the aim to focusing on them in the ESIA. The Consultant will provide an indication of the most appropriate impact identification and evaluation methodologies to be used in the ESIA. Particular attention should be paid to the (direct, indirect and cumulative) impacts that are likely to be the most significant, considering:
 - The nature/type of intervention,
 - The location of the sites in an urban setting,
 - Adjoining land uses and related activities,
 - Sensitivity of the environment,
 - The pressures resulting from the subproject, and
 - The expectations of the stakeholders.

Based on these considerations, the Consultant should identify potential impacts on the baseline biophysical and human environments;

- **Develop a draft Terms of Reference (TOR) for the ESIA.** Based on the outcomes of the scoping study, the Consultant will develop a detailed Terms of Reference (TOR) for the main ESIA to be undertaken in line with Ghana's Environmental Assessment Regulations, 1999 (LI 1652) and to satisfy the World Bank Safeguard Policy on Environmental Assessment as well as the World Bank Group's Environmental Health and Safety Guidelines (EHS). The TOR will be incorporated in the Scoping Report that will be prepared at the end of the scoping study.

5.3 Environmental and Social Impact Assessment (ESIA) of the project and preparation of Environmental and Social Impact Statement (ESIS).

The ESIA will build on activities and results from the scoping study but the level of detail shall be higher. The ESIA will involve the following tasks:

Task 1: Description of the Proposed Interventions

The consultant will work with MWH and the beneficiary MMAs to develop a detailed description of the proposed interventions. MWH will employ the services of another consultant to undertake detailed engineering design of the interventions. The ESIA Consultant for the ESIA will have to liaise with the MWH and the engineering design Consultant in developing a detailed description of the proposed interventions to support impact identification and assessment. The description of each of the interventions would include:

- Description of the type, components and specifications of the interventions;
- Site location including geographic coordinates;
- Adjoining land uses, including any proposed future developments;
- Description of construction activities and schedule;
- Description of construction materials, including quantities to be used and their sources;
- Types of equipment required for the construction, repair or demolition works;
- Labour requirements for the construction, repair or demolition works; and
- Other relevant information on the interventions.

The description will include maps at appropriate scales to illustrate the specific location of the interventions as well as surrounding areas that would potentially be affected by the implementation of the interventions.

Task 2: Policy, Legal and Regulatory Considerations

The Consultant will identify and discuss national and the World Bank's policies, regulations and standards or guidelines governing environmental assessment, environmental quality, and occupational health and safety that are applicable to the execution of the proposed interventions. The discussion will also include a gap analysis between Ghana's safeguards regulations, standards/guidelines and the World Bank's Operational Policies and General Environmental, Social, Health, and Safety Guidelines.

Task 3: Description of the Baseline Biophysical and Socio-Economic Environments

The Consultant will assemble, evaluate, and present baseline data on the biophysical and socioeconomic characteristics of the selected community to aid impact identification and assessment. In addition to the baseline characteristics of the community, the Consultant will also highlight any peculiar baseline characteristics and conditions of environmental and social interest, if any, found at particular intervention site. The Consultant will collect as much primary physical and biological environmental and socio-economic baseline data/information as relevant to the assessment,

supplementing this with available secondary data as necessary. The baseline data collection should include information on Project Affected Persons, people living with disabilities, elderly as well as community infrastructure. It is important that the Area of Influence (Aol) of the proposed activity is well defined. The environmental baseline study would include a description of the current state of the environment in the Aol, focusing on those aspects that may be influenced by the activity.

(a) Environmental Baseline

The Consultant shall assemble, evaluate and present baseline data on relevant environmental characteristics of the study area as it relates to the Project. The environmental description should be concise and focused on the potential impacts of the Project, clearly defining the area of influence. Detailed baseline data should be presented when it is relevant to corresponding mitigation measures. When extensive background information is required for documentation purposes, and/or for project files, this information should be provided in appendices. Such information should be assimilated in illustrative maps at an appropriate scale. The following will be included as part of this activity:

- **Physical environment:** Geology; topography; soils; climate and meteorology; ambient air quality; surface and groundwater hydrology; existing sources of noise and air emissions; existing water pollution discharges; and receiving waterbodies quality.
- **Biological environment:** Flora; fauna; rare or endangered species; sensitive habitats, including parks or preserves, significant natural sites, etc.; species of commercial importance; and species with potential to become nuisances, vectors or dangerous;

(b) Socio-economic Baseline

Socio-Economic Conditions: Identify and map nearby settlement features in specific areas likely to be impacted, paying special attention to communities or people potentially affected by the Infrastructure Upgrading, if any. For each community it will be necessary to collect socio-economic data as may be necessary to assess potential impacts on their income, livelihood status etc. Demographic data would include: population (size, gender and age distribution); cultural characteristics (religion, ethnic composition, languages spoken, etc.); population migration over the last few years, livelihood and economic activities; literacy rates and levels of education; community organizations and social networks; public health and safety.

