MINISTRY OF LOCAL GOVERNMENT AND RURAL DEVELOPMENT (MLGRD)

GREATER ACCRA METROPOLITAN AREA (GAMA) SANITATION AND WATER PROJECT

Construction of Road Culvert Drains in GAMA –

KANESHIE 1ST LIGHT DRAIN

FINAL ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

April 2017

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ACRONYMS AND ABBREVIATIONS

AMA	Accra Metropolitan Assembly
BoQ	Bill of Quantities
DUR	Department of Urban Roads
EHSD	Environmental Heath and Sanitation Department
EPA	Environmental Protection Agency
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FMP	Facilities Management Plan
GAMA	Greater Accra Metropolitan Area
GoG	Government of Ghana
GWCL	Ghana Water Company Limited
IUCN	International Union for Conservation of Nature
JHS	Junior High School
LI	Legislative Instrument
MA	Municipal Authority
MLGRD	Ministry of Local Government and Rural Development
MMA	Metropolitan and Municipal Assembly
MMDA	Metropolitan, Municipal and District Assembly
OP	Operational Procedures
PPE	Personal Protective Equipment
SHEP	School Health Education Programme
S&W	Sanitation and Water
ToR	Terms of Reference
WB	World Bank
WC	Water Closet
WD	Works Department

EXECUTIVE SUMMARY

The Government of Ghana (GoG) has received financing from the World Bank towards the cost of implementation of the Greater Accra Metropolitan Area (GAMA) Sanitation and Water Project (GAMA S&W Project).

The Government, through the Ministry of Local Government and Rural Development (MLGRD) intends to apply part of the GAMA S&W Project funds to undertake emergency priority drainage intervention to alleviate the situation in flood prone areas by constructing reinforced concrete open and box culverts on some priority roads in the GAMA area where storm water pose a severe risk for environmental sanitation management, lives and economic activities.

Ghana's Environmental Assessment Regulations, 1999 (LI1652) requires that for any start-up project which has potential to impact negatively on the environment and people, the undertaking should be assessed for its environmental and social impacts, and the appropriate mitigation measures identified prior to the undertaking for implementation. The Project has also triggered the World Bank Safeguards policies: ***Environmental Assessment Policy OP4.01*** and the ***Involuntary Resettlement Policy OP4.12.*** These require that any potential environmental and social issues arising from the project implementation should be mitigated.

The Ministry of Local government and Rural development, in seeking to address the flood risk situation on the drains intends to comply with these frameworks (ESMF and RPF) and other relevant national laws, has contracted Messrs SAL Consult Limited to prepare an Environmental and Social Management Plan (ESMP) for the proposed **drain construction at Kaneshie (Accra Academy)** in accordance with the Environmental Assessment Regulations (EAR) 1999, LI 1652 and the World Bank's Safeguards Policy on Environmental Assessment (OP 4.01) and the Involuntary Resettlement Policy OP4.12.

Proposed Drains to be provided by Project

The proposed drain to be constructed at Kaneshie will comprise of the following:

i. 540m x 4.0m x 2.0m (length x width x depth) box drain;
ii. 6.0m x 3.5m x1.5m (length x width x depth) open drain; and
iii. 80.0m x 3.5m x 1.5m (length x width x depth) open drain.

The construction works will include site clearance, excavation of land and drain to remove concrete and debris using heavy duty equipment, cutting of access roads, removal of existing box culverts on the roads and their reconstruction, concrete works to line the drains, approach filling and road diversions.

Approach and Methodology for ESMP

The approach and methodology adopted for the ESMP study include:

- Site inspections;
- Stakeholder Consultation;
- Review of available literature;
- Land Use Studies;

- Socio-economic Studies; and
- Reporting.

Relevant Policies, Legal and Administrative Frameworks

The relevant national policies to guide the implementation of the proposed drain construction include the following:

- The National Environment Policy (2013);
- The National Environmental Sanitation Policy dated April 2010;
- National Health Policy (2007);
- Riparian Buffer Zone Policy, 2011;
- National Urban Policy Framework and Action Plan, 2012; and
- National Water Policy.

The relevant national laws and legislation particularly to guide the preparation of the ESMP for the proposed project include the following:

- The Constitution of Ghana ;
- The State Lands Act, 1962;
- The Lands (Statutory Wayleaves) Act, 1963;
- Lands Commission Act 2008, Act 767;
- Environmental Protection Agency Act 1994, Act 490;
- Environmental Assessment Regulations 1999, LI 1652;
- Fees and Charges (Amendment) Instrument 2015 (LI 2228);
- Water Resources Commission Act 1996, Act 522;
- Local Government Act, 1993 Act 462;
- Lands (Statutory Wayleaves) Act, 1963 (Act 186);
- The State Lands Act, 1963 (Act 125);
- Lands Commission Act, 2008 (Act 767);
- The Labour Act, 2003 (Act 651); and
- Workmen's Compensation Law, 1987, PNDCL 187.

Institutional Framework

The ministries with responsibilities for drainage are the Ministries of Water Resources, Works and Housing and the Ministry of Highways and Roads, via the National Environmental Sanitation Policy, which has devolved responsibilities for sanitation and hygiene to the local level, the Ministry of Local Government and Rural Development is also involved.

The responsibility for primary drains lies with the Hydrological Services Department (HSD) under the MWRWH. The responsibility for the construction of secondary and certain tertiary drains lies with the Department of Urban Roads (DUR), a civil service organization under the Ministry of Roads and Highways. While DUR funds, procures and supervises the execution of works, these responsibilities are gradually devolved to the MMDA.

Description of Environmental and Social Impacts

Activities of potential environmental and social impacts identified with the proposed project are outlined under four (4no.) main phases of the project activities; namely preparatory; construction; operations and maintenance and decommissioning phases.

Preparatory Phase Impacts

The potential significant environmental/social impacts associated with preparatory phase activities include:

- Land/wayleave Acquisition and compensation issues; and
- Occupational Health & Safety and Traffic/Public Safety Issues

Constructional Phase Impacts

The potential significant environmental/social impacts associated with constructional phase activities include:

- Loss of vegetation and impacts on fauna;
- Water Pollution/Soil Disturbance and Erosion and impact on aquatic life;
- Air quality deterioration;
- Vibration and noise nuisance;
- Visual intrusion;
- Generation and disposal of solid waste;
- Occupational health & safety;
- Public safety & health issues;
- Flooding;
- Impact from the influx of Labour; and
- Sanitation and public health.

Operational and Maintenance Phase Impacts

The potential adverse environmental impacts associated with operational and maintenance phase activities include the following:

- Waste disposal;
- Water quality deterioration;
- Public health and safety;
- Occupational health and safety; and
- Sustainability of the drains/risk of flooding.

Operational and Maintenance Phase Impacts

The potential adverse environmental impacts associated with such decommissioning phase activities include the following:

- Occupational/public safety and traffic concerns; and
- Waste management and disposal.

Mitigation/Action Plan

Mitigation and management measures for the significant adverse impacts are stated below.

Mitigation measures/actions for potential significant adverse impacts

No.	Environmental/ Social Component	Proposed Mitigation Measures (Tick)	Monitoring Parameters	Monitoring Site	Frequency	Responsibility (Implementation/ Supervision)
PPREPARATORY/ PLANNING PHASE						
1.	Land/wayleave Acquisition and compensation issues	• Complete the preparation of an ARAP for the project prior to the resumption of construction. • Consult affected property owners/users and seek their consent prior to commencement of construction works. • The contractor will be required to allow the affected person to harvest any matured plantains before destroying or removing the plant. • Ensure fair and adequate compensation is paid to all affected persons prior to commencement of construction activities	- evidence of compensation payment - evidence of reinstatement of affected property	Drain corridor	Monthly. After valuation	MLGRD
CONSTRUCTION PHASE						
1.	Loss of vegetation	• Vegetation clearance will be limited to only the area required for construction. • The drain will be constructed in sections of between 50m to 100m and the same applies for clearing of vegetation in order to control or minimize impact on fauna within the drain corridor.	- Presence of vegetation within drain corridor	Drain corridor	Daily	Contractor/ Engineering Consultant
2.	Water Pollution/Soil Disturbance and Erosion	• Works will not be executed under aggressive weather conditions such as rains or stormy conditions. • No solid waste, fuels, or oils will be discharged into any section of the drain or waterway. • Construction will be done in sections to minimize impacts and exposure of soil. • Ensure that heaped sand delivered for construction works is covered with tarpaulin to prevent wind and water transport of soil particles • Excavated materials and soil, which cannot be used will be disposed of at sites approved by the AMA Waste Management department. • Works on exposed trenches and earth materials will, as much as possible, be completed before new earth dug and trenches are created. • Temporary sediment barriers to be installed on slopes to prevent silt from entering water courses. • Maintenance, fuelling and cleaning of vehicles and equipment to take place at off-site workshop with adequate leakage prevention measures	- Observable change in turbidity of water - Observable oil sheen - presence of stagnant water	Drain		Contractor/ Engineering Consultant

No.	Environmental/ Social Component	Proposed Mitigation Measures (Tick)	Monitoring Parameters	Monitoring Site	Frequency	Responsibility (Implementation/ Supervision)
3.	Air quality deterioration	• Soil/sand and cement loads in transit will be well covered to reduce dust levels rising above acceptable levels. • Stockpiles of exposed soil and unpaved access roads will be sprinkled with water to regulate dust levels. • Use of good quality fuel and lubricants in vehicles, equipment and machinery. • Engines of vehicles, machinery, and other equipment will be switched off when not in use. • Regular scheduled maintenance and servicing will be carried out on all vehicles and equipment to minimise exhaust emissions. • Construction and civil works will be phased out or controlled to reduce emissions from equipment and machinery in use.	-observation of air borne particulates (dust) and exhaust fumes	- Construction site -Immediate environs	Daily	Contractor/ Engineering Consultant
4.	Vibration and noise nuisance	• Excavation and construction activities will be carried out during daylight hours. • Concrete mixer and other construction machines and equipment will be located away from sensitive environmental receptors. • Construction equipment and machinery will be regularly maintained and serviced to reduce noise generation when in use. • Engines of vehicles, equipment and machinery will be turned off when not in use. • Earthworks and other construction activities will be phased out or controlled to reduce noise generation during construction.	-complaints on noise nuisance from community	- Construction site -Immediate environs	Daily	Contractor/ Engineering Consultant
5.	Visual intrusion	• Construction activities will be done in sections to reduce impacts of change and visual intrusions to the general public. • The construction sites will be hoarded off from public view. • Good housekeeping measures, such as regular cleaning, will maintained at the construction site. • Ensure an acceptable post-construction site as per provisions in the contract.	Hoarding in place	- Construction site -Immediate environs	Daily	Contractor/ Engineering Consultant
6.	Disruption of Utility Services and Damage Public infrastructure	<u>Road Cutting</u> • The contractor to ensure strict adherence to the requirements of the Department of Urban for road crossing as provided in their approval letter and the approved Traffic Management Plan. • MLGRD-PCU to publish in national newspapers announcements to inform motorist of the	- Indicators and record of the location of utility service lines - Evidence of consultations with service providers - Record of affected service	Construction site	Daily	Contractor/ Engineering Consultant/MLGRD-PCU

No.	Environmental/ Social Component	Proposed Mitigation Measures (Tick)	Monitoring Parameters	Monitoring Site	Frequency	Responsibility (Implementation/ Supervision)
		schedule for the proposed road cutting and proposed road diversion plans. • Contractor/ Engineering Consultant to closely ccollaborate with the Regional and Metropolitan Urban Roads Department to ensure that the highest standards are implemented for the road cutting and reinstatement. <u>GWCL Pipelines</u> • Contractor to collaborate with the regional engineer of the GWCL to prevent blind encroachment of the Weija-Kaneshie water supply transmission line and provide supervision of excavation works to ensure the pipelines are protected during road cutting at First Light. In this regard the Contractor must ensure the engineers from the DUR are present during road cutting. <u>Comsys Ghana Telecommunication Cables</u> • Contractor to collaborate with the engineers of Comsys Ghana Limited to temporarily relocate their cables to allow for the excavation and construction works. The cables will be reinstated on land after completion of works and provide two concrete chambers with steel plates and galvanized pipes at agreed locations. • Collaborate with the engineers of the Comsys Ghana Limited to ensure any lines damaged inadvertently are promptly repaired.	and action taken			
7.	Generation and disposal of solid waste	• Excavated earth materials will, as much as possible, be re-used for back filling purposes to reduce waste • Excavated solid waste from the drain channel that are unsuitable for backfilling will be collected onsite, allowed to drain and collected for disposal at sites approved sites in collaboration by the AMA. • Ensure that the required amounts of construction materials are delivered to site to reduce the possibility of the occurrence of excess material • Provide bins on site for temporary storage of garbage such as lubricant containers, drinking water sachets and carrier bags/packaging materials. • Ensure judicious use of construction materials such as pipes, laterites, sand, etc. to reduce waste	- Availability and use of bins - Records on frequency and location of waste disposal site of domestic and construction waste	Construction site	Daily	Contractor/ Engineering Consultant

No.	Environmental/ Social Component	Proposed Mitigation Measures (Tick)	Monitoring Parameters	Monitoring Site	Frequency	Responsibility (Implementation/ Supervision)
		• All metal scrap waste will be disposed of at sites approved by the AMA or sold to approved third party agents for use by metal companies. • Contractor to work according to a prepared and agreed Solid Waste Management Plan.				
8.	Occupational health and safety	• Engage experienced artisans for construction works. • All workers should be given proper induction/orientation on safety. • The contractors/engineering consultant to develop a Health & Safety Policy and procedures to guide the construction activities. • Regularly service all equipment and machinery to ensure they are in good working condition. • Ensure there are first aid kits on site and a trained person to administer first aid. • Provide and enforce the use of appropriate personal protective equipment (PPE) such as safety boots, reflective jackets, hard hats, hand gloves, earplugs, nose masks, etc. • Proof of competence for all equipment/machine operators will be required and established through inspection of valid drivers or operator's license or documents.	- Availability and proper use of PPEs - Adherence to health and safety procedures - Records on frequency, type and source of illness/accident/injury - Records on non-compliances	Construction site	Daily	Contractor/ Engineering Consultant
9.	Public safety issues	• Hoard off the construction sites to prevent access by unauthorised persons. • Transport of materials to the site will not be done during peak traffic hours and outside the arrival and closing times for Accra Academy i.e. between 7am to 9am and 4pm to 6pm. • Warning signs and notices will be placed at all dangerous sites, including open trenches meant for culvert construction. • Provide adequate signage to warn motorists of blockage of the outer lane (to Accra Academy) of the Kaneshie-Winneba road • Transport of materials to the site will not be done during peak traffic hours between 7am to 9am and 4pm to 6pm. • Speed limit for all vehicles and construction equipment should be less than 20km/h within the drain construction corridor. • Ensure delivery trucks hired/contracted are in good condition to prevent breakdowns on roads.	- Hoarding of project site - Records on frequency, type and source of accident/injury - Warning signs and notices in place - Schedule for transport of materials	Construction site	Daily	Contractor/ Engineering Consultant

No.	Environmental/ Social Component	Proposed Mitigation Measures (Tick)	Monitoring Parameters	Monitoring Site	Frequency	Responsibility (Implementation/ Supervision)
10.	Sanitation and public health impacts	• As a policy, open defecation is prohibited, and any construction worker found violating this policy will be sacked. • Provide waste bins at project site to minimise littering of the site, and final disposal of waste will be done at the AMA approved waste dump sites only. • Provide mobile toilet facilities for use by construction workers. The mobile toilet facilities must be regularly maintained and cleaned. • Food vendors and hawkers will be sensitized to use the public toilet facilities in the vicinity of the project area to prevent open defecation. • Drain off all trenches or excavations made during the construction to avoid the occurrence of stagnant water • Potable water in filtered water sachets from certified sources will be made available at workplaces as workers' drinking water.	- mobile toilet facilities in place - presence of stagnant water in drains - availability of potable water to worker	Construction site	Daily	Contractor/ Engineering Consultant
11.	Flooding Issues	• Ensure the drain channel is not blocked during construction to allow for continuous and flow downstream and also prevent flooding as a result increased runoff volumes during rains. • Regularly remove accumulated waste in the drains during the construction period. • Desilt the existing drain from the Accra Academy wall and provide two additional drains to channel accumulated water behind the school fence wall into the main culvert when feasible. • Ensure existing drain and its outfall is not blocked by dumping of excavated spoil on the drain corridor.	- Open outlet for runoff from the drain under construction - Extent of flooding after rains - Absence of waste from drains	Construction site	Daily	Contractor/ Engineering Consultant
12.	Impact from the Influx of Labour	• Workers will be made aware of the Code of Conduct at Induction, weekly safety meetings and Project monthly meetings. • Contractor will ensure all workers comply with the Code of Conduct on site • Appropriate punitive measure will be applied in the event of any misbehaviour by workers on site. • Open communication channels will be maintained through the grievance redress	- Workers provided with a copy of the code of conduct for site	Construction site	Daily	Contractor/ Engineering Consultant

No.	Environmental/ Social Component	Proposed Mitigation Measures (Tick)	Monitoring Parameters	Monitoring Site	Frequency	Responsibility (Implementation/ Supervision)
		mechanism to enable the community members report on any misbehaviour by workers.				
13.	Public Complaints/ Grievances	☐ Implement Grievance Redress Mechanism, which will include such elements as: ○ Lodging and registration of PAPs grievance by grievance redress committee; ○ Redress decision, feedback and implementation; ○ Dissatisfaction and alternative action; and ○ Monitoring and evaluation.	- Type and nature of complaints and concerns; - Complaint records (Record of grievance and number resolved/unresolved) - Management and Stakeholder Meetings	Project community	Weekly	Contractor/ Engineering Consultant/
OPERATIONAL PHASE						
1.	Waste generation and disposal	• Waste management Department of the AMA and Okaikoi South Sub Metro to provide and implement a schedule for the maintenance and desilting of all drains within their jurisdiction • Silt and waste from the desilting/maintenance of drains should promptly removed from the drain corridor to prevent them from being washed back into drain by runoff and also prevent nuisance to motorists and pedestrians. • Segregate waste from maintenance/desilting of drains (i.e. separate sand/silt materials from garbage), • Make available sand/silt materials obtained from desilting of drain to interested local communities and private individuals for their private projects. • Identify land requiring reclamation and send any excess silt materials to such places instead of to landfill sites. • Dispose of plastic and other garbage from maintenance and desilting activities at approved dump sites if it cannot be reused.	- Drain desilting schedule developed - Records of inspection and desilting of drains - Options for reuse of collected silt	Drain corridor	-Monthly	Contractor for Desilting (Contractor)/ Drainage Maintenance Unit (DMU), Waste Management Dept. (WMD) and EHSD of AMA & Okaikoi South Sub Metro
2.	Water Quality Deterioration	• Maintain vegetation along the drain corridor to retard erosion • Ensure that contractors do not dispose of any waste oil, or refuse into the drain. • Ensure prompt removal piles of soil and desilted materials left along drain corridor during drain maintenance/desiliting • Conduct public education and awareness campaigns on the impacts of inappropriate	- vegetation along the drain corridor maintained - presence of desilted material on drain corridor	Drain corridor	-Monthly	Contractor/ DMU, WMD & EHSD of AMA/ Okaikoi South Sub Metro

No.	Environmental/ Social Component	Proposed Mitigation Measures (Tick)	Monitoring Parameters	Monitoring Site	Frequency	Responsibility (Implementation/ Supervision)
		sanitation practices such as disposal of solid waste and dislodgement of human excrement into drains.				
3.	Public health and safety impacts	• No free range defecation will be allowed within the drain corridor during maintenance for desilting works. • Keep record of the location all water pipelines in the drain RoW Identified and marked during construction to prevent rupturing during maintenance. • Ensure that clear signage are provided for uncovered drain	- Availability of signages for uncovered drain - Complaint records (Record of grievance and number resolved/unresolved)	Drain corridor/ Community	Monthly Weekly	Contractor/ DMU, WMD & EHSD of AMA/ Okaikoi South Sub Metro
4.	Occupational Health and Safety	• Engage experienced artisans for maintenance works. • All workers should be given proper induction/orientation on safety. • Ensure contractor have a Health & Safety Policy and procedures to guide the construction activities. • Ensure there are first aid kits on site and a trained person to administer first aid. • Provide and enforce the use of appropriate personal protective equipment (PPE) such as safety boots, reflective jackets, hard hats, hand gloves, earplugs, nose masks, etc. • Proof of competence for all equipment/machine operators will be required and established through inspection of valid drivers or operator's license or documents.	- Availability and proper use of PPEs - Adherence to health and safety procedures - Records on frequency, type and source of illness/accident/injury - Records on non-compliances	Drain corridor	-Daily	Contractor/ DMU, WMD & EHSD of AMA/ Okaikoi South Sub Metro
5.	Sustainability of the drains/ Risk of Flooding	• Conduct public education and awareness campaigns on the impacts of inappropriate sanitation practices such as disposal of solid waste and dislodgement of human excrement into drains. • Sensitise the public to ensure all solid waste and silt are removed from the public drains on the national sanitation day (first Saturday of each month). • Develop and implement a monitoring and maintenance regime for the drains.	- Availability of schedule and plan awareness creation and sensitisation - Record of awareness creation and sensitization activities carried out - Monitoring and maintenance regime for the drains developed	AMA & Okaikoi South Sub Metro/ Community	Monthly	Contractor/ DMU, WMD & EHSD of AMA/ Okaikoi South Sub Metro
DECOMMISSIONING PHASE						
1.	Occupational/pu	The contractor will be required to ensure that:	- Availability and proper use	Drain	-Daily	Contractor/

No.	Environmental/ Social Component	Proposed Mitigation Measures (Tick)	Monitoring Parameters	Monitoring Site	Frequency	Responsibility (Implementation/ Supervision)
	blic safety and traffic	• personal protective gear are provided to workers involved with decommissioning of facilities and camp. • toilet facilities are available throughout the decommissioning period. • workers still have access to public toilet facilities in the communities or can be conveyed to such facilities where needed, if mobile toilet facilities have been relocated. • final movement of its vehicles and equipment comply with approved speed limits within the communities. • all community complaints are resolved before handing over drain project.	of PPEs - Adherence to health and safety procedures - Records on frequency, type and source of illness/accident/injury	corridor		Drainage Maintenance Unit of (AMA) & Okaikoi South Sub Metro
2.	Waste disposal	• Ensure that all waste streams created during construction of the drain are collected from work sites and properly disposed of before handing over the project. • inspect the site to ensure that the contractor has properly cleaned up all construction sites before final payment is made to the contractor.	- Availability and use of bins - Records on frequency and location of waste disposal site of domestic and construction waste	Drain corridor	Daily	Contractor/ Engineering Consultant

Environmental and Social Monitoring Plan and Reporting

Environmental monitoring is an essential component to ensure the successful implementation of the ESMP. An Environmental and social monitoring plan has been proposed to track the implementation of the mitigation measures for the identified impacts in the ESMP. A format for reporting on the extent of implementation if the ESMP has also been prepared as part of the report.

Capacity Building and Other Requirements for Implementation of ESMP and Permit Conditions

Capacity building measures (refer to section 7.5) and other requirements proposed to ensure effective implementation of the ESMP and environmental permit conditions are:

- Training Workshop on ESMP, Permit Schedule, Triggered World Bank Safeguards Policy;
- Induction on health& safety and environmental management;
- Project monthly meetings (review of environmental monitoring plan and report);
- Training for use and management of the culverts; and
- Sensitization and awareness creation on waste disposal and maintenance of drains.

Conclusion

The Project Coordinating Unit of MLGRD is committed to ensuring sustainable environmental management and safeguarding the health and safety of the construction workers and the general public during the implementation of the proposed project. The Project Coordinating Unit is also aware of the provisions in the Environmental Assessment Regulations 1999, LI 1652 and the World Bank Operational Policies. In keeping with these laws, this ESMP has identified and assessed key environmental and social impacts and concerns that may arise from the implementation of the proposed project.

Consultations with stakeholders, review of relevant literature, field inspections and studies underpinned the identification of the project adverse environmental and social impacts. A monitoring programme to help detect changes arising from the predicted adverse impacts has also been presented in this ESMP. The recommendations outlined in the ESMP for the project will ensure a high level of health, safety and environmental management for the proposed project. The cost of implementation is estimated at **GHS80,800.00.**

The proposed project has the potential to provide numerous benefits to the beneficiary institutions and the national economy. These include improved sanitation, hygiene and waste management in the beneficiary institutions, improved access to sanitation facilities for vulnerable groups and employment opportunities.

1.0 INTRODUCTION

1.1 Background

The Government of Ghana (GoG) has received financing from the World Bank towards the cost of implementation of the Greater Accra Metropolitan Area (GAMA) Sanitation and Water Project (GAMA S&W Project).

The objective of the GAMA S&W Project is to increase access to improved sanitation and improved water supply in the GAMA, with emphasis on low income communities; and to strengthen management of environmental sanitation in the GAMA.

The GAMA Project supports eleven (11) Metropolitan and Municipal Assemblies (MMAs) spread across the Greater Accra Region. The project has four components:

- **Component 1** – Provision of water and environmental sanitation services to priority low income areas of GAMA;
- **Component 2** – Improvement and expansion of the water distribution network in the GAMA;
- **Component 3** – Improvement and expansion of waste water and faecal sludge collection, transportation and treatment in GAMA; and
- **Component 4** – Institutional Strengthening.

Over the years, floods have claimed several lives, loss of property and disrupted economic activities resulting from the lack of adequate capacity of road culverts to discharge storm water from streams and communities. The floods often resulted in inundating the entire roads.

The Government, through the Ministry of Local government and Rural Development (MLGRD) intends to apply part of the GAMA S&W Project funds to undertake emergency priority drainage intervention to alleviate the situation in flood prone areas by constructing reinforced concrete open and box culverts (summarized in **Table 1-1**) on some priority roads in the GAMA area where storm water pose a severe risk for environmental sanitation management, lives and economic activities.

Table 1-1: Summary of road culvert drains for the GAMA project

No.	Location	Administrative District	Brief description of proposed intervention
1.	Mallam Junction	Ga South Municipality	Construction of: • Double cell drain 150mx4.0mx2.5m; reinforced concrete open rectangular channel 80.0mx7.0mx2.5m (length x width x depth); • Deepening and widening of earth channel 230m long
2.	Kaneshie (Accra Academy)	Accra Metropolis	Construction of: • 540mx4.0mx2.0m (length x width x depth) box drain • 6.0mx3.5mx1.5m (length x width x depth) open drain • 80.0mx3.5mx1.5m (length x width x depth) open drain.
3.	New Gbawe	Ga South Municipality	Construction of a double cell precast 200mx1.2m (length x diameter) culvert

No.	Location	Administrative District	Brief description of proposed intervention
4.	Dome-Kwabenya	Ga East Municipality	Construction of: • 2No twin cell box culverts 12mx4.0mx2.0m 5m (length x width x depth); and • 3No single cell box culverts7.0mx4mx12.0m 5m (length x width x depth)
5.	Agbogba	Ga East Municipality	Construction of 1 No double cell box culvert 12.0mx4.0mx2.0m

Ghana's Environmental Assessment Regulations, 1999 (LI1652) requires that for any start-up project which has potential to impact negatively on the environment and people, the undertaking should be assessed for its environmental and social impacts, and the appropriate mitigation measures identified prior to the undertaking for implementation. The Project has also triggered one of the World Bank Safeguards policies: ***Environmental Assessment Policy OP4.01*** and the ***Involuntary Resettlement Policy OP4.12.*** These require that any potential environmental and social issues arising from the project implementation should be mitigated.

The Ministry of Local government and Rural development, in seeking to address the flood risk situation on the drains intends to comply with these frameworks (ESMF and RPF) and other relevant national laws, has therefore contracted Messrs SAL Consult Limited to prepare an Environmental and Social Management Plan (ESMP) for the proposed drain construction at Kaneshie (Accra Academy) in accordance with the Environmental Assessment Regulations (EAR) 1999, LI 1652 and the World Bank's Safeguards Policy on Environmental Assessment (OP 4.01) and the Involuntary Resettlement Policy OP4.12.

1.2 Objectives/Purpose of the ESMP

The objective/purpose of this ESMP is to guide the effective mitigation and management of potential environmental and social issues of the proposed drain construction at Kaneshie (Accra Academy). The ESMP will assist the implementation of the construction of the road culvert interventions in a manner that any potential impacts are avoided and /or mitigated before, during and after the construction activities.

The specific objectives of the ESMP include the following:

- Identification of possible direct and indirect significant adverse impacts associated with the proposed drain construction;
- Assessment and evaluation of potential impacts of the proposed project on the biophysical and human environment;
- Provision of practical, socially acceptable, technically and economically feasible and environmentally sustainable measures to address the potential adverse impacts; and
- To comply with the Environmental Assessment Regulations (EAR) 1999, LI 1652 and the World Bank's Safeguards Policy on Environmental Assessment (OP 4.01) and the Involuntary Resettlement Policy OP4.12.

1.3 Approach and Methodology

The approach and methodology adopted for the study include:

- Site inspections;
- Stakeholder Consultation;
- Review of available literature;
- Land Use Studies;
- Socio-economic Studies; and
- Reporting.

1.3.1 Site Inspections

SAL Consult, in close collaboration with Weruw Consult (the Design Consultants), inspected the proposed sites for the drain construction between November 2016 and March 2017 to confirm the environmental and social issues and conditions to be affected or are likely to develop from the implementation of the proposed project (see **Plate 1-1**). Site inspections were also carried out with the Safeguards Specialist at the MLRGD/ Project Coordinating Unit (PCU) representatives of utility providers (Electricity Company of Ghana (ECG), Ghana Water Company Limited (GWCL), National Communication Authority (NCA) and the Telecom providers) as shown in **Plates 1-2** and **1-3**. The inspections included:

- the observation of the physical characteristics of the proposed construction sites and their immediate environs;
- assessment and confirmation of utility services within the proposed drain corridor;
- identification of potential project affected persons and land use conflict from the proposed drain construction;
- identification of existing waste collection and disposal facilities and water supply facilities; and
- observation of portions of the drains where construction has started.

Plate 1-1: Site inspection near the Entrance of Accra Academy

Plate 1-2: Inspection of the upstream location of the Kaneshie drain with NCA and ECG

Plate 1-3: Site visit with NCA and Telecom providers along the Kaneshie drain corridor

1.3.2 Stakeholder Consultations

Stakeholder consultations were carried out between November 2016 and February 2017 with the project affected persons to gain a deeper understanding of the potential environmental and socio-economic issues and the extent of the impacts. Information on project designs and alternative considerations were obtained from the MLRGD, engineering consultant and some contractors.

Key environmental and social issues/concerns obtained from the stakeholder consultations are summarized in **Chapter 5** and incorporated in the analysis of potential impacts and mitigation measures. The stakeholders consulted are as follows:

Project proponent:

- Ministry of Local Government and Rural Development/ Project Coordinating Unit
  - Safeguards Specialist

Engineering Consultant

- Weruw Consulting
  - Project Engineer; and
  - Project Engineers

Contractor

- Vuulux Company Limited
  - Operations Manager;
  - Internal Supervisor; and
  - Site Engineer.

Local Administrative Authority

- Accra Metropolitan Assembly
- Okaikoi South Sub-Metropolitan Council

Regulators for Road Corridor

- Department of Urban Roads (Approval by the Urban Roads Department has been received by the MLGRD-PCU for road cutting at First Light after submission and acceptance of a Traffic Management Plan for the project).

Utility Providers/ Users of Right of Way

- National Communications Authority;
- Electricity Company of Ghana;
- Ghana Water Company Limited;
- Airtel Ghana Limited;
- Comsys Ghana Limited;
- C-Squared Ghana Limited;
- Globacom Ghana Limited;
- MTN Ghana Limited;
- Tigo Ghana Limited; and
- Vodafone Ghana Limited.

Project Beneficiary Community

- Accra Academy Senior High School (see **Plate 5-1**)
- Project Affected Persons and Neighbours (Refer to Annex 1)

1.3.3 Review of Available Literature/Project Documents

The following project related documents were reviewed:

- Final Draft Resettlement Policy Framework for the Sanitation and Water Project for Greater Accra Metropolitan Area, February, 2013;
- Environment and Social Management Framework (ESMF) for Sanitation and Water Project for GAMA, December 2012; and

- Relevant research work carried out within the project's area of influence.

1.3.4 Land Use Studies

Methods employed included:

- Field observations of existing conditions within the project's area of influence; and
- Use of the 1:50,000 topographical maps and satellite images of the project area to demarcate the project area of influence as well as the location of telecommunication service lines.

1.3.5 Socio-economic Studies

The methodology used for the studies included:

- Observational studies;
- Interviews with farmers within the scheme;
- Interviews with the project affected persons;
- Review of District Profiles for the Accra Metropolitan Assembly; and
- Review of District Analytical report for Accra Metropolitan Area, 2010 Population and Housing Census, October 2014.

1.3.6 Reporting

The major headings of the report include the following:

a) Executive Summary;
b) Introduction;
c) Description of Proposed Project;
d) Relevant Policies, Legal and Administrative Frameworks;
e) Baseline Environmental and Social Conditions;
f) Description of Environmental and Social Impacts;
g) Environmental and Social Impact Mitigation and Management Plan;
h) Conclusions;
i) Bibliography;
j) Annex.

2.0 DESCRIPTION OF THE PROPOSED PROJECT

2.1 Need for the Project

The first light drain receives flood from both the Kofi Owusu and the Bubiashie Communities. Both drains converge at the South western corner of Accra Academy boundary. The total drainage catchment area is 2.02km^2. Over the years the communities have become heavily populated due to the settlements developed in the flood plains of the drains which has result in the rapid changes in the land use pattern of the drainage basin.