Socio-cultural environment (include both present and projected): identify community structures; recreation; public health; and historical, archaeological, ceremonial and cultural resources in the impact zone/within the area of influence.

- **Infrastructure:** For each settlement potentially affected, describe the infrastructure such as access roads and traffic patterns. Public health, education infrastructure as appropriate if it is to be used or adversely affected.

- **Poverty and Social Risks** - For each settlement potentially affected, analyze the level of poverty and vulnerability, including social risks such as prevalence of sexual and gender based violence (SGBV), high-risk behaviors among youth, child and forced labor in the construction sector, community cohesiveness etc.
- **Religious Groups and Ethnic/Other Minorities** - Information on marginalized and vulnerable groups living in settlements to be impacted, including ethnic or other minority groups or other traditional cultural groups.
- **Vulnerable or disadvantaged groups** if relevant, social data should be disaggregated accordingly to the extent it is technically and financially feasible. To the extent possible demographic data should report on households with members with disabilities.
- **Legacy issues related to land use, property rights etc.**

Task 4: Stakeholder Consultation and Engagement³

The Consultant will build on the consultation and engagement activities and outcomes from the scoping phase of the assignment with the aim of engaging comprehensively with stakeholders. Consultation and engagement of the stakeholders shall be a continuous activity throughout the assignment - once during the scoping stage, another during the ESIA and upon completion of the draft ESIS. A Public Consultation and Participation Plan (PCPP) shall be prepared. This should describe a methodology for addressing substantive issues with national and local government, traditional authorities, residents of the project area of influence, academic and applied research institutes, non-governmental organizations and interested individual citizens.

The SEP prepared at the scoping phase will be implemented. It is expected that the engagement activities to be undertaken during this work will be carefully planned and agreed with the MWH, beneficiary MMAs and PCU in advance of going to site. Materials to be used during stakeholder engagement (including a ‘key messages’ document) will need to be agreed in advance with the MWH, beneficiary MMAs and PCU and all engagement activities fully documented. The outcomes of consultation with the community, PAPs and other stakeholders will be presented in an updated version of the Issues and Response Report. The Issues and Response Report will be incorporated in the draft ESIS.

The ESIA consultant will engage with the MWH and PCU to ensure that officials in-charge of procuring the works for the interventions and preparing the bidding documents are involved in the process of ESIA so that they have full understanding and ownership of the ESMP. With ownership, the officials will ensure that the ESMP gets into the bid documents and are able to effectively implement the ESMP.

³ The consultant shall comply with all national, WB and WHO COVID-19 prevention and management protocols throughout the ESIA process.

Should the EPA decide to hold a public hearing on any of the proposed interventions, the Consultant will work with MWH and the beneficiary MMA to organize and facilitate it.

Task 5: Analysis of Alternatives to the Proposed Investments

The Consultant will analyze alternatives to the proposed interventions that would meet the objective of improved infrastructure in the selected community. The analysis will include the “No Action” or “No Project” alternative (i.e. not implementing the proposed interventions) in order to demonstrate environmental and social conditions which would prevail without the implementation of the Project. In addition to the “No Action” alternative, the analysis will consider alternatives with respect to:

- Type of intervention : with respect to the proposed community upgrade, are the proposed interventions the most environmentally and socially sustainable options to achieve the project objective?
- Location: consider the proposed locations of the interventions and recommend the best locations from an environmental and social sustainability perspective;
- Design: consider whether the design criteria for the proposed interventions will lead to the provision of environmentally and socially sound infrastructure, and
- Methods of execution: consider the methods of execution of the proposed interventions and recommend measures that would have least adverse environmental and social impacts.