As a result of the development of settlements, most of the drains are used as garbage dumping receptacles, especially in crowded and low income areas where garbage collecting basins are placed very close to open areas near drains. Others are badly choked with weeds and bushes, and serious erosion has damaged drains and culverts in places. Stagnant foul waters are found in drains in the central part of the city where there are stores, markets and restaurants, as well as lorry parks. No maintenance is carried out to remove the garbage and silt in the industrial areas, causing flooding.

Figure 2-1: Kaneshie Drain choked with garbage

The floods in the communities have claimed several lives, loss of property and disrupted economic activities. The major restrictions to the flood from the communities is the lack of adequate capacity to discharge flows into the Odorkor-Kaneshie drain. This often resulted in massive floods of the first light area with floods inundating the entire road from first light to Obetsebi circle.

The construction of proposed reinforced concrete open and box culverts at Kaneshie, is therefore intended to alleviate the situation in flood prone areas.

2.2 Drain Location

The North Odorkor/First Light drain is composed of two drains located in a substantial part of Kofi Owusu and the Bubuashie communities. They take their sources from the boundary of eastern Odorkor and Bubuashie (Cable and wireless) areas respectively (see **Figure 2-2**). The combined flows join the Kanshie drain at first light on the Winneba Road.

The proposed drain will be constructed along the main Kaneshie-Winneba road, within the Okaikoi South Sub-Metropolitan District of the Accra Metropolitan Area. The drain stretches from First Light, near Kaneshie (5°34'9.85"N, 0°14'32.12"W) veers off the main road at 5°34'18.95"N, 0°14'47.29"W to link up with existing drains as illustrated in **Figure 2-3.**

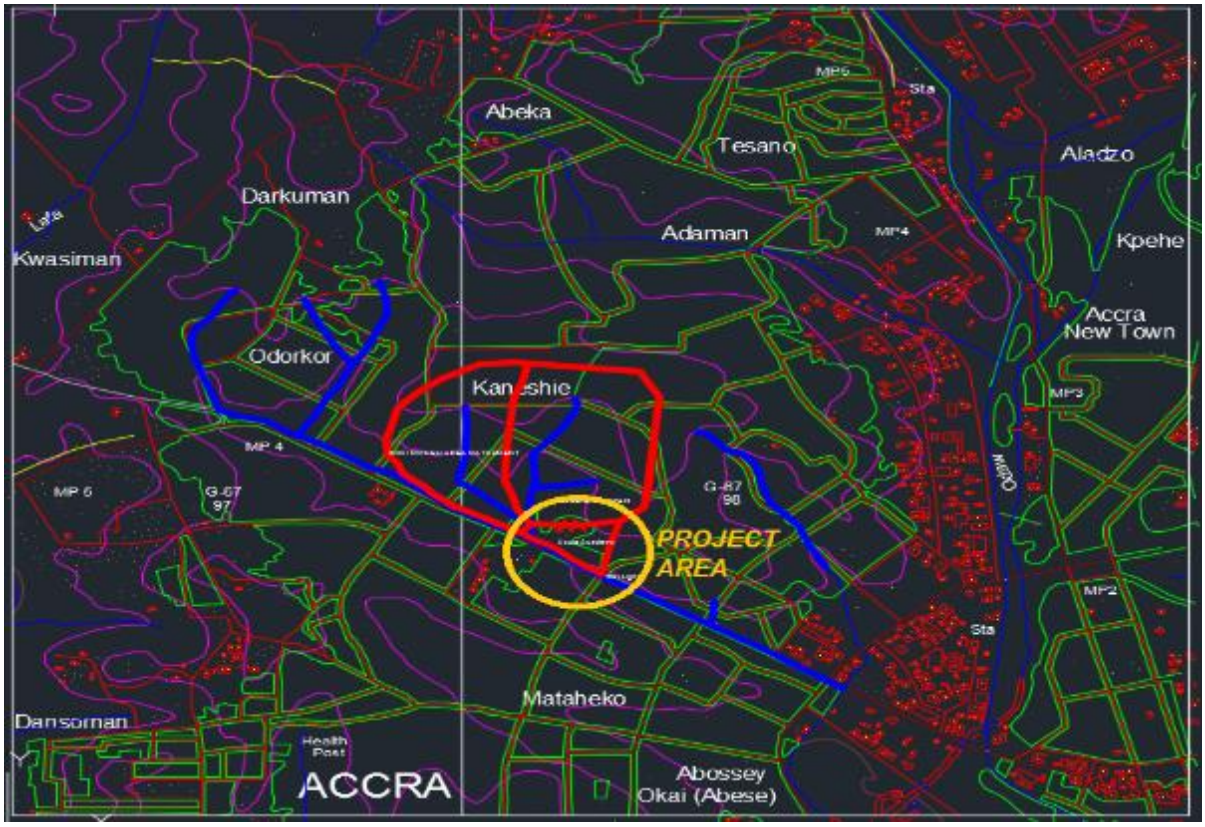

Figure 2-2: Location of the proposed project area for the Kaneshie drain

Figure 2-3: Location of the RoW of the proposed drain and the existing drains

2.3 Proposed Drains to be provided by Project

The proposed drain to be constructed at Kaneshie will comprise of the following:

iv. 540m x 4.0m x 2.0m (length x width x depth) box drain;
v. 6.0m x 3.5m x1.5m (length x width x depth) open drain; and
vi. 80.0m x 3.5m x 1.5m (length x width x depth) open drain.

The construction works will include site clearance, excavation of land and drain to remove concrete and debris using heavy duty equipment, cutting of access roads, removal of existing box culverts on the roads and their reconstruction, concrete works to line the drains, approach filling and road diversions.

2.4 Equipment and Machinery/Raw Materials

The main equipment for the project are listed below:

- Concrete mixer;
- Excavator;
- Backhoe;
- Tipper truck;
- Water storage tanks;

- Light duty vehicles;
- PPEs such as Goggles, hand gloves, safety boots; and
- First Aid Kit/Box.

The main raw materials to be used include:

- Sand;
- Cement;
- Chippings;
- Water;
- Nails;
- Iron Rods;
- Drain pipes; and
- Drain pipes accessories.

2.5 Labour and Related Issues

The project construction activities will involve about twenty-five (25 No) workers of both skilled and unskilled labour at a time. There shall no work camps for the accommodation of workers on site. Accommodation will be provided only for the security man to protect the materials on site from theft.

The conduct of workers on site will be guided by the model code of ethics to be adopted by the contractor. In addition, awareness meetings/ workshops will be conducted to sensitize workers on issues such as irresponsible sexual behaviours and HIV HIV/AIDS during project implementation.

3.0 RELEVANT POLICIES, LEGAL AND ADMINISTRATIVE FRAMEWORKS

The relevant national and sector policies and plans, national legal and institutional frameworks and World Bank safeguards policies to guide the proposed drain construction at Kaneshie (Accra Academy) are briefly described below.

3.1 Policy Framework

The relevant national policies to guide the implementation of the proposed drain construction include the following:

- The National Environment Policy (2013);
- The National Environmental Sanitation Policy dated April 2010;
- National Health Policy (2007);
- Riparian Buffer Zone Policy, 2011;
- National Urban Policy Framework and Action Plan, 2012; and
- National Water Policy.

3.1.1 The National Environment Policy (2013)

The Ghana National Environmental Policy was formulated in 1995 and revised in 2013. The ultimate aim of the National Environmental Policy of Ghana is to improve the surroundings, living conditions and the quality of life of the entire citizenry, both present and future. It seeks to promote sustainable development through ensuring a balance between economic development and natural resource conservation. The policy thus makes a high quality environment a key element supporting the country's economic and social development.

3.1.2 The National Environmental Sanitation Policy dated April 2010

The revised environmental sanitation policy seeks to refocus the priorities of the sector, so it is forward looking and effectively embraces the challenges of changing life-styles associated with modernization and improving wealth status. The policy lays the basis for developing a systematic approach and framework for identifying and harnessing resources for value-for-money (economy, effectiveness and efficiency) services to all.

3.1.3 National Health Policy (2007)

The National Health Policy document which aims at creating wealth through health, among other things places emphasis on improvements in personal hygiene, immunisation of mothers and children. The National Health Policy also argues that a healthy population could only be achieved if there were improvements in environmental hygiene and sanitation, proper housing and town planning, provision of safe water, safe food and nutrition and encouragement of regular physical exercise.

3.1.4 Riparian Buffer Zone Policy, 2011

The riparian buffer zone policy identifies encroachment of watercourses and wetlands as a major cause of flooding in Ghana. To remedy the situation, the policy sets out "to preserve or establish green spaces as riparian buffers along waterways in areas that are practically difficult for regeneration and reforestation of riparian vegetation as more efficient ways of preventing drinking water contamination and flooding". Measures outlined in the policy to support flood abatement are provision of minimum standards for delineating reservations for various types of water bodies, enforcement of a no development zones around water bodies and removal of unauthorised structures in reservations around water bodies.

The policy seeks to harmonise policies and laws from other sectors in respect to buffer zones but some of its proposals actually conflict with existing planning standards and legislations. For example, the 60-metre buffer along major rivers stipulated in the Riparian Buffer Zone Policy conflicts with the 30-metre standard set in the National Building Regulations (L.I. 1630, 1996).

3.1.5 National Urban Policy Framework and Action Plan, 2012

The goal of the National Urban Policy (NUP) is "to promote a sustainable, spatially integrated and orderly development of urban settlements with adequate housing, infrastructure and services, efficient institutions, and a sound living and working environment for all people to support the rapid socioeconomic development of Ghana. The policy identifies choked drains and frequent flooding as part of the key sources of environmental deterioration. The initiatives to achieve Objective 4: "Improving environmental quality of urban life", includes to "Develop and implement a systematic programme of flood control measures in urban communities (Initiative 4.6)". The key activities proposed in the Action Plan for Initiative 4.6 are as follows:

- 4.6.1 Review existing flood control and management situation and develop, as necessary, drainage/flood control management plans for cities and towns
- 4.6.2 Monitor, evaluate and revise plans on a regular basis
- 4.6.3 Prepare a technical manual on urban drainage schemes to guide MMDAs
- 4.6.4 Institute regular inspection and maintenance of drains; and enforce strict land use controls to prevent building encroachments on drainage channels and nature reserves
- 4.6.5 Strengthen the technical capacities of MMDAs for drainage planning, development and management; and flood disaster prevention, preparedness and management

3.1.6 National Water Policy

The National Water Policy was formulated in 2007 within the context of Growth and Poverty Reduction Strategy (GPRS II), New Partnership for Africa's Development (NEPAD) and the Millennium Development Goals (MDGs). The policy objective is to "promote an efficient and effective management system and environmentally sound development of all water resources in Ghana." (Government of Ghana, 2007:12). The highlight of the document is the recognition that water resources have competitive and conflicting uses and is organised around three themes namely water resources management, urban water supply and community water and sanitation.

The water resources management theme discusses issues relating to flood abatement under focal areas 1 and 6 that cover integrated water resource management and climate change/variability respectively. In both focal areas, there is an acknowledgement that water resources are finite and vulnerable given its multiple uses. The plan recognises the need to integrate water resources planning with land use planning activities and adopt river basins as planning units. Finally, water resources were to be protected from human activities and river basin management was to be integrated with coastal zone and wetlands management. These sections also make statements about the threat posed by extreme weather events, notably flooding.

3.2 National Legal and Regulatory Framework

The relevant national laws and legislation particularly to guide the preparation of the ESMP for the proposed project include the following:

- The Constitution of Ghana
- The State Lands Act, 1962
- The Lands (Statutory Wayleaves) Act, 1963
- Lands Commission Act 2008, Act 767
- Environmental Protection Agency Act 1994, Act 490
- Environmental Assessment Regulations 1999, LI 1652
- Fees and Charges (Amendment) Instrument 2015 (LI 2228)
- Water Resources Commission Act 1996, Act 522
- Local Government Act, 1993 Act 462
- Lands (Statutory Wayleaves) Act, 1963 (Act 186)
- The State Lands Act, 1963 (Act 125)
- Lands Commission Act, 2008 (Act 767)
- The Labour Act, 2003 (Act 651)
- Workmen's Compensation Law, 1987, PNDCL 187

3.2.1 The Constitution of Ghana and the Protection of Individual Property

Displacement of people

The Project has taken note of Clause 3 of Article 20, which states that:

"Where a compulsory acquisition or possession of land effected by the State in accordance with clause (1) of this article involves displacement of any inhabitants, the State shall resettle the displaced inhabitants on suitable alternative land with due regard for their economic well-being and social and cultural values."

Article 20 of the 1992 Constitution of Ghana provides for the protection from deprivation of property unless such acquisition is made in the interest of defence, public safety, public order, public morality, town and country planning, or the development or utilisation of property to promote public interest.

Under the same Article 20 of the Constitution, such compulsory acquisition of property by the State should be made under a law which makes provision for prompt payment of fair and adequate compensation as well as a right of access to a High Court by any person who has interest in or right

over the property for the determination of his interest or right and the amount of compensation to which he is entitled.

3.2.2 The State Lands Act, 1962

The State Lands Act, 1962 (Act 125) vests in the President of the Republic the authority to acquire land for the public interest via an executive instrument. In addition, the State Lands Act, 1962, details the different elements to be taken into consideration when calculating compensation and these include:

- "Cost of disturbance" means the reasonable expenses incidental to any necessary change of residence or place of business by any person having a right or interest in the land;
- "Market value" means the sum of money which the land might have been expected to realise if sold in the open market by a willing seller or to a willing buyer,
- "Replacement value" means the value of the land where there is no demand or market for the land by reason of the situation or of the purpose for which the land was devoted at the time of the declaration made under section 1 of this Act, and shall be the amount required for reasonable re-instatement equivalent to the condition of the land at the date of the said declaration; and
- "Other damage" means damage sustained by any person having a right or interest in the land or in adjoining land, by reason of severance from or injurious affection to any adjoining land.

3.2.3 The Lands (Statutory Wayleaves) Act, 1963

The Lands (Statutory Wayleaves) Act, 1963 (Act 186) details the process involved in occupation of land for the purpose of the construction, installation and maintenance of works of public utility, and for the creation of right-of-ways for such works. The key elements of this Act include the following:

- The owner/occupier of the land must be formally notified at least a week in advance of the intent to enter, and be given at least 24 hours notice before actual entry;
- Any damage due to entry must be compensated in accord with the procedures established by the Minister unless the land is restored or replaced;
- In the case of highways, no compensation shall be paid, unless the land taken is more than one fifth of the total holdings of an affected person;
- Where a right of way must be established in the public interest, the President may declare the land to be subject to such statutory wayleave; and
- On publication of a wayleave instrument specifying the area required, and without further assurance, the land shall be deemed to be subject to wayleave. Compensation is then determined and paid, with the right of appeal to a Tribunal established by the President, in parallel with the Lands Act, 1962.

3.2.4 Lands Commission Act 2008, Act 767

The Lands Commission Act 2008 re-establishes the Lands Commission to integrate the operations of public service land institutions in order to secure effective and efficient land administration to provide for related matters. The objectives of the Commission include among others to:

- Promote the judicious use of land by the society and ensure that land use is in accordance with sustainable management principles and the maintenance of a sound eco-system; and

- Ensure that land development is effected in conformity with the nation's development goals.

3.2.5 Environmental Protection Agency Act 1994, Act 490

The Environmental Protection Agency Act 1994 (Act 490) gave mandate to the Agency to ensure compliance of all investments and undertakings with laid down Environmental Assessment (EA) procedures in the planning and execution of development projects, including compliance in respect of existing ones.

3.2.6 Environmental Assessment Regulations 1999, LI 1652

The Environmental Assessment Regulations 1999 (LI 1652) enjoins any proponent or person to register an undertaking with the Agency and obtain an Environmental Permit prior to commencement of the project.

3.2.7 Fees and Charges (Amendment) Instrument 2015 (LI 2228)

The Fees and Charges (Amendment) Instrument 2015 (L.I. 2228) replaces the Fees and Charges (Amendment) Instrument, 2014 (LI 2216), and gives regulation to the fees and charges (Miscellaneous Provision) Act 2009, Act 793. The law provides a comprehensive rates, fees and charges collectable by Ministries, Department and Agencies (MDAs) for goods and services delivered to the public.

3.2.8 Water Resources Commission Act 1996, Act 522

The Water Resources Commission Act 1996 (Act 522) establishes and mandates the Water Resources Commission as the sole agent responsible for the regulation and management and the utilisation of water resources and for the co-ordination of any policy in relation to them. Section 13 prohibits the use of water (divert, dam, store, abstract or use water resources or construct or maintain any works for the use of water resources) without authority. The Act states under Section 24 that any person who pollutes or fouls a water resource beyond the level that the EPA may pre-scribe, commits an offence and is liable on conviction to a fine or a term of imprisonment or both.