The Consultant will examine in detail a reasonable range of alternatives in exploring options for the construction, operation and decommissioning of the proposed interventions and identify alternatives which would achieve the same project objectives. The identified alternatives should be assessed in terms of potential environmental, social, economic (cost) and technical impacts and compare them to those of the proposed interventions. The assessment would conclude whether the findings from this comparison could improve or, in any other manner, inform the development of the Project. The analysis may recommend alternative interventions that could be more sustainable from an environmental and socio-economic and technical point of view than the originally proposed interventions. To the extent possible, the Consultant should quantify the environmental and socio-economic costs and benefits of each alternative, incorporating the estimated costs of any associated mitigation measures. In selecting the proposed design over alternatives or vice versa, the explanation should include diagrams, maps, tables, and descriptive text based on the existing information. A shorter text of the Project alternatives, understandable to the non-technical audience and for use in public consultations, should also be prepared, supported by diagrams, maps, and tables of the Project alternatives. In developing and assessing the alternatives, the ESIA Consultant will discuss such alternatives with the Design Consultant working on the engineering designs and with MWH prior to presenting them in the ESIS.

Task 6: Analysis of the Potential Impacts of the Proposed Investments

The Consultant will present a detailed analysis of the impacts of the execution of the interventions on the biophysical and socio-economic environments. This analysis will build on the preliminary identification and assessment of impacts presented in the scoping report. The Consultant will identify, categorise and assess the project's key environmental and social impacts.

Due to the location of the intervention sites in heavily built-up areas, the Consultant shall give due consideration to the identification of impacts on, among others:

- Public health and safety;
- Ambient air quality and odour;
- Ambient noise and vibration;
- Soils (erosion and contamination);
- Surface water resources (quality and flow characteristics), including storm water, floods and climate change;
- Utilities (disruption to electricity, water, sanitation and telecommunications);
- Transportation networks and accessibility;
- Land use and economic activities;
- Solid and liquid waste management;
- Occupational health and safety;
- Labour influx;
- Cultural heritage and archaeology;
- Vulnerable Groups (including people living with disabilities in the area, youth, children and analysis of how the proposed activities will impact them), and
- Gender issues, including Gender-Based Violence (GBV) and Sexual Exploitation and Abuse (SEA), and
- Child labour

Task 7: Formulation of Appropriate Mitigation and Enhancement Measures

The Consultant, in discussion with officials of MWH, PCU, Project Support Units of Okaikwei North Municipal Assembly and the technical engineering Design Consultant, will recommend measures to mitigate the negative environmental and social impacts or to enhance the positive impacts. These measures must be technically feasible, socially acceptable (i.e. they must take into account the views of the main stakeholders) and cost-effective. The mitigation and enhancement measures will be specifically tailored to the impacts in order to achieve the aim of avoiding or limiting the negative effects of the Project. Where feasible, the measures should be embedded in the technical engineering designs to mitigate or enhance the identified impacts. Also, the Consultant shall prepare a "chance find" procedure to be included in the ESIA for

use if unanticipated archaeological, historical and sacred sites or materials are encountered during construction works.

As detailed below, there should be clear distinction between the measures associated with the construction and operation phases of the project. Each mitigation measure should be described in as much technical detail as possible and include the type of impact to be minimized or mitigated, the conditions under which it is required, along with designs, equipment descriptions, and operating procedures. For impacts that cannot be mitigated (residual impact), the Consultant will rate their significance, assess their acceptability and propose compensatory mitigation measures or compensation to the affected parties. The mitigation measures relate broadly to:

- i) *Construction Phase: Construction Spoils - Plan to manage the disposal of construction spoils generated in an environmentally-friendly manner; Erosion and Sediment Control Mitigation measures to minimize sediments carried by runoff from entering surface water drainage systems; Fugitive Dust Mitigation Plan to control fugitive dust control emissions during construction activities; Noise and Vibration Mitigation Plan to control noise and vibration impacts on the surrounding communities; Occupational Health and Safety Plan to ensure workers protection and safety; Public Health and Safety Plan to ensure local communities protection; Re-vegetation and Natural Habitat Mitigation Plan to ensure re-vegetation of areas disturbed by construction activities; Traffic Control, Public Safety and Public Communications Plan to minimize the disruption of daytime traffic flows along important access roads in the areas; Archaeology/Cultural Resources Mitigation Plan to mitigate any archeological or cultural impacts that may be encountered during construction; Worker Safety Plan to identify standards for protection of workers including onsite training and proper safety equipment; Labor Influx Management Plan and/or a Workers' Management Plan that outlines measures to manage laborers without hindering social and communal life of the communities; Grievance Redress Mechanism (GRM) that allows the public and PAPs to lodge their concerns and complaints and Public Consultation and Community Communications Plan to inform the Stakeholders and the Public.*
- ii) *Operations Phase: Community safety and issues related to Public Consultation and Community Communications Plan for Operations Activities that considers all impacts and mitigations related to air pollution (dust and odour), noise, traffic safety, accident prevention and so on.*

Task 8: Development of an Environmental and Social Management and Monitoring Plan (ESMMP)

The Consultant will develop an Environmental and Social Management and Monitoring Plan (ESMMP) to be used as a tool for the effective implementation and monitoring of the impact mitigation and enhancement measures. The ESMP should clearly translate the mitigation proposals from the ESIA into an operational plan and develop environmental and social monitoring required during the construction, operational and

decommissioning phases of the Project. It should identify the parties responsible for implementation of each mitigation measure including measures needed to address emergency response requirements for accidents.

The mitigation measures component of the ESMMP should include a table showing impacts of construction, operational and decommissioning phases for all key project components. The matrix should include: (i) significant potential impacts; (ii) proposed mitigation measures and their timing; (iii) the party responsible for implementing the mitigating measures and (iv) estimated budget of the proposed mitigation measures and the responsible financial entity.

The ESMP will include appropriate indicators and parameters to be monitored, frequency of monitoring, responsibility for monitoring, and the system for reporting the results. The monitoring plan will enable the EPA, World Bank, MWH and PCU to confirm the accuracy of the impact assessment and the effectiveness of the mitigation measures contained in the ESIS.

To ensure that the ESMMP is properly executed, the Consultant will: a) evaluate the capacity of the implementing institution and/or contractors to develop and implement an environmental management plan for the construction and operation of the proposed project; b) identify environmental and social personnel, resources and training required for successful construction and operation of the various components of the Project (such as wastewater treatment plants); and c) liaise with MWH to ensure that the capacity strengthening and training in environmental and social management are included as part of the capacity building and training of the implementing agencies.

Institutional structure and strengthening as well as the budget for implementation of the ESMP should be proposed and included in the ESIS.

To support the ESMP, the Consultant will provide, as annexes, outlines of related management plans that will have to be prepared and implemented by contractors during the construction and operational phases of the project. The plans include but are not limited to:

- Construction Environmental and Social Management Plan;
- Public Health and Safety Management Plan;
- Air Quality and Odour Management Plan;
- Noise Management Plan;
- Occupational Health and Safety Plan, and
- GBV Prevention and Management Plan.

Task 9: Environmental and Social Impact Statement Preparation

The Consultant will prepare an ESIS at the end of the ESIA. The ESIS will be a compilation of the outcomes of activities undertaken during the ESIA.

6. Deliverables

The following reports shall be prepared and presented by the Consultant to MWH through the PCU:

i. Inception Report

The Consultant will prepare and submit three (3) hard copies and an electronic copy (in MS Word and pdf) of the Inception Report within **two (2) weeks** from the Commencement Date of the contract. The Inception Report will be reviewed by the MWH, PCU and the World Bank's Safeguard Specialists within one (1) week of submission.

The Inception Report will essentially be a report on, among others:

- Activities undertaken since the signing of contract for ESIA preparation;
- Data/information collected during the inception phase and any identified gaps;
- Preliminary findings at the sites and environs;
- Meetings held including those with Stakeholders and the outcomes;
- Project documents reviewed and any additional literature required for the study, and
- A detailed work plan for the assignment.

ii. Scoping Report

The Consultant will prepare and submit eight (8) hard copies and an electronic copy of the Scoping Report (in MS Word and pdf) to MWH within six (6) weeks from the commencement date of the contract, i.e. **4 weeks** after submission of the Inception Report.

The outline for the Scoping Report, with the TOR for the ESIA, as provided by EPA, is presented in Annex 2. The scoping report will be submitted to the EPA, MWH, PCU and World Bank for review and agreement on the TOR for the ESIA.

iii. Draft Environmental and Social Impact Statement (ESIS)

As with the preparation of the Scoping Report, the Consultant will prepare an Environmental and Social Impact Statement (ESIS). The Consultant will prepare and submit eight (8) hard copies and an electronic copy (in MS Word and pdf) of the draft ESIS to MWH and PCU, within **eight (8) weeks** after MWH /PCU provides the Consultant with a compilation of review comments on the Scoping Report. The draft ESIS shall be submitted to the EPA and World Bank for review and feedback. The draft ESIS shall also be subject to a public review (consistent with the Ghana EA regulations) to allow for public feedback and comments.