3.2.9 Local Government Act, 1993 Act 462

This Act establishes and regulates the local government system and gives authority to the Regional Coordinating Council (RCC) and the District Assembly to exercise political and administrative power in the Regions and District, provide guidance, give direction to, and supervise all other administrative authorities in the regions and district respectively. The Assembly is mandated to initiate programmes for the development of basic infrastructure and provide municipal works and services as well as being responsible for the development, improvement and management of human settlements and the environment in the district.

3.2.10 The Labour Act, 2003 (Act 651)

Section 118(1) of the Labour Act 2003 (Act 651) stipulates that it is the duty of an employer to ensure that every worker employed works under satisfactory, safe and healthy conditions. Act 651 contains a number of specific provisions relating to an employer's duty to its workers. These include providing and maintaining "*at the workplace, plant and system of work that are safe and without risk to health*" and taking "*steps to prevent contamination of the workplaces by, and protect the workers from, toxic gases, noxious substances, vapours, dust, fumes, mists and other substances or materials likely to cause risk to safety or health*". A worker is required to report situations that he believes may pose "an imminent and serious danger to his or her life, safety or health".

3.2.11 Workmen's Compensation Law, 1987, PNDCL 187

It is to provide for the payment of compensation to workmen for personal injuries caused by accidents arising out and in the course of their employment. The tenets of the law places a large share of the burden of supporting workers injured at the workplace on the shoulders of the employers.

3.3 Institutional Framework

The ministries with responsibilities for drainage are the Ministries of Water Resources, Works and Housing and the Ministry of Highways and Roads, via the National Environmental Sanitation Policy, which has devolved responsibilities for sanitation and hygiene to the local level, the Ministry of Local Government and Rural Development is also involved.

The responsibility for primary drains lies with the Hydrological Services Department (HSD) under the MWRWH. The responsibility for the construction of secondary and certain tertiary drains lies with the Department of Urban Roads (DUR), a civil service organization under the Ministry of Roads and Highways. While DUR funds, procures and supervises the execution of works, these responsibilities are gradually devolved to the MMDA.

A schematic overview of the key actors in drainage is given in the **Figure 3-1**.

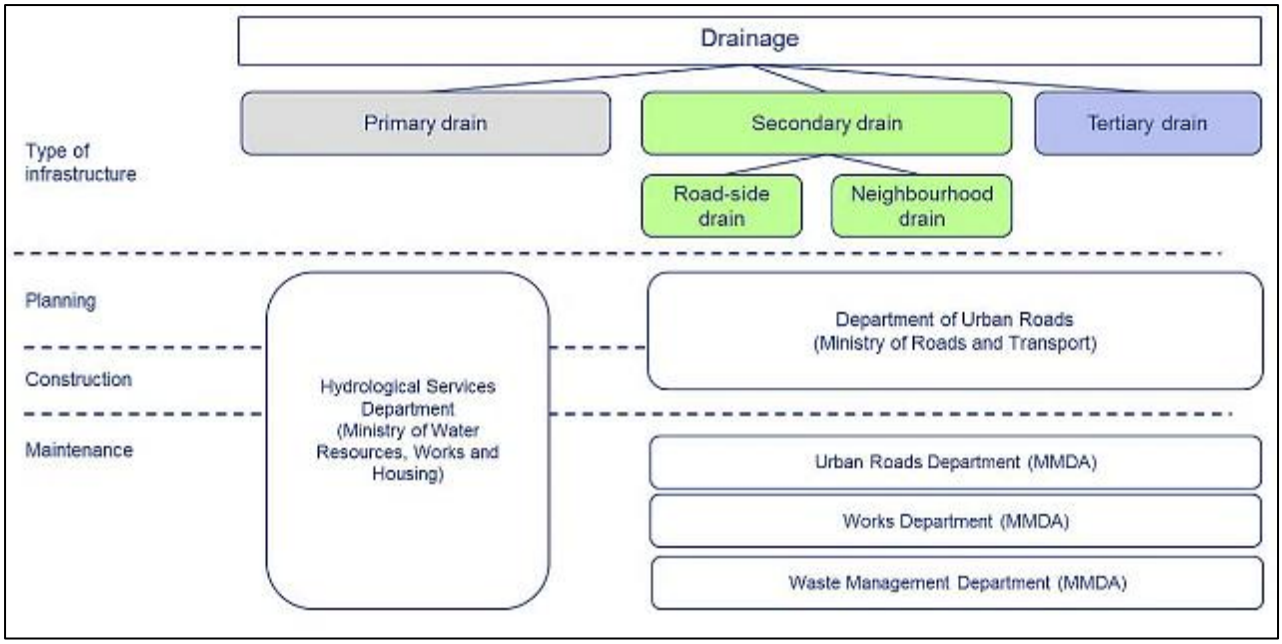

Figure 3-1: Institutional responsibilities in the drainage sector (Source: GNWP TA, September 2014)

3.3.1 Ministry of Local Government and Rural Development

The Ministry of Local Government and Rural Development (MLGRD) exists to promote the establishment and development of a vibrant and well-resourced decentralized system of local government for the people of Ghana to ensure good governance and balanced rural based development. The MLGRD is the main implementation agency for the GAMA S&W Project, aimed at providing emergency priority drainage intervention to alleviate the situation in flood prone areas.

3.3.2 Ministry of Water Resources Works and Housing (MWRWH)

The Ministry of Water resources, Works and Housing (MWRWH) has the overall responsibility for the initiation, the formulation, implementation and co-ordination of policies and programmes for the systematic development of the country's infrastructure requirements in respect of Works, Housing, Water Supply and Sanitation, Hydrology and Flood Control Systems to ensure efficiency of the sector. The Works Directorate and the Hydrological Services Department of the Ministry have direct responsibility for drainage and flood control measures.

The main objective of the Works Directorate is to facilitate the formulation of policies for the construction industry (building and drainage), and the protection of Ghana's coastline through the following:

- Liaise with PPME Directorate in the development of sectoral policy;
- To collate plans, programmes and projects emanating from policies and objectives of the sector as well as assist in the development of strategies for the determination of works priorities;
- To programme and coordinate the construction, rehabilitation, maintenance and reconstruction of state properties i.e., public buildings and Government bungalows;

- To programme and coordinate the construction, rehabilitation, maintenance and reconstruction of storm water drainage systems and coastal works;
- To liaise with works sub-sector implementing Agencies to ensure that, their programmes are integrated into well-defined national and sectoral plans and priorities;
- To prepare short, medium and long-term plans for the sub-sector to attract donor funding;
- To monitor the implementation of all works related field programmes and projects.

The Hydrological Services Department is an agency of the Ministry has the responsibility of programming and the co-ordination of coastal protection works, the construction and maintenance of storm drains countrywide and the monitoring and evaluation of surface water bodies in respect of floods.

3.3.3 Environmental Protection Agency

The Environmental Protection Agency is the body responsible for regulating the environment and ensuring the implementation of government policies on the environment. The functions of the Agency include:

- ensuring compliance with any laid down environmental impact assessment procedures in the planning and execution of development projects, including compliance in the respect of existing projects;
- promoting effective planning in the management of the environment;
- imposing and collecting environmental protection levies in accordance with the Environmental Protection Agency Act 1994, Act 490 or regulations made under the Act; and
- acting in liaison and co-operation with government agencies, District Assemblies and other bodies and institutions to control pollution and generally protect the environment.

3.3.4 Department of Urban Roads (DUR)

The responsibility for the construction of secondary and certain tertiary drains lies with the Department of Urban Roads (DUR), a civil service organization under the Ministry of Roads and Highways. While DUR funds, procures and supervises the execution of works, these responsibilities are gradually devolved to the MMDA. Thus for the maintenance of secondary and tertiary drains in the MMDA, the Urban Roads Department (URD) is the first responsible entity.

3.3.5 Accra Metropolitan Assembly

Metropolitan, Municipal and District Assemblies (MMDAs) are responsible for the provision of water and sanitation services within their respective areas of jurisdiction, including the planning and implementation of projects where necessary.

The proposed Kaneshie drain construction falls within the jurisdiction of the Accra Metropolitan Assembly (AMA). The Accra Metropolitan Assembly is a key institution involved in flood adaptation in the city of Accra. The legislative instrument (L.I.1500, 1989) establishing the Assembly charges it to ensure public safety in Accra, including public protection from the adverse impacts of floods. Section 46 of the Local Government Act, 1993 (Act 462). The Assembly serves as the planning authority responsible for the overall development of their areas of jurisdiction.

The URD of the AMA is expected to coordinate activities with the Works Department – in charge of the design and management of all building projects of the Assembly – and the Waste Management Unit or Department (WMD) -responsible for ensuring a clean environment. In practice, the coordination between these departments is challenging.

3.3.6 Okaikoi South Sub Metropolitan Council

The Okaikoi South sub-metro Council is one out of the ten Sub-metros of the Accra metropolitan Assembly in the Greater Accra Region created by L.I. 2034 which established the Accra Metropolitan Assembly. The functions of the Council include:

- the day-to-day administration of its area.
- regular inspection of the area for the detection of nuisance or any condition likely to be offensive or injurious to health and to cause proper steps to be taken to secure the abatement of the nuisance or the removal of the condition.
- To build, install, maintain and control public latrines, lavatories and urinals.
- waste management in its area.
- Sensitize the public on development projects with the Assembly
- Demolishing of unauthorized structures on public right of ways
- Demolishing of buildings on water ways

3.3.7 National Disaster Management Organization

The National Disaster Management Organisation (NADMO) is the government agency that is responsible for the management of disasters as well as other emergencies in Ghana. NADMO performs specific functions which are all aimed at ensuring that in times of emergency, the government is ready to support relief efforts. These functions are:

1. Rehabilitation services for victims of disasters;
2. Mobilization of people at various levels of society to support governmental programmes;
3. Ensuring the preparedness of the country in the management of disasters; and
4. Coordinating the activities of various governmental and non-governmental agencies in the management of disasters.

The organization's mandate includes response to earthquakes, floods and rainstorms, and market fires.

3.4 World Bank Safeguards Policies

The World Bank (WB) has published policies/procedures to guide the safe development of projects it is funding. Two (2) of the ten (10) WB Safeguards Policies, **OP 4.01 (Environmental Assessment)** and **OP 4.12 (Involuntary Resettlement)** are triggered by the proposed project. The WB safeguards policies and a summary of their core requirements are provided in **Table 3-1**.

Table 3-1: Summary of World Bank Safeguard Policies

No	World Bank Safeguard Policy	Summary of core requirements	Potential for Trigger under proposed project	Remarks or recommendation for proposed project
1	**OP 4.01 Environmental Assessment**	Requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making. The EA takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and physical cultural resources); and trans boundary and global environmental aspects. It categorizes proposed projects into categories A, B, C or FI based on the extent of adverse impacts anticipated from the project. For Category A and B projects, an ESMP is to be prepared to guide the Implementation of mitigation measures for all identified environmental impacts from the proposed warehouse project.	Triggered	The entire GAMA project being funded by the WB, including the Construction of Institutional Sanitation Facilities in MAs and Construction of Road Culvert Drains falls under category B, and this EMP is in line with the requirement of the policy.
2	**OP 4.04: Natural Habitats**	Do not finance projects that degrade or convert critical habitats. Support projects that affect non-critical habitats only if no alternatives are available and if acceptable mitigation measures are in place. The policy strictly limits the circumstances under which any Bank-supported project can damage natural habitats (land and water areas where most of the native plant and animal species are still present).	Not triggered	Project locations and design will not affect any critical habitats.
3	**OP 4.09: Pest Management**	Support integrated approaches to pest management, identify pesticides that may be financed under the project and develop appropriate pest management plan to address this.	Not triggered	The project will not involve the use of pesticides.
4	**OP 4.36: Forest**	Aim is to reduce deforestation, enhance the environmental contribution of forested areas, promote afforestation, reduce poverty, and encourage economic development. Support sustainable and conservation oriented forestry. Do not finance projects that involve significant conversion or degradation of critical forest areas.	Not triggered	Project location and design will not affect any critical forests.
5	**OP 4.11: Physical Cultural Resources**	Investigate and inventorise cultural resources potentially affected. Include mitigation measures when there are adverse impacts on physical cultural resources or avoid if possible	Not triggered	No culturally sensitive sites identified.

No	World Bank Safeguard Policy	Summary of core requirements	Potential for Trigger under proposed project	Remarks or recommendation for proposed project
6	**OP 4.12: Involuntary Resettlement**	Assist displaced persons in their effort to improve or at least restore their standards of living. Avoid resettlement where feasible or minimise. Displaced persons should share in project profits. The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts. The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to Bank appraisal of proposed projects.	Triggered	The field studies identified six (6no.) persons to be affected by the proposed project
7	**OP 4.10: Indigenous Peoples**	Screen to determine presence of indigenous peoples in project area. Policy triggered whether potential impacts are positive or negative. Design mitigation measures and benefits that reflect indigenous peoples' cultural preferences.	Not triggered	No indigenous groups were identified.
8	**OP 4.37: Safety of Dams**	Requires that experienced and competent professionals design and supervise construction, and that the borrower adopts and implements dam safety measures through the project cycle. The policy distinguishes between small and large dams by defining small dams as those normally less than 15 meters in height. Large dams are 15 meters or more in height.	Not triggered	The proposed project does not involve the construction of dams.
9	**OP 7.50: Projects on International Waterways**	Ascertain whether riparian agreements are in place, and ensure that riparian states are informed of and do not object to project interventions.	Not triggered	The proposed project does not involve international waters.
10	**OP 7.60: Projects in Disputed Areas**	Ensure that claimants to disputed areas have no objection to proposed project.	Not triggered	No issues of land dispute were identified.

4.0 BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS

Baseline conditions give the existing status of the environmental and social conditions in the area before the commencement of the proposed project. The information serves the purpose of a base reference against which the changes due to the implementation of the project are measured. The ensuing therefore constitutes the baseline conditions of the proposed project area, which includes the existing physical and socioeconomic environment.

4.1 Location

The Accra Metropolitan Area (AMA) is bounded to the North by Ga West Municipal, the West by Ga South Municipal, the South by the Gulf of Guinea, and the East by La Dadekotopon Municipal. It covers a total land area of 139.674 km^2 (see **Figure 4-1**).

Structurally, the AMA is made up of the General Assembly at the apex, followed by ten (10) Sub-Metropolitan District Councils which are subordinate bodies of the Assembly performing functions assigned to them by the instrument that sets up the Assembly. The proposed Kaneshie drain construction falls within the Okaikoi South Sub Metropolitan Area (see **Figure 4-1**).

Accra Metropolitan area forms part of a large built-up area called the Greater Accra Metropolitan Area (GAMA) in the Greater Accra Region. GAMA is comprised of thirteen (13) administrative districts (see Figure 4-1) namely; Accra Metropolitan Assembly (AMA), Tema Metropolitan Assembly (TMA), Ashaiman Municipal Assembly (AshMA), Ledzokuku-Krowor Municipal Assembly (LekMA), La Nkwantanang–Madina Municipal Assembly (LaNMMA), La Dade-Kotopon Municipal Assembly, Adentan Municipal Assembly (AdMA), Kpone-Katamanso District (KKD), Ga-East Municipal Assembly (GEMA), Ga-West Municipal Assembly (GWMA), Ga Central Municipal Assembly (GCMA) and Ga-South (GSMA).

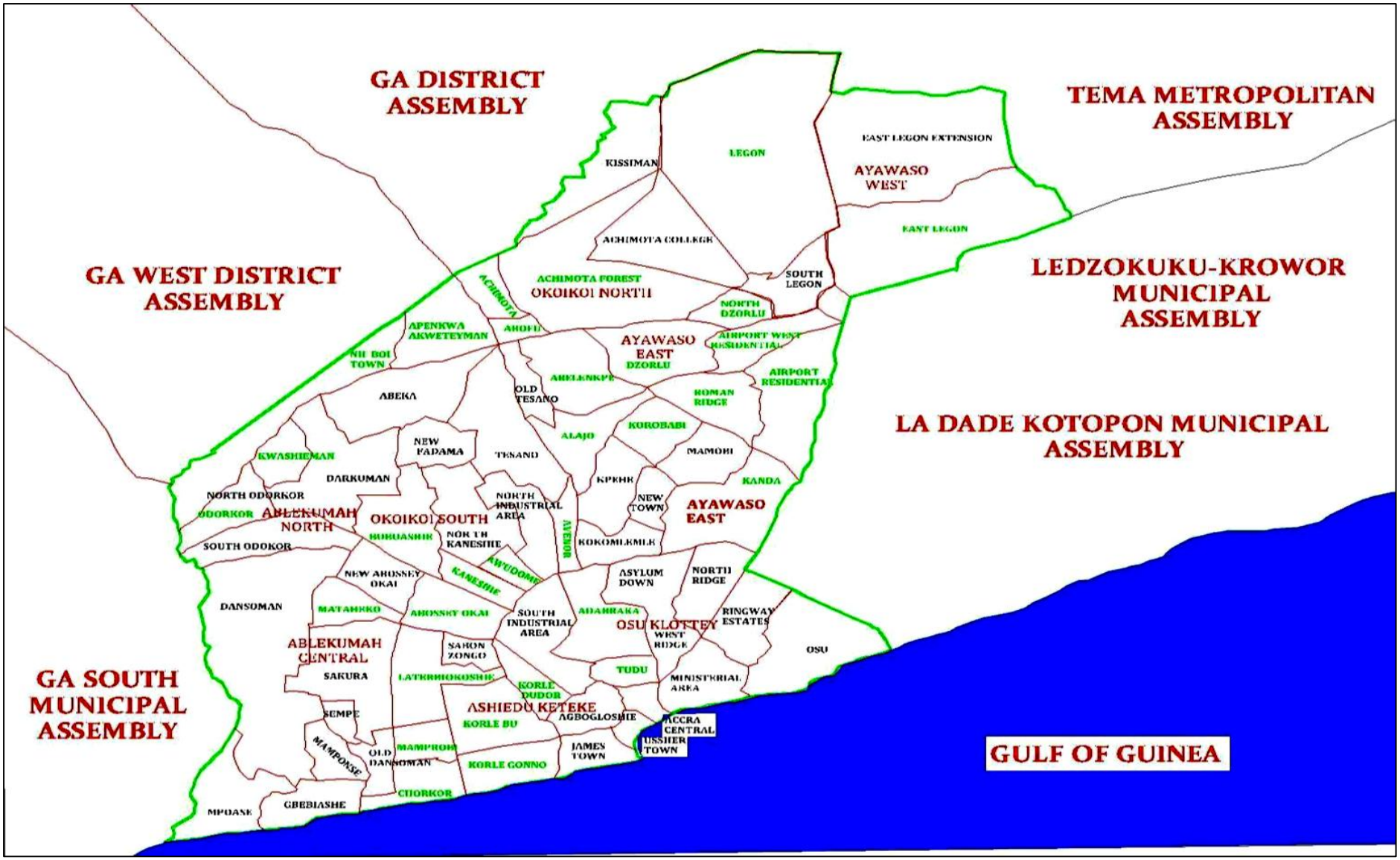

Figure 4-1: Map of Accra Metropolitan Assembly in a regional context (Source: 2015 AMA Composite Budget)

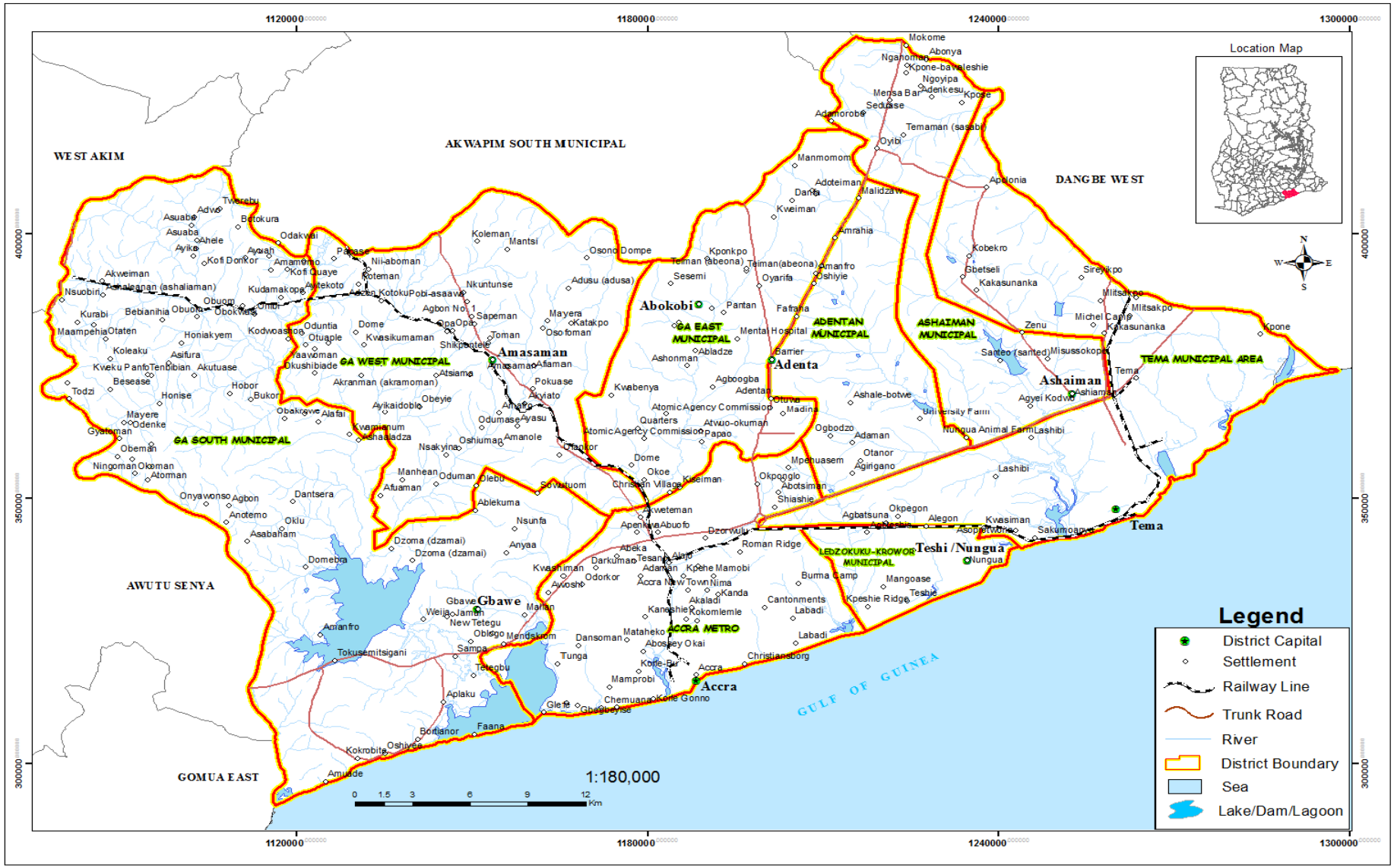

Figure 4-2: Map of Greater Accra Metropolitan Area (GAMA)

4.2 Physical Environment

4.2.1 Climatic Conditions

The Accra Metropolitan Area lies in the dry equatorial climatic zone. It experiences two rainy seasons. The first begins in May and ends in mid-July while the second season begins in mid-August and ends in October. It has an average annual rainfall of about 730 mm which is the lowest in the country.

Again, GMET also indicated that rainfall patterns in the Accra plains have changed in terms of frequency and intensity as captured from recent rainfall figures. While frequency has largely reduced, the intensity of rainfall per rainy day appears to have gone up on the average (Amoako et al, 2014).

Rainfall figures collected from GMET collected from 1961 to 2010, as summarised in **Figure 4-3**, indicate that the highest rainfall over the period was 1400 mm recorded in 1968 while the lowest rainfall of 350 mm was recorded in 1983 when the entire country experienced its worst drought in history.

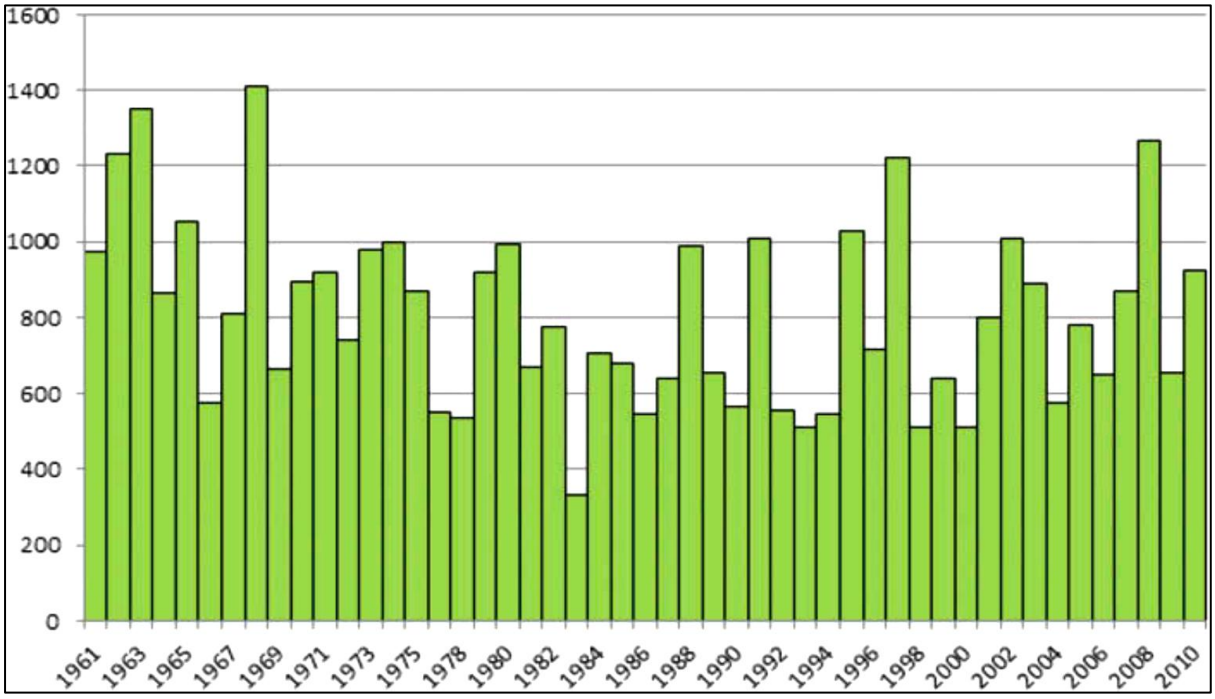

Figure 4-3: Total annual rainfall figures for Accra 1961–2010 (Source: Amoako et al, 2014)

A further analysis of the rainfall pattern of Accra reveals a gradual increase in annual rainfall over the last three decades along with the average annual rainy days (see **Figure 4-4**).

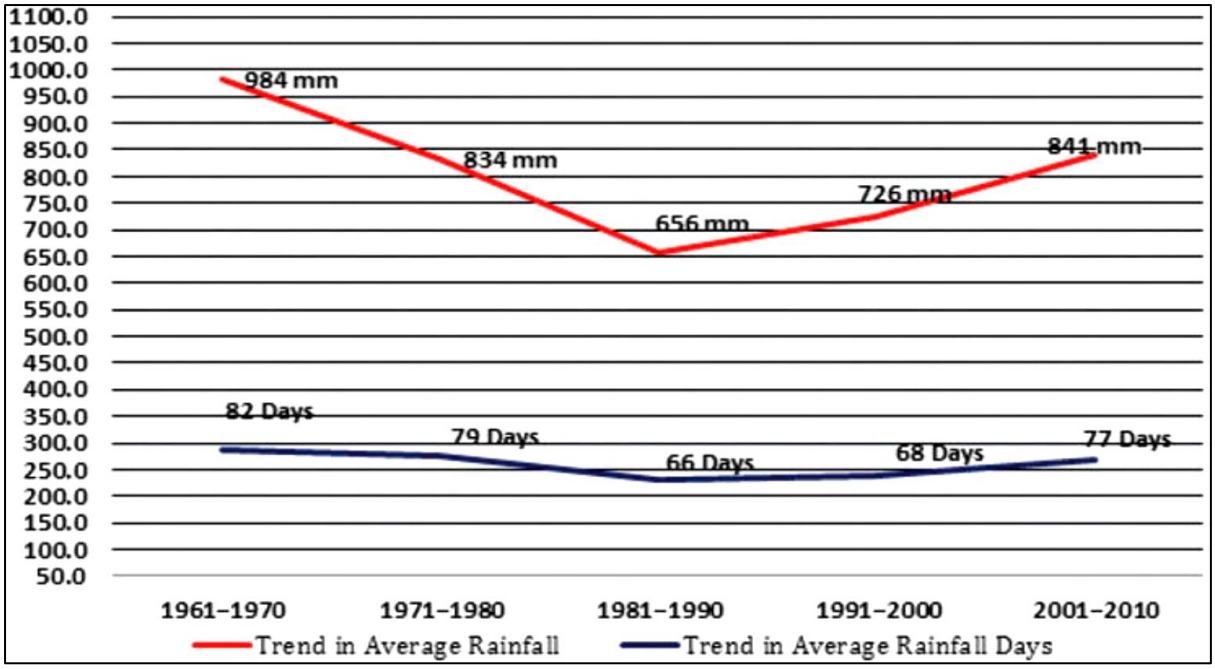

Figure 4-4: Changes in mean annual rainfall per decade for Accra 1961–2010 (Source: Amoako et al, 2014)

This increases, notwithstanding, the rate of increase in mean annual rainfall has been faster than the average number of rainy days per year. This is an indication of a general increased intensity of precipitation events per rainy day over the years.

There is very little variation in temperature throughout the year. The mean monthly temperature ranges from 24.7°C in August (the coolest) to 33°C in March (the hottest) with annual average of 26.8°C (Dickson and Benneh, 2001). As the area is close to the equator, the daylight hours are practically uniform throughout the year. Relative humidity is generally high varying from 65% in the mid-afternoon to 95% at night.

4.2.2 Drainage Systems in Accra

River Basins

The existing drainage system in the AMA is based on gravity flow with most of the drainage basins being open. GAMA comprises 4 principal catchment basins for the main streams of rivers flowing into various lagoons and the sea. These are:

- Densu River basin, to the west of the city, which drains into the Sakumo Lagoon and then into the sea (Gulf of Guinea);
- Odaw-Korle-Chemu catchment which passes through the middle of the city with a number of tributaries;
- Kpeshie catchment to the far east of the city; and
- Songo-Mokwe catchments or drainage systems to the far east of the city.

In between these basins there are several minor drainage basins which outfall to the sea, including Kpeshie, Korle, Densu, Sakumo, Lafa, Osu, Songo Mokwe and Chemu Basins. **Figure 4-5** shows the drainage system of GAMA.

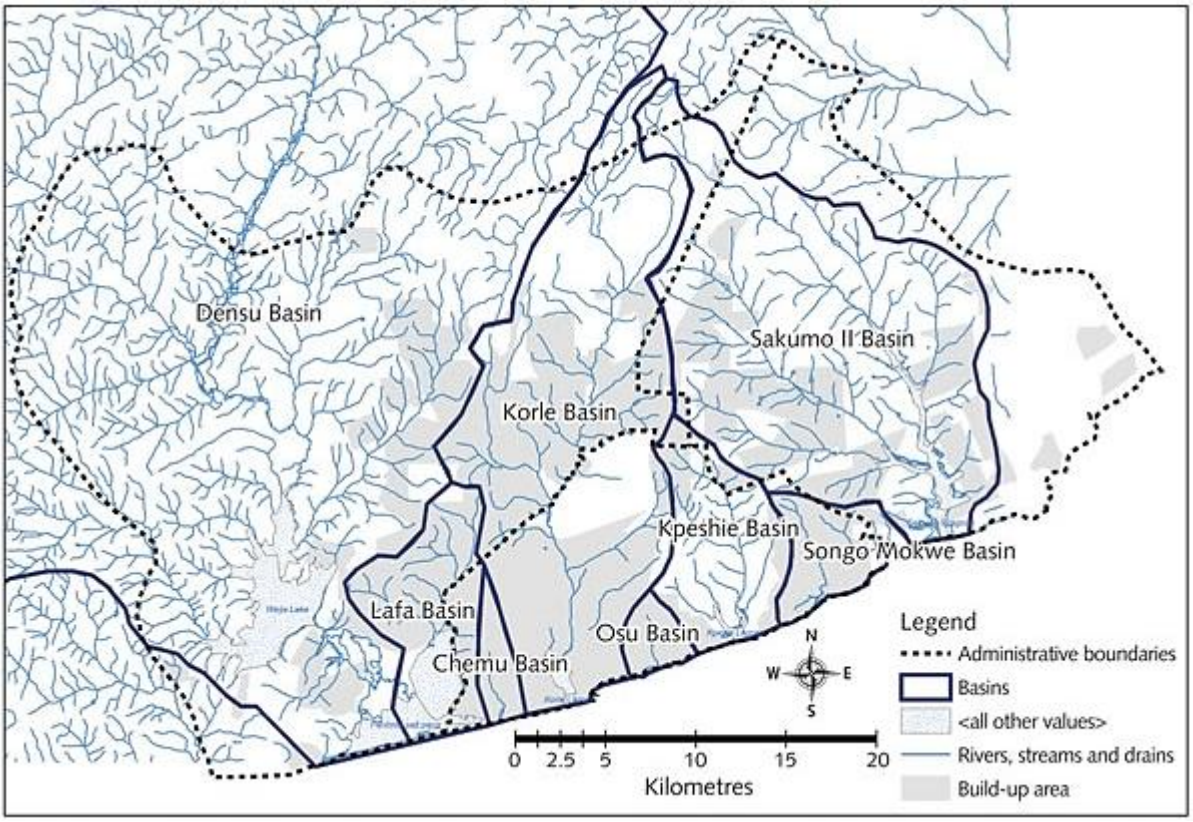

Figure 4-5: Basins in the Greater Accra Metropolitan

The proposed Kaneshie drain falls within the Odaw-Korle-Chemu catchment which covers an area of 250 km^2 and passes through the most urbanised spaces of Accra. The Odaw stream is the main stream, with major tributaries of the Dzorwulu and Nima streams flowing from the east. The Onyasia River (Dzorwulu) joins the Odaw immediately upstream of the Nsawam Road crossing at Caprice while the Nima Stream, joins just south of Kwame Nkrumah Circle at Ring Road. Sections of the main Odaw and Nima channels have been desilted, while the remaining sections are yet to be lined. The primary drains, namely the Kaneshie, KorleGonno, Awudome, Kpehe and others have been lined.