In preparing the ESIS, the Consultant will be informed by the EPA's Guidelines for the Preparation of Environmental Impact Statement, which is attached in Annex 3.

iv. Final Environmental and Social Impact Statement (ESIS)

The ultimate deliverable of this assignment will be a final ESIS. The final ESIS shall incorporate comments and feedback collated during the public review of the draft ESIS by the requisite stakeholders. The Consultant will submit six (6) hard copies and an electronic copy (in MS Word and pdf) of the final ESIS to MWH/PCU, within two (2) weeks after receipt of the compilation of review comments on the draft ESIS from the PCU.

The deliverables and time schedules are presented in the table below:

	Reports	Time schedule	No. of copies of Report
1	Inception Report	To be submitted within 2 weeks from commencement date of contract	Three (3) hard copies and a soft copy
2	Scoping Report	To be submitted within 4 weeks after submission of the Inception Report	Eight (8) hard copies and a soft copy
3	Draft ESIS	To be submitted within 8 weeks from date of acceptance of the Scoping Report	Eight (8) hard copies and a soft copy
4	Final ESIS	To be submitted within 2 weeks after Consultant is provided with review comments on draft ESIS	Six (6) hard copies and a soft copy

7. Disclosure

The MWH's Project Implementation Unit (PIU), with the support of GARID Project Coordinating Unit (PCU), will facilitate the disclosure of the final ESIS by making copies available to the World Bank and the Project Support Units (PSUs) of the beneficiary Metropolitan and Municipal Assemblies. The Consultant will work with the Ministry and PCU to facilitate disclosure of the ESIS at the local/community level in the local language. The World Bank will also facilitate the disclosure of the final ESIS on the Bank's external website.

8. Duration of Contract

The Contract will be for a period of 16 weeks over 10 man-months.

9. Required Expertise

The Consulting firm/Consultant must be legally registered as an environmental consulting firm. Other characteristics of the Consultant include:

- Must have been in the business of undertaking environmental and social impact assessment over a period of not less than 10 years;
- Should be registered with a relevant environmental regulatory institution;
- Must have past experience in undertaking ESIA on development projects, and
- Must have requisite management in place.

The firm will field a team of specialists, as indicated below, under the leadership and supervision of a Lead Consultant. The CVs of the specialists should be included in the proposal.

i. Lead Consultant

The Lead Consultant must possess a degree in Environmental Science/Engineering, Civil Engineering, Development Planning or in a related discipline. A post-graduate qualification in a relevant discipline will be an advantage. In addition, the Lead Consultant must:

- Be recognized by Ghana's EPA or an environmental regulatory/certification institution in the firm's country of operation as an ESIA Consultant;
- Demonstrate proven and documented working experience with Ghana's environmental assessment regulations and procedures and the World Bank's Environmental and Social Standards;
- Have a minimum of ten (10) years of relevant experience in undertaking ESIA;
- Have led the ESIA of, at least, 15 projects;
- Have led the ESIA of, at least four community upgrading projects or development projects;
- Be a member of a professional body or association of impact assessment practitioners;
- Experience in working on Ghana government project(s), and
- Proficiency in English (oral and written).

ii. Social Development/ Community and Stakeholder Engagement Specialist

The Social Development/Community/Stakeholder Engagement Specialist must have a degree in Development Planning, Sociology, Geography or a related discipline. A post-graduate qualification in a relevant discipline will be an advantage. The Social Development Specialist must also:

- Have, at least, seven (7) years of relevant experience in the field of social impact assessment or social development;
- Have experience in working with a wide spectrum of stakeholders including PAPs, local communities, governmental and non-governmental institutions, and civil society organizations and other relevant stakeholders;
- Have working knowledge of Ghana's environmental assessment regulations and procedures and the World Bank's Environmental and Social Standards;
- Have received training in environmental and social safeguards;
- Have participated in the ESIA of, at least, 10 projects, 2 of which must be on community upgrading or development projects;

- Proficiency in English (oral and written). Knowledge of a local language in the subproject area will be desirable.

iii. Environmental Specialist/Ecologist

The Environmental Specialist/Ecologist must have a degree in Environmental Science, Ecology or related field. A post-graduate qualification in a relevant discipline will be an advantage. The Specialist must also:

- Have, at least, seven (7) years of relevant experience in the collection of baseline data, impact analysis and management of environmental impacts;
- Have working knowledge of Ghana's environmental assessment regulations and procedures and the World Bank's Environmental and Social Standards;
- Have received training in environmental and social safeguards;
- Have participated in the ESIA of, at least, 10 projects, 2 of which must be on community upgrading or development projects;
- Proficiency in English (oral and written). Knowledge of a local language in the subproject area will be an added advantage.