The Odaw River catchment is approximately 30km long with its headwaters near Aburi in the north. It discharges into Korle lagoon, the outlet to the Gulf of Guinea in Accra in the south. The widest part of the catchment is just over 10km wide just north of Accra. Small tributaries also flow to the Odaw River in Accra. The low-lying plains of the Odaw stretch from Korle Lagoon to the confluence of the Dzorwulu and the Odaw near Abuofo in the north. Korle Lagoon occupies a large portion of the lowest lying area of the basin and stretches northwards about 1.5km.

The lower Odaw area is the centre of all commercial and industrial activities of the city, resulting in the construction of commercial houses, financial institutions, industries, roads and other infrastructure including drains. Major drains have been constructed to carry storm water and dry weather flows, from industrial and commercial operating areas as well as residential areas. Secondary and tertiary drains are provided alongside roads to carry runoff and sullage water from houses along these roads.

The drains are in deplorable conditions as a result of poor and, in some cases, lack of maintenance; dumping of refuse and human excreta in the drains; flow obstructions caused by service and utility lines; undersized culverts crossing roads and unauthorized structures located within the flow paths of some of the drains. Some portions of the drains need lining to check scouring and to improve their carrying capacities.

4.2.3 Susceptibility to Flooding in AMA

Runoff Discharge

With increased urbanisation in Accra, runoff coefficients and peak discharge of the various rivers in the city have been high. The peak run-off determined is presented in **Table 4-1**.

Table 4-1: Total run-off discharge of Accra's hydrology (Source: Nyarko et al)

Name of catchment	Area (km^2)	Runoff coefficient	Storage coefficient	Rainfall intensity (mm)	Peak run-off (m^3/s)
Densu-Sakumo	393	0.7	0.5	140.2	1,444–3,251
Kpeshie	62.6	0.7	0.2	140.2	344
Songo-Mokwe	30.7	0.8	0.3	140.2	105–115
Odaw-Korle-Chemu	250	0.9	0.2	140.2	2350

Table 4-1 shows the total run-off discharge over the land surface of the Accra Metropolis and hence the maximum flood that the various areas are likely to experience in the event of intensive precipitation. From this table, the Odaw-Korle-Chemu and Densu-Sakumo being the biggest catchments produce a total discharge rate of 2,350 m^3/sec and 3,251 m^3/sec, respectively, if their entire catchments contribute to run-off at the same time. With limited drains, increasing impervious surfaces and unpredictable extreme precipitation events, Accra's hydrology is susceptible to high storm water run-off increases in the years to come.

Current flood risk map

Accra's exposure and vulnerability to flood hazards is primarily associated with with uncontrolled growth of informal settlements in low-lying and flood-prone areas. A study conducted by C. Amoako et al, 2014, identified three areas of flood vulnerability in the AMA:

a. areas of frequent flooding due to insufficient drainage network, clogged drains and overflow of lagoons/rivers;
b. low-lying flood-prone areas yet to experience flood hazards; and
c. wetlands or swampy areas.

The current flood risk map prepared by the Centre for Remote Sensing and Geographic Information System (CERGIS) of the Department of Geography and Resource Development, University of Ghana is presented in **Figure 4-6**. **Figure 4-6** shows areas vulnerable to flood hazards in the city of Accra.

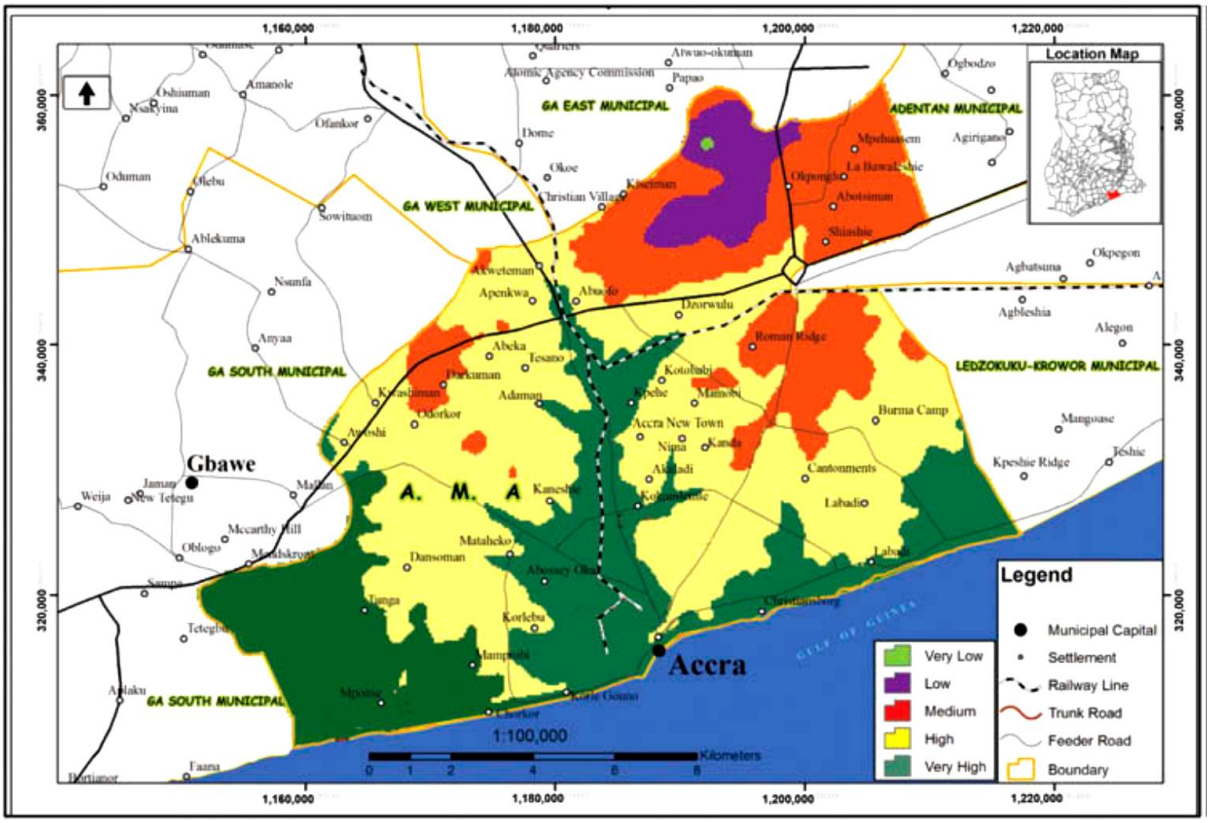

Figure 4-6: Flood risk map of City of Accra (Source: CERSGIS, University of Ghana, Accra, July–August 2013)

Significantly large areas of AMA are considered to be a High flood risk zone. Low-lying areas of AMA relatively more likely to get flooded than areas on relatively higher elevations. Many areas of AMA situated in the very high flood risk zones are found to also have elevations of below 50m above sea level (e.g. Alajo, Glefe and part of Lashibi). Similarly, significant areas of the High Risk zone lie in the range of 50m to 150m contours. For the Medium Risk zone, many areas have elevations of 150m – 250m above sea level. The Low and Very Low zones also fall significantly in the range 300m-400m and above 400m contours respectively on the map.

A thesis prepared by Anyang Abeka, 2014 reports that the geography of flooding in Accra has also changed since the 1950s. In the 1950s through to the 1970s flooding was concentrated in the Odaw catchment with Agbogbloshie, Kaneshie South and North Kaneshie experiencing devastating floods. In the 1980s and 1990s, communities like Nima, Kwame Nkrumah Circle, Obetsebi Lamptey Circle, Avenor and Aladjo entered the ranks of flood risk communities. More recently, areas like Dansoman Otorjor, Gbegbeysie, Panbros, Glefe and Mpoase that are within the Densu-Sakumo catchment have joined the league of notorious flood zones in Accra.

The high-risk zones are concentrated along the coastal front and within the flood plains of the major rivers, which drains the city, notably the Odaw river. Flood areas in GAMA mostly found in low lying areas and in most instances closely associated with drainage systems. Flood areas have elevation ranging between -7.3 m below sea level – 105.8 m above sea level. About 99.9% of flood areas have elevation of less that 100m above sea level and about 74% of the flood areas lie below 50m contour.

Flood Occurence

The flood prone communities in Accra are summarised in **Table 4.2**. **Figure 4-7** shows the flood prone areas in the Odaw-Korle-Chemu catchment.

Table 4-2: Flood prone in the Accra Metropolitan Area

Catchment	Flood Prone Communities
Densu-Sakumo	Mpoase, Dansoman (Otorjor), Panbros, Glefe, Gbegbeysie*
Korle-Chemu	Sukura* Chorkor Agbogbloshie* Alajo, Avenor, Old Fadama*, Abossey-Okai Kaneshie First Light North Kaneshie Nima, Dzorwulu, Kwame Nkrumah Circle Maamobi, Caprice Mataheko
Kpeshie	La

Source: UNDP (1992), Adinku, (1994), Songsore et al. (2009) * ILGS and IWMI (2012)

The occurrence of floods inevitably results in the destruction of property and loss of lives. Table 4-3 gives a summary of flood events, number of communities and residents affected and the estimated cost of damage in GAMA spanning the period between 2000 and 2012 compiled data from NADMO, HSD and reports from local media. **Table 4-3** indicates that 83 people have been killed directly by flood hazards over the period in the GAMA. Over the same period, about 178,750 people have been displaced by flood hazards with an estimated total cost of damages and loss standing at about US$43.7 million.

Table 4-3: Major flood hazards and their impacts in Accra (2000–2012)

Date	No. of communities affected	No. displaced	Casualties	Estimated cost of damage (million US$)
7 May and 5 June 2000	49	6,584	12	5.65
1 June 2001	65	41,450	13	10.00
6 January, 9 and 13 June 2003	25	2,787	3	2.54
18 June 2003	30	3,140	5	1.71
13 April 2004	9	250	–	0.61
12 March 2005	22	2,370	3	7.35
13 June 2007	40	13,140	5	1.14
27 March 2008	12	1,456	–	0.91
19 June 2009	33	15,616	7	4.12
20 June 2010	42	19,833	17	2.78
25 and 26 Oct 2011	149	65,236	14	4.72
June and October 2012	157	6,888	4	2.18

Source: Compiled from National Disaster Management Organization, Hydrological Services Department and Media Reports (2000–2012).

The most infamous flood occurrence was on June 3, 2015. The June 3, 2015 floods were the result of heavy rains on June 2, 2015, that caused the Odaw River to overflow its banks. Storm drains at Nima and Odawna were filled to the brim, causing intense flooding at the Kwame Nkrumah Circle. The Kaneshie market and its surroundings were submerged, preventing vehicles from moving. Graphic Road, home to some automobile companies, was heavily flooded. The Toyota Ghana and Rana Motors showrooms were completely submerged.

A GOIL fuel station near Kwame Nkrumah Interchange was burnt with people and vehicles in the vicinity. The fire also burnt a Forex Bureau and Pharmacy nearby. The effect of this flood on was without question the worst in years – with fatalities hovering close to 200 persons. In addition to loss of life, the loss and damage to our homes, local businesses, property and livelihoods are inestimable

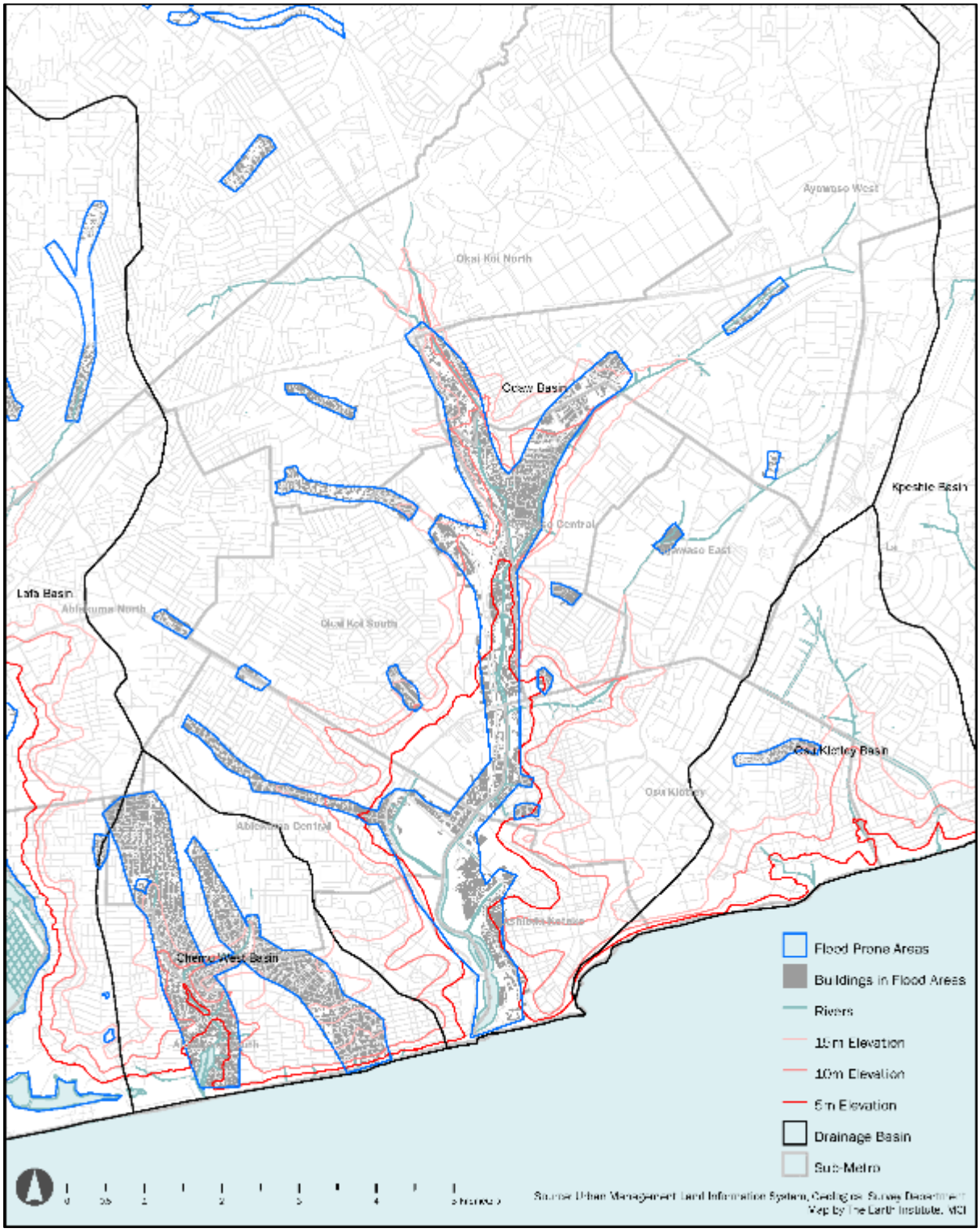

Figure 4-7: Map of Flood prone areas in the Odaw-Korle-Chemu catchment

4.2.4 Geology

In Accra the plains are mostly underlain by Precambrian rocks and to a less extent by Togo Quartzite and Tertiary Sediments. The Precambrian rocks consist of the Dahomeyan, which comprises alternating acidic and basic bands of massive crystalline gneisses with subordinate schists and migmatites. The acidic types decompose to slightly permeable calcareous clay and the basic type to impermeable clay (Junner & Bates; 1945). The clay is more than 150 feet (47m) thick at the foothills of the Akwapim Range while on the plains the thickness is generally less than 20 feet (6.2m) deep in most areas.

The geology of Accra gives rise to generally lateritic soil groups, which are readily erodible, and provide a significant source of sediment for the drains. The constraints imposed by the geology and rainfall restrict the vegetation to savannah scrubland over much of Accra. Around most villages and communities even this limited vegetation is not easily maintained due to grazing by animals and movement of persons and vehicles.

4.2.5 Seismic Activity

Generally, Ghana is a stable land mass, and features very low seismic activity. The exception is the coastal region of Ghana, that is, along the Gulf of Guinea, where earthquakes up to magnitude 5.5 to 6.5 according to the Richter Scale have been recorded historically (in 1906 and 1939) and occur on repetitive periods of between 50 and 140 years (GWCL & GNWP, 2015).