iv. Urban Planner

The Urban Planner must have a degree in Urban Planning, Land Use Planning or a related field. A post-graduate qualification in a relevant discipline will be an advantage. The Planner must also:

- Have, at least, seven (7) years of relevant experience in planning urban landscapes;
- Have working knowledge of Ghana's environmental assessment regulations and procedures and the World Bank's Environmental and Social Standards;
- Have received training in environmental and social safeguards;
- Have participated in the ESIA of, at least, 10 projects, 2 of which must be on community upgrading or development projects;
- Proficiency in English (oral and written). Knowledge of a local language in the subproject area will be an added advantage.

v. Other Support

In addition to the above personnel, the Consultant may require expertise in wastewater treatment, solid waste management, geology (site investigations); land use planning (land use, aesthetics and topography), hydrogeology and hydrology (surface and ground water), economics, and institutional specialist (organisations)

10. Reporting Relationship

The Consultant shall submit the Inception Report, Scoping Report, draft ESIS and final ESIS under official cover letter to MWH, attention to the GARID Project Coordinator, in a timely manner. The PCU will facilitate the submission of the reports to the MWH, EPA, the World Bank and other relevant institutions for review.

11. Client's Input

The MWH and/or GARID PCU will provide the Consultant with the following:

- i. Any available documents on the proposed infrastructure and selected communities, including maps, technical engineering designs, etc;
- ii. GARID Project Environmental and Social Management Framework;
- iii. GARID Project Resettlement Policy Framework;
- iv. Facilitation of access to the community and sites for the interventions;
- v. Facilitation of access to the Consultants preparing Feasibility Study and Engineering Design of the Project;
- vi. Facilitation of meetings with officials of MWH, PCU, the World Bank (if necessary) and relevant Municipal Assemblies; and
- vii. Technical support by GARID Project's Environmental and Social Safeguards Specialists, if necessary.

ANNEX 1: LOCATIONAL MAP/SITE PLAN OF THE PROPOSED SITES

Location Map of Alogboshie



ANNEX 2: SCOPING REPORT OUTLINE

- 1. Introduction**
 - Project Background
 - Purpose/objectives of the scoping
 - Justification for the project
 - The scoping process/methodology

- 2. Policy, Legal, Regulatory and Institutional Framework (relevant ones)**
 - Relevant policies (including Climate Change and Gender related policies, the GH-NDCs, etc),
 - Legislative and Regulatory Framework
 - International Conventions and requirements (where applicable include: the SDGs, AU Agenda 2063, and the Paris Agreement etc.)
 - Detail out how they relate to the project

- 3. Description of the Project**
 - Project location and adjoining land uses
 - Key project components in terms of processes, raw materials, equipment, human resource requirements, etc
 - Sub-project components
 - Outline any climate change related features/components of the project
 - Auxiliary components

- 4. Baseline (highlights on the affected environment in terms of project location and adjoining land uses)**
 - Bio-physical (including climate change related issues), socio-economic, cultural and institutional issues

- 5. Public Participation/Stakeholder Engagement**
 - Stakeholders Identified (categories)
 - Engagement Approaches/tools/methods
 - ✓ Public notices
 - ✓ One-on-one
 - ✓ Key persons interview
 - ✓ Focus group discussions/interviews
 - ✓ Emails
 - ✓ etc
 - Issues /concerns of stakeholders
 - Issues-Response (Matrix)

- 6. Alternatives (based on sections 3, 4 and 5)**
 - Location
 - Technology
 - Raw materials
 - Access

- Etc
- 7. **Key Issues for consideration in the EIS, including climate change related issues. (focus on significant impacts)**
- 8. **Terms of Reference (ToR) for Environmental and Social Impact Assessment**
- 9. **Annexes/Appendices**
 - This should include: Site and Block plans, maps, correspondences, , evidence of consultations, etc.

ANNEX 3: GUIDELINES FOR THE PREPARATION OF ENVIRONMENTAL AND SOCIAL IMPACT STATEMENT (ESIS)

COVER PAGE

Name of Company/Proponent:

Title of Report:

Name of Consultant (s)

Month and year of submission

SIGNATURE PAGE

Leader Team of Consultant

Name: Signature

Acceptance and declaration by Proponent

Name Signature

The EIS should be presented under the following headings

- ❖ Non-Technical Executive summary
- ❖ Introduction
- ❖ Policy, Legislative and Administrative Requirements
- ❖ Description of proposal and alternatives
- ❖ Description of existing environment/baseline
- ❖ Stakeholder consultation
- ❖ Impacts identification and significance
- ❖ Mitigation and enhancement measures
- ❖ Provisional Environmental Management Plan
- ❖ Reclamation/Decommissioning
- ❖ Conclusion

Non-Technical Executive Summary

The Non-Technical Executive Summary should contain all aspects and findings of the Environmental Impact Study including the following:

- ❖ The scope, purpose and objectives of the project
- ❖ Brief project description
- ❖ The legal basis of the project
- ❖ Brief explanation of the methods by which information and data were obtained
- ❖ Brief on the baseline data
- ❖ Impacts identified and their mitigation
- ❖ Monitoring
- ❖ Any other critical matters

Chapter One (1): Introduction

This section should highlight the need for and aims of the proposal and alternatives. It should also include

- ❖ The purpose and objectives of the undertaking
- ❖ The aims of the environmental assessment and how those aims are to be achieved.
- ❖ Methods by which information and data were obtained

Chapter Two (2): Policy, Legislative and Regulatory Requirements

- ❖ Provide an overview of:
 - Relevant Policies (including Climate Change and Gender related policies, the GH-NDCs, the SDGs, AU Agenda 2063 etc),
 - Company's Corporate Environmental Policy should include sustainability issues particularly Climate Change and Gender related issues
 - Legislative and Regulatory Framework that necessitates the EIA
 - Act 490, LI 1652
 - Sector laws
 - International Laws and Conventions requirements (where applicable),
- Detail out how the policies and regulations listed above relate to the project

Chapter Three (3): Project Description and Alternatives

The following should be provided under this section

- ❖ The location (GPS coordinates), land take, design, size and scale of the development, components of the project, the nature and duration of constructional and operational activities with diagrams, plans, charts and/or maps
- ❖ Description of adjoining land uses and land use requirement

- ❖ Description of constructional activities (proposed works; source and quantities of materials)
- ❖ Description of the physical characteristics, scale and design, quantities of material needed during construction and operation, description of the production processes.
- ❖ Description of operational phase (processes or activities; scope; facilities and utility services required; all outputs (products and wastes)
- ❖ Description of the possible implication of the project on climate change and vice-versa⁴
- ❖ Description of other development (off-site areas or facilities affected by the project)
- ❖ Numbers of workers involved with the project during both construction and operation
- ❖ The types and quantities of waste generation including emissions, heat/noise/radiation discharges, deposits and residuals (where applicable) and the rate at which these will be produced, are adequately estimated. Uncertainties are acknowledged and ranges or confidence limits given where possible.
- ❖ Alternative sites, processes, designs and operating conditions where these are practicable and available to the developer. The main socio-cultural, economic, institutional and environmental advantages of these should be discussed and the reasons for final choice given. All the alternatives should take into account Climate Change Mitigation and Adaptation issues and must be environmentally sustainable. Where alternatives are not considered, explain.

Chapter Four (4): Description of Existing Environment/Baseline

This chapter should discuss the biophysical, socio-cultural, economic and institutional environment of the proposed undertaking (project) to include:

- ❖ The land area taken up by the development, its location clearly shown on a map and GPS coordinates provided
- ❖ Climatic and atmospheric conditions; (temperature, wind speed and direction, humidity, rainfall, air quality, sources of air pollution etc.);
- ❖ Climate zone (refer to the GMet Climate Zones classification) within which the project is located
- ❖ Geology: (soil characteristics, geologic hazards); hydrology (surface water, aquifers, watersheds, water quality etc.);

⁴ The section should also capture other innovative technologies that address climate change such as the use of biogas technology, rain water harvesting etc.

- ❖ Ecology: (flora and fauna, habitats, endangered species, environmental stresses);
- ❖ Land use/ landuse change: (agriculture, forests, industrial, commercial, residential), transportation routes such as roads, rail, water and air, utility corridors
- ❖ Noise levels
- ❖ Air quality including Potential sources of Greenhouse Gases (GHGs), where applicable
- ❖ Demography: (population composition and distribution, socio-economic conditions, cultural and ethnic diversity, population growth rate, people living with disability, school children,);
- ❖ Employment and labour, including child labor;
- ❖ Sensitive Site features (religious structures, cemetery, fetish grove, etc)
- ❖ Social services: (electricity, telecommunication, water supply, hospitals, sanitation facilities etc);
- ❖ Cultural heritage: (unique features of the area or its people; festivals etc).