For all the earthquakes, which have occurred in the country, the epicentres were located along the coast, in the area surrounding Accra, the national Capital, and Cape Coast, the regional capital of Central Region and surroundings, and these areas suffered relatively minor damages. In the past fifteen years seismic events of minor scales between 2 and 4 on the Richter Scale have been measured three or four times a year, and it is likely that the coastal weakness is renewed with each event. Building foundations, water and sewerage pipes, oil pipelines and power cables might therefore be affected in the event of a major earthquake of the magnitude of that of 1939, (GWCL & GNWP, 2015).

It is suggested that any type of foundation adopted for projects in the area should take into consideration an appropriate seismic factor.

4.3 Socio-Economic Environment

The socioeconomic characteristics of the project area are presented below.

4.3.1 Demographic Characteristics

The population of Accra Metropolitan Assembly (AMA), according to the 2010 Population and Housing Census, is 1,665,086 representing 42 percent of the region's total population. Males constitute 48.1 percent and females represent 51.9 percent. The Metropolis is entirely urban (100%). It has a sex ratio of 93 and youthful population (children under 15 years) (42.6%) depicting a broad base population pyramid which tapers off with a small number of elderly persons (60+ years) constituting 5.9 percent. The total age dependency ratio is 48.5%, the child dependency ratio is higher (42.6%) than that of old age dependency ratio (5.9).

4.3.2 Existing Land Use in the Project Area

The section of the drain to be constructed is largely within corridor lying between the Accra Academy High School wall and the Kaneshie-Winneba road, spanning from the Police Quarters junction section to Kaneshie First Light, where it crosses the road.

A section of the drain, between First Light and Accra Academy, has been partially constructed (see **Plate 4-1**), the remainder is yet to be constructed (see **Plate 4-2**).

As pertained to most drains, solid wastes are found or dumped into the drain especially near the upstream section were the wayside mechanics are. Towards the first light section, people defecate into the drain and on the banks. Common grasses and weeds have grown in between the Accra Academy fence wall and the drain.

During the field visit on November 3, 2016, it was observed that the contractor has desilted or excavated and constructed part of the drain from the Accra Academy main entrance towards first light. The contractor work-camp is sited near the main entrance of Accra Academy.

Plate 4-1: Unconstructed section of the drain

Plate 4-2: Constructed section of the drain

4.3.3 Project Affected Persons/Properties

The implementation of the project will inevitably result in conflict with adjacent land use and affect properties in the drain corridor. The affected properties and issues are as follows:

- fence wall
- an occupied makeshift structure (wooden kiosk) **Plate 4-3**
- access to a shop
- flower pot/flowers (see **Plate 4-4**).
- Chattels/ furniture of a carpenter

- a plantain farm

Plate 4-3: Structure belonging squatter within the drain corridor

Plate 4-4: Damaged flower garden for Emperor gardens

Some commercial operations have also been identified to be near the proposed drain corridor. Feasibility and field studies indicate that the proposed project will not affect their continuous occupation of their current location and operation, as they are located outside the active construction area and beyond the boundaries of the hoarded area. The identified commercial operations are:

- A wayside mechanics at the upstream section of the drain.
- A bicycle repair kiosk and shed at the upstream section of the drain.
- A Lotto kiosk near the upstream end of the drain.
- A dealer in motor cycle spare parts and accessories located just beyond the downstream end of the proposed drain culvert

- Dealers in herbal medicines and clothing located just beyond the downstream end of the proposed drain culvert.

Although the above are not expected to be affected by the proposed project, their proximity to the site means that caution should be taken during the construction activities to stay within the demarcated area for active construction to ensure their safety and minimise disturbance.

4.3.4 Housing

The housing stock of Accra Metropolis is 149,689. The total number of households in these houses was 450,794 with population per house estimated to at (11.1%) and an average household size of 3.7.

About 6 in 10 (68.8%) of all dwelling units in the Metropolis are compound houses; 9.4 percent are separate houses and 6.6 percent are semi-detached houses. About (36.5%) of the dwelling units in the Metropolis are owned by members of the household; 42.1 percent are owned by private individuals; 13.1 percent are owned by a relative who is not a member of the household and only 4.1 percent are owned by public or government. Less than one percent (0.8%) of the dwelling units is owned through mortgage schemes.

Residential land use forms about 58% of the total land use in the metropolitan area and can be categorised into three distinct income zones – the low income zones, the middle income zone and the high income zone. One of the most notable features residential areas in all three categories is that development is predominantly single storey (low rise). The proposed project area densely developed as shown in **Figure 4-8.**

A few areas in the high and middle class areas have some two-storey housing, but multi-storey residential housing is a rarity found only in some institutional developments such as SSNIT flats.

The low income residential areas include Sukura, Teshie, Chorkor, and Darkuman while middle income residential areas include Dansoman, Adabraka, Kaneshie, Asylum Down, and Achimota. High income residential areas include Airport residential area, Labone, Cantonments and East Legon. Also in these residential areas are schools, small-scale commercial and industrial activities, minor roads and drains.

Figure 4-8: Residential development around the proposed project area

4.3.5 Waste Management

The mandate of the Accra Metropolitan Assembly is to provide municipal services to residents. Key amongst these services is good sanitation and waste management. Sources of Refuse Generation include:

- Domestic/households;
- Industrial/commercial;
- Markets;
- Schools; and
- Hospitals.

Recycling of Waste

- 3% of plastic recycling by the informal sector
- 80% of metals recycling by the informal sector.

Refuse Collection

The City generates about Three Thousand (3,000) tonnes of garbage daily out of which the Assembly is able to collect Two Thousand Five Hundred (2,500) tonnes daily based on the existing equipment holding. The huge backlog is reflected in choked drains, overflowing garbage heaps, littered pavements etc. The Assembly requires about Five Hundred and Fifty Thousand Ghana Cedis (GH¢550,000.00) a month to pay waste contractors and maintain the land fill site.

The cost of payment has been the problem facing the Accra Metropolitan Assembly. Only forty per cent (40%) of residents in the first class residential areas pay for the cost of refuse collection. The remaining sixty percent (60%) of the population who form the majority generate the bulk of the waste but do not pay for collection. The Assembly spends on average more than 65% of its revenue to keep the city of Accra clean and healthy. In spite of this effort, there is much more to be done. The Assembly is currently implementing the Fee and Performance Based Solid Waste Collection System (based on the Polluter Pay Principle, house-to-house refuse collection).

In line with the above, the Assembly contracted Nine (9) solid waste management companies and assigned them to each of the 10 Sub-Metropolitan District Councils to help in the cleaning and collection of Metropolitan Solid Waste (MSW). The Assembly and the companies intended registering and providing garbage bins for every household in the Metropolis by the end of the plan period. The Assembly and the companies were able to register only 41% (116,133) of households and distributed 33.4% (94,976) In 2015. Ten (10) new compaction tracks and twenty (20) waste (bola) taxis were acquired to lift solid waste. This system is expected to ease the financial burden on the Assembly with regard to the solid waste management hence; all other components of the Fee and Performance Based Solid Waste Collection System would be implemented during this plan period.

AMA is Implementing AS3DAP – CONTI project which is aimed at alleviating flooding in low line areas and the sewerage and sanitation condition of the AMA and adjoining municipalities. Component 3 of AS3DAP – CONTI project is aimed at planning, improvement and expansion of environmental sanitation at a cost of Thirty- Four million dollars (US$34 m).

It is also expected that waste collection will provide the necessary raw materials for the commencement of the Waste-to-Energy project. The Waste-to-Energy project will transform the waste generated in the City into electrical energy. This electric power will be connected to the national grid. The Assembly estimates that about 60,000 tonnes of solid waste will generate 50mw of electricity. AMA will generate substantial revenue from the sale of electricity power to be generated. There will also be job opportunities for the youth. Investors are needed to collaborate with the Assembly in a Win-Win scenario to erase filth out of the Millennium City.

4.3.6 Road and Transportation

The total road network in the Metropolis is 1,617km made up of 884km (55%) paved and 733km (45%) unpaved road networks. Out of this, 15% is Arterial, 15% Collector and Local 70% as the composition of the classes of road.

4.3.7 Education and Literacy

Of the population 11 years and above, 89 percent are literate and 11 percent are non-literate. The number of non-literate females (98,439) was more than twice that of males (39,567). Five out of ten people (52.0%) indicated they could speak and write both English and Ghanaian languages. Out of the 533,291 persons enumerated as currently in school, 38.4 percent were at the primary level, 18.2 percent were at the JSS/JHS level while 12.8 percent were at the Senior High School level.

4.3.8 Employment and Industry

The Accra Metropolitan Area is the economic hub of the Greater Accra Region and the rest of the country. It hosts a number of manufacturing industries, oil companies, financial institutions, telecommunication, tourism, education, health institutions and other important establishments. These institutions provide employment opportunities to residents of the City. Their presence continues to attract people from all parts of the country and beyond to transact various businesses. Majority of residents in the city are engaged basically in the primary, secondary and tertiary sectors of the economy. They are engaged in occupations or employments such as trading, construction, fishing, farming, services, manufacturing among others. The indigenous people until recently were mostly engaged in fishing and farming.

5.0 STAKEHOLDER CONSULTATIONS

Stakeholder participation during project planning, design and implementation is widely recognized as an integral part of environmental and social management for projects. It is a two-way flow of information and dialogue between project proponents and stakeholders, which is specifically aimed at developing ideas that can help shape project design, resolve conflicts at an early stage, assist in implementing solutions and monitor ongoing activities.

Key project stakeholders were identified for consultations and these included the Accra Metropolitan Assembly, Assembly Member for the beneficiary community, Project Affected Persons (PAPs) and their representatives.

5.1 Objectives of consultation

The main objective of the consultations with stakeholders is to discuss the proposed project's environmental and social implications and to identify alternatives for consideration. Specifically, the consultations seek to achieve the following objectives:

- To provide some information about the proposed project;
- To provide opportunities for stakeholders to discuss their concerns and offer recommendations;
- To gain insight on the role of each stakeholder in the implementation of the environmental and social safeguards as well as structures in place for the management of the proposed facilities;
- To provide and discuss with stakeholders the alternatives considered to reduce anticipated impacts;
- To identify and verify significance of environmental, social and health impacts; and
- To inform the process of developing appropriate mitigation and management options.

5.2 Stakeholder Consultation Strategy and Plan

Stakeholder consultation is a process and would continue through the ESMP study stages through to its implementation. **Table 5-1** summarizes the proposed approach for stakeholder engagement.

Table 5-1: Stakeholder engagement programme

No.	Activity	Identified Stakeholders	Focus of Consultation/ Engagement	Timelines/ Frequency	Forms of communication	Facilitator
1.	Preparation of ESMP/ Project design	• Ministry of Local Government and Rural Development/ Project Coordinating Unit, • Weruw Consulting Engineering • Vuulux Company Limited • Project affected persons/ institutions • Utility providers • Accra Metropolitan Assembly Works Department; ○ ○ Urban Roads Department ○ Environmental Health and Sanitation Department ○ Metro Waste Management Department ○ Drainage Maintenance Unit Okaikoi South Sub-Metro Council	• Potential environmental and social issues of concern from the proposed project's implementation • Compliance with World Bank and EPA requirements for GAMA S&W Project • Strategies for mitigating the potential impacts and successful maintenance of the proposed facility during their operation • Public and occupational health and safety at construction sites • Scope of interventions of proposed works for culverts.	Throughout the ESMP study period	• One on one Interviews • Field visitation • Sharing and review of relevant reports • Email and phone calls	SAL Consult Limited
2.	Site preparation prior to construction	• Community/ Assembly member • Accra Metropolitan Assembly Works Department; ○ Urban Roads Department ○ Environmental Health and Sanitation Department ○ Metro Waste Management Department ○ Drainage Maintenance Unit ○ Okaikoi South Sub-Metro Council	• Information on schedule of preparation and construction • Awareness creation on the potential impacts and remedial measures to the community • Integration of the ESMP into planning for construction (impacts and mitigation measures) • Grievance redress procedures • Capacity building for stakeholders for the implementation of the ESMP	Two weeks prior to construction	• Community notifications.	GAMA Coordinator (AMA)/ Weruw Consulting Engineering/ Vuulux Company Limited
3.	Start of construction	• Community/ Assembly member • Accra Metropolitan Assembly Works Department;	• Information on Schedule of construction works, activities and progress of construction	Throughout the construction	• General stakeholder meeting for	GAMA Coordinator (AMA)/ Weruw Consulting

No.	Activity	Identified Stakeholders	Focus of Consultation/ Engagement	Timelines/ Frequency	Forms of communication	Facilitator
		○ Urban Roads Department ○ Environmental Health and Sanitation Department ○ Metro Waste Management Department ○ Drainage Maintenance Unit ○ Okaikoi South Sub-Metro Council	• Awareness creation on the potential impacts and remedial measures to community • Training ○ ESMP Implementation (impacts and mitigation measures) ○ Code of Conduct • Grievance redress mechanism	period	Consultant, and contractor • Community notification.	Engineering/ Vuulux Company Limited
4.	End of construction / Decommissioning of construction equipment and machinery	• Community/ Assembly member • Accra Metropolitan Assembly Works Department; ○ Urban Roads Department ○ Environmental Health and Sanitation Department ○ Metro Waste Management Department ○ Drainage Maintenance Unit ○ Okaikoi South Sub-Metro Council	• Information on Schedule of decommissioning works, activities and progress of decommissioning • Awareness creation on the potential impacts and remedial measures to students and community • Training ○ ESMP Implementation (impacts and mitigation measures) ○ Code of Conduct • Grievance redress mechanism	Decommissioning phase	• General stakeholder meeting for Consultant, and contractor • Community notification.	GAMA Coordinator (AMA)/ Weruw Consulting Engineering/ Vuulux Company Limited
5.	Commissioning and handing over of Culverts	• Community/ Assembly member • Accra Metropolitan Assembly ○ Works Department; ○ Urban Roads Department ○ Environmental Health and Sanitation Department ○ Metro Waste Management Department ○ Drainage Maintenance Unit ○ Okaikoi South Sub-Metro Council	• Roles and responsibilities in the O&M • Training on the Drain Management.	Prior to commissioning	• Community Notification. • Training workshop	GAMA Coordinator (AMA)/ Weruw Consulting Engineering/ Vuulux Company Limited
6.	Operation and maintenance of drains	• Community/Assembly member	• Public awareness creation/sensitisation on waste disposal and maintenance of drains • Operation and Maintenance (O&M) requirements of the culverts • Roles and responsibilities in the O&M • Training on the Drain Management.	During operation and maintenance period	• General meeting/possible door to door sensitization. • Community engagement	• Accra Metropolitan Assembly ○ Works Department; ○ Environmental Health and Sanitation Department ○ Metro Waste

No.	Activity	Identified Stakeholders	Focus of Consultation/ Engagement	Timelines/ Frequency	Forms of communication	Facilitator
			• Review of grievance			Management Department ○ Drainage Maintenance Unit ○ Okaikoi South Sub-Metro Council

5.3 Stakeholders Consulted

Key stakeholders to the proposed culverts to be constructed at Kaneshie (First Light) in the Accra Metropolitan Area have been identified and sampled for consultation. The Consultation of the stakeholders was carried out from November 2016 to March 2017 to gather information, comments and concerns on the proposed project with respect to the potential environmental and social issues and impacts.

The approach adopted for the stakeholder consultations involved one-on-one interviews and focus group discussions. The stakeholders consulted during the ESMP study are listed below.

Project proponent:

- Ministry of Local Government and Rural Development/ Project Coordinating Unit
  - Safeguards Specialist

Engineering Consultant

- Weruw Consulting
  - Project Engineer; and
  - Project Engineers

Contractor

- Vuulux Company Limited
  - Operations Manager;
  - Internal Supervisor; and
  - Site Engineer.

Local Administrative Authority

- Accra Metropolitan Assembly
- Okaikoi South Sub-Metropolitan Council

Regulators for Road Corridor

- Department of Urban Roads
  - Approval by the Urban Roads Department has been received by the MLGRD-PCU for road cutting at First Light after submission and acceptance of a Traffic Management Plan for the project.

Utility Providers/ Users of Right of Way

- National Communications Authority;
- Electricity Company of Ghana;
- Ghana Water Company Limited;
- Airtel Ghana Limited;
- Comsys Ghana Limited;
- C-Squared Ghana Limited;
- Globacom Ghana Limited;
- MTN Ghana Limited;
- Tigo Ghana Limited; and
- Vodafone Ghana Limited.

Project Beneficiary Community

- Accra Academy Senior High School
- Project Affected Persons and Neighbours: The names and contacts of project affected persons and nearby residents engaged in the consultation are presented in Annex 1. These people are also presented in the Abbreviated Resettlement Action Plan (ARAP) for the Project.