The following must be noted:

- ❖ It is important to note that only relevant considerations to the project should be discussed (parameters to the project should be considered).
- ❖ The methods and investigation undertaken for collection of baseline data should be provided.
- ❖ Existing data used should be well referenced.

Chapter Five (5): Stakeholder consultation

This chapter should:

- ❖ Identify all relevant stakeholders pertaining to the sector and project.
- ❖ Outline concerns of the stakeholders
- ❖ Describe how the national and WHO COVID-19 prevention and management protocols will be integrated into the exercise
- ❖ Provide evidence and outcomes of the consultation

Chapter Six (6): Impacts Identification and Significance

- ❖ All key issues identified in the terms of reference (from the scoping report) should be included in the report.
- ❖ It is important to set impact boundaries (geographical area of influence) to limit the amount of information to be gathered and analysed.
- ❖ Identify potential impacts for all phases of the project (i.e. pre-construction, construction, operation and decommissioning)

- ❖ The identified Impacts should be presented based on the following categories/attributes: nature, duration, spatial extent, reversibility, direct and indirect impacts, short term and long term, positive or negative, cumulative, etc.
- ❖ Stakeholder (interested and affected) concerns should be accounted for in the identification of impacts
- ❖ Methodology for the identification of impacts should be well presented using the following (where applicable) matrices, checklists, expert opinion, modelling, GIS, Climate Change Vulnerability Assessment /Climate Trend Analysis among others.
- ❖ Climate change tools for profiling Climate Change Risk and emission foot prints as well as opportunities for building resilience and reducing emissions.
- ❖ Impacts should be analysed as the deviation from baseline conditions, i.e. the difference between environmental conditions expected if the development were not to proceed and those expected as a consequence of it; and sufficient data produced to support the analysis of the impact.
- ❖ Assess the significance of impacts using appropriate national and international quality standards where available.
- ❖ The methods used to analyse and predict the significance of impacts should be described

The impact significance identified should be based on the following:

- The extent of impact coverage, intensity in concentration in relation to assimilative capacity of the recipient medium,
- The exceedances of environmental guidelines, standards or thresholds,
- Non-compliance with land use policies and plans
- The effects on ecological sensitive areas and heritage resources
- The effects on community life styles, traditional land uses, and socio-cultural values

The assessment of significance should also be based on environmental guidelines, standards and thresholds, socio-cultural and economic values, health and safety, and ecological importance of the resource. The determination of significance must also take into consideration Climate Change issues.

Chapter Seven (7): Mitigation and enhancement measures

- ❖ The mitigation of all significant impacts should be considered and specific mitigation measures defined in practical terms (e.g. costs, equipment and technology needs, timing). The mitigation exercise should address Climate Change issues and concerns. Measures proposed for enhancement of all beneficial impacts should be provided in practical terms.

- ❖ Proposed ways of handling and/or treating wastes and residuals where applicable should be indicated, together with the routes and mode by which they will eventually be disposed of to the environment.
- ❖ The extent of the effectiveness of the mitigation measures should be presented and where the mitigation measure is uncertain or depends on assumptions about operating procedures, climatic conditions, etc data should be provided to justify the acceptance of these assumptions

Chapter Eight (8): Provisional Environmental Management Plan

- ❖ Comprehensive listing of the mitigation measures (actions) that the Project will implement at all phases should be provided in a proposed action plan, the action plan below gives an example:

Impact	Identified mitigation action	Actual action	Objective	Target	Budget	Time frame	Responsibility
Waste generation	Waste recycling	Installation of a waste recycling plant	To reduce the amount of waste landfilled	Recycle 80% of waste produced	GHS 60,000	Jan to June 20--	Environmental Officer

- ❖ Environmental quality parameters that will be monitored to track how effectively actions and mitigation would be implemented should be presented in a tabulated monitoring plan. An example is given in the table below

Monitoring plan

No	What to monitor (parameter)	When to monitor (frequency)	How to monitor (methods)	Who monitors	Budget
1	Noise	Weekly	Noise meter	Production Manager	GHS 10,000

Chapter Nine (9): Conclusion

The general conclusions of the study should be presented in this chapter:

- ❖ Consideration should be based on the pillars of sustainability (economic viability, socio-cultural acceptability, institutional arrangements and the environmentally friendly or benign) amongst others.