Plate 5-1: Consultation with representative of Golden Motors

5.4 Outcome of Stakeholder Consultations carried out during ESMP Preparation

A summary of the outcome of the stakeholder consultations is provided in **Table 5-2**. Further evidence of stakeholder consultations with the various stakeholders/institutions have been provided as **Annex 1**.

Table 5-2: Details of Stakeholder consultations

Stakeholder	Contact Person	Role	Contact number	Date	Concerns raised / information Received
PROJECT PROPONENTS/CONSULTANT/CONTRACTOR/ASSEMBLY MEMBER					
Ministry of Local Government and Rural Development/ Project Coordinating	George Awudi	Safeguard Specialist	0506152780	ongoing	• Provided relevant information and documents on project implementation and environmental and social concerns • Provided input on requirements for compliance with world bank safeguards
Accra Metropolitan Assembly	Graham O. Sarbah	Director, Drains Maintenance Unit/ GAMA SWP Project Coordinator (AMA).	0243235530/ 0202019170	ongoing	• Provided information on the institutional arrangement within the AMA for the maintenance of the drains. • The role of the AMA (Drains Management Uni) during the construction stage is mainly by participating in monthly project meetings at which at which technical guidance can be provided to the contractor. • The Drains Management Unit is in charge of the maintenance of large drains such as the proposed Kaneshie drain, and the Sub-metropolitan Council is responsible for the maintenance of the smaller drains. • The Environmental Health and Sanitation Department is responsible for the education of the public.
Weruw Consulting Engineering	Mr. Wise Ametefe, Consulting Engineer, Richard Amekor, Project Engineer Felix Selanase Tsinase, Project Engineer Boateng, Quantity Surveyor	Engineering Consultants	0244384254 0244378082 024467794 0277781201	ongoing	• Provided assistance in the description of the project Scope and measures taken to minimize impact on the physical and social environment. • Facilitated site visits by Consultants and Utility providers. Also served as a liaison between Environmental Consultant and the contractor. • Sites were handed over to contractors on the 24th June 2016 to execute the project for a 3 months period. • Delays were encountered until the project was officially suspended by the 9th November, 2016. Letters have been officially written to the contractors about the suspension and they have also been instructed to protect the site against any potential environmental impact. • The Traffic Management Plan for the project has been submitted to the DUR who have reviewed the document and approved the road crossing activity. The letter of approval has been submitted to the MLGRD-PCU.

Stakeholder	Contact Person	Role	Contact number	Date	Concerns raised / information Received
Vuulux Company Limited	• Site Engineer, Richard • Eric Yaw Agyemang, Foreman for masons	Contractors	0244378082 0243621854	Ongoing	•
Assembly member, Bubui Electoral Area	Honourable Davis Abalo	Assembly member,	0244103275	27/02/2017	• The size of the drains should be big enough to convey the volume of water from upstream sections such as Cable & Wireless as well as the Odorkor-Darkuman drains. • During the recent rains of 26 February the entire drain was covered so this might be an indication that the height of the proposed drain needs to be increased. • There is also a need to provide a secondary drain from behind the Acccra Academy fence wall into the main drain in order to prevent flooding in the school.
Utility Providers/Right of Way Users					
Department of Urban Roads	Patience Onny	Traffic Engineer		11/01/2017	• Copies of the Traffic Management Plan and the works programme of the contractor should be submitted to the DUR office. This will enable the Department assess and approve the Management plan and plan for its implementation. • The DUR suggests the need for at least one of DUR Engineer to be involved in the project execution especially the road cutting which will impact traffic. • DUR requires that a qualified road contractor with the adequate Ministry of Roads and Highway classification be selected to reinstate the roads into its original state. • The DUR has developed a master drainage plan for Kaneshie area under the RBT project and would have appreciated if the current project undertaken fits into the master plan.
Electricity Company of Ghana	• Mr James Teye, Project Engineer Accra West. • Nat Fleischer, Principal Drafts Man Accra west	Service Providers/ RoW user	0243438027 0244125789	3/03/2017	• There are no power lines of the ECG at the location of the proposed culvert construction.

Stakeholder	Contact Person	Role	Contact number	Date	Concerns raised / information Received
	• Mawuli Sallah, Electrical Engineer/ Project supervisor Accra West • Gabriel Narteh, Electrical Contractor.		0244992903 0200263936		
Ghana Water Company Limited	Engineer Francis Lamptey	Service Providers/ RoW user	0205221912 0244531715	3/03/2017	• There is a GWCL pipeline running parallel to the Winneba-Kaneshie road. The proposed raod crossing could therefore impact on the pipeline • The project contractor and consulting engineers will need to liaise with the Regional Engineer/Distribution Manager for GWCL to advise on the exact location of the GWCL supply pipeline' • The GWCL team will need to be present during the construction to ensure that the pipelines are not ruptured during the road cutting works.
National Communications Authority	Edward Sunderland, Officer (Engineering)	Telecom regulator	0574497157	3/03/2017	• The engineering consultant (Weruw Consult) needs to provide the NCA with drain location maps (KMZ file format). • The NCA will superimpose the map layer over the National Fibre footprint to determine the potential areas of conflict. • The project engineering consultant, .Telecom providers, SAL Consult and the PCU will subsequently be invited to a meeting at the offices of the NCA to share the information and plan for remedial measures.
National Communications Authority and Telecommunications Service Providers: • Airtel Ghana Limited; • Comsys Ghana Limited; • C-Squared Ghana Limited; • Globacom Ghana Limited; • MTN Ghana Limited; • Tigo Ghana Limited; and • Vodafone Ghana Limited.	See Annex 1 for list of participants	Telecom Regulator/ Telecom Service Providers	See Annex 1 for list of participants	22/03/2017	<u>Potentially affected service providers</u> Potentially affected networks identified by superimposition of drain location maps over the National Fibre footprint at the offices of the NCA are as Airtel Ghana Limited, Comsys Ghana Limited, C-Squared Ghana Limited, Globacom Ghana Limited, MTN Ghana Limited, Tigo Ghana Limited and Vodafone Ghana Limited. <u>Information Required by Telcos</u> The project implementation team should provide the Telecommunication companies (Telcos), through the NCA, details of the scope of works for the five drains as follows:

Stakeholder	Contact Person	Role	Contact number	Date	Concerns raised / information Received
					• location of the proposed drain or culvert (Google earth file); • depth of the excavation required for the works; • difference between road level and top of the drains/culverts; and • Schedule for the construction works. The Telcos will study these and confirm the potential impact of the proposed project on their lines since there is the possibility that the crossing may be at a safe depth (i.e. depth of excavation may be higher than the depth at which the cables are placed). <u>Proposed Immediate action</u> There shall be follow up field visits by the NCA, Telcos, SAL Consult Limited and the project implementers (MLGRD-PCU and Weruw Consult) on Friday, 24 March 2017. The teams will then reconvene on Wednesday, 29 March 2017, to confirm the remedial actions and provide associated costs.
National Communications Authority and Telecommunications Service Providers: • Airtel Ghana Limited; • Comsys Ghana Limited; • C-Squared Ghana Limited; • Globacom Ghana Limited; • MTN Ghana Limited; • Tigo Ghana Limited; and • Vodafone Ghana Limited.	See Annex 1 for list of participants	Regulator/ Service Providers	See Annex 1 for list of participants	29/03/2017	<u>Potentially affected service providers</u> Potentially affected networks confirmed after site visits on 24 March 2017 for the Kaneshie drain culvert construction is Comsys Ghana Limited. Other networks in the area are located at safe distances. <u>Information Required by Telcos</u> The project implementation team should provide the Comsys Ghana Limited, through the NCA, the schedule for the construction works to enable them plan and mobilise accordingly. <u>Proposed Immediate action</u> • The relocation of the cables will be at a shared cost: contractor will bear expenses for all civil works and Comsys Ghana Limited will bear the cost of additional cables required as well as professional services for fibre optic cable splicing.

Stakeholder	Contact Person	Role	Contact number	Date	Concerns raised / information Received
					• Engineers from the Comsys Ghana Limited will be present during construction to ensure the cables are safeguarded. • Comsys Ghana Limited will temporarily relocate their line to allow for the excavation and construction works. The cables will be reinstated on land and concrete chambers with steel plates and galvanized pipes for crossing. • The cables of Comsys Ghana Limited which were damaged during the initial works have been restored. <u>Proposed Strategic Action</u> • NCA will organize multi-stakeholder meetings with all the key players involved in the management of RoWs and urban planning to ensure there is coordination of efforts and avoid conflicts in the use of these RoWs. Ke players identified include: o National Communication Authority; o Telecommunication providers in Ghana; o Ghana Highway Authority o The Department of Urban Roads, and its national emergency coordination team; o Hydrological Services of Department of the Ministry of Water Resources, Works and Housing; o Ministry of Local Government and Rural Development; o Ghana Water Company Limited; and o Electricity Company of Ghana.
Beneficiary Communities/Project Affected Persons (PAPs)					
Owners of temporary structures, fence wall, access to shop, toilet slap, flower pot, relocation and neighbors.	PAPs- The names and contacts are elaborated in the Abbreviated Resettlement Action Plan (ARAP) prepared for the project.	Affected persons and Institution		November 2016 to February 2017	o Elaborated in the Abbreviated Resettlement Action Plan (ARAP) prepared for the project.

5.5 Summary of Key Environmental and Social Concerns from Stakeholder Consultations

The main environmental and social concerns raised during the stakeholder consultations are as follows:

i. Clarity on Project Duration

Majority of the PAPs and utility providers consulted expressed concern about the suspension of construction works and wanted to know when the project will resume and the duration of the construction works.

ii. Disruption of Telecom Services and Damage Public infrastructure

Stakeholder consultations indicate that the initial construction works have resulted in damage to some cables of Comsys Ghana Limited at multiple points. The proposed road cutting at First Light could also impact negatively on public safety and transportation. The road sections that will undergo cutting will need to be reinstated to its previous condition or better.

iii. Resettlement/Compensation Issues

The initial construction works affected some property and limited access to property.

Majority of PAPs expect full compensation and/or reinstatement of affected properties as well as the institution of appropriate measures to safeguard their property when the project resumes. The PAPS also sought clarification on the criteria for the valuation of affected properties as well as compensation for loss of livelihood. The PAPs resettlement issues are addressed in the Abbreviated Resettlement Action Plan (ARAP) for the project.

5.6 Disclosure of ESMP

The World Bank (WB) requires that the ESMP be submitted for public disclosure purposes. The disclosure will take the form of in-country as well as disclosure at the Infoshop of the World Bank.

5.6.1 In-country Disclosure Process

The PCU will submit copies of the ESMP to the GAMA Project Task Team Leader (TTL) at the World Bank for clearance by the Bank. The PCU will then ensure that copies of the cleared ESMP or its extracts (core report without annexes) are made available to the AMA departments, the AMA Zonal Council Offices, the EPA, relevant Ministries including Ministry of Local Government and Rural Development, Ministry of Finance and Economic Planning, Ministry of Sanitation and Water Resources, the PAPs, and other stakeholders such as Assemblymen/women and NGOs. A public notice of the ESMP disclosure will be placed at the Assembly premises and publication will be made in national newspapers to inform the public/PAPs.

Duration of in-country Disclosure

A maximum of 7 days (from date of public notification) would be allowed for receipt of public comments from the in-country disclosure.

5.6.2 Infoshop Disclosure

Copies of the Final ESMP will be submitted in electronic form to the GAMA Project TTL at the World Bank who will cause the ESMP to be disclosed at the Infoshop of the Bank.

An Environmental and Social Management Framework (ESMF) was prepared for the GAMA Projects in December 2012 and it was approved by the World Bank and disclosed as part of the World Bank requirements at the World Bank Infoshop.

6.0 DESCRIPTION OF ENVIRONMENTAL AND SOCIAL IMPACTS

Field inspections and observations, concerns arising from stakeholder consultations and project description and designs formed the basis for the identified potential environmental issues and impacts likely to be associated with the proposed drain construction at Kaneshie, in the Okaikoi South Sub Metropolitan area.

6.1 Project Area of Influence

The area of influence of the proposed drain construction at Kaneshie is described with respect to the following:

- Geographical Area of Influence;
- Physical Environmental Media Influence;
- Community Influence and Vulnerable Persons in the Institutions; and
- Institutional Influence.

6.1.1 Geographical Area of Influence

The immediate geographical area of influence for the proposed drain at Kaneshie during the construction stage is the immediate environs of the drain, i.e. along the main Kaneshie-Winneba road from First Light, near Kaneshie (5°34'9.85"N, 0°14'32.12"W) to Police quarters junction (5°34'18.95"N, 0°14'47.29"W). The area of influence after construction in the entire catchment of the Odaw -Chemu-Korle basin.

6.1.2 Physical Environmental Media Influence

The physical environmental media to be potentially influenced by the activities of the proposed project are land (landscape), air quality and surface and groundwater. The landscape features include soil, flora and fauna at the proposed project site which will be impacted by the project activities. Runoff from the site will be washed downstream of the project site. The air quality may also be impacted by dust and gaseous emissions from construction activities.

6.1.3 Community Influence, Vulnerable Persons and Institutions

The implementation of the proposed project could have an impact on the economic and socio-cultural conditions of nearby communities such as Kaneshie, First Light, Police quarters, Bubiashi as well as generally for communities in the Odaw-Chemu-Korle basin. Accra Academy High School will also be significantly influenced by the proposed project.

Vulnerable groups are those at risk of becoming disadvantaged and require special provisions in the project design. Vulnerable people include, but not limited to:

- disabled members of the community;
- very sick and or physically weak individuals; and
- children.

6.1.4 Institutional Influence

The major institutions to be influenced or involved in the proposed project include:

- Ministry of Local Government and Rural Development;
- Ministry of Water Resources, Works and Housing, Works Directorate;
- Ministry of Water Resources, Works and Housing, Environmental Health and Sanitation Directorate;
- Hydrological Services Department (HSD);
- Ghana Health Services;
- Environmental Protection Agency;
- National Disaster Management Organization (NADMO);
- Department of Urban Roads;
- Accra Metropolitan Assembly (AMA);
    - Works Department;
    - Drainage Maintenance Unit of (AMA);
    - Urban Roads Department (AMA);
    - Metro Physical Planning Department
    - Metro Waste Management Department
    - Okaikoi South Sub-Metro Council;
- Town and Country Planning Department;
- Ghana Meteorological Agency;
- Centre for Remote Sensing and Geographic Information Systems (CERGIS);
- Regional Land Valuation Division of the Lands Commission, Accra; and
- Water Research Institute, Surface Water Division; and
- Vuulux Company Limited.

6.2 Project Activities of Environmental and Social Concern

Activities of potential environmental and social impacts identified with the proposed project are outlined under four (4no.) main phases of the project activities; namely preparatory; construction; operations and maintenance and decommissioning phases.

6.2.1 Preparatory Phase Activities

Preparatory phase activities include among others:

- Project technical feasibility studies, including assessment of existing drain, geotechnical studies, hydrological studies and environmental screening;
- Preparation of environmental and social screening reports;
- Statutory permitting activities from EPA.

The preparatory phase activities had been completed prior to commencement of the preparation of the ESMP.

6.2.2 Construction Phase Activities

Construction phase activities include among others:

- Site clearance and removal of vegetation and obstacles within RoW;
- Transport of construction materials and equipment to and from site;
- Excavation of land and drain to remove concrete and debris using heavy duty equipment;
- Cutting of roads (First Light-Accra Academy and Accra Academy entrance);
- Removal of existing box culverts on the roads and their reconstruction;
- Concrete works to line the drains;
- Road diversions; and
- Waste generation and disposal.

6.2.3 Operations and Maintenance Phase Activities

The main project works that will potentially create environmental and safety concerns during the operational stage include:

- Drain section maintenance activities
  - De-silting of choked sections
  - Repairs of damaged sections
  - Clearing of drain corridor of deposits and vegetation
- Silt trap/chambers maintenance activities
  - De-silting of chambers
  - Repairs of defects
- Culvert maintenance activities
  - De-silting of culvert cells
  - Repairs of structural defects.
- Flood management.

6.2.4 Decommissioning Phase

The drain structure is not expected to be decommissioned. Decommissioning issues under this project will occur after construction and will cover the following:

- Dismantling of temporary work camp of the contractor; and
- Waste management.

6.3 Criteria of Impact Evaluation

6.3.1 Duration of the Impact

- A temporary impact can last days, weeks or months, but must be associated to the notion of reversibility.
- A permanent impact is often irreversible. It is observed permanently or may last for a very long term.

6.3.2 Extent of the Impact

- The extent is regional if an impact on a component is felt over a vast territory or affects a large portion of its population.
- The extent is local if the impact is felt on a limited portion of the zone of study or by a small group of its population.
- The extent is site-specific if the impact is felt in a small and well defined space or by only some individuals.

6.3.3 Intensity of the Impact

- The intensity of an impact is qualified as strong when it is linked to very significant modifications of a component.
- An impact is considered of average intensity when it generates perceptible disturbance in the use of a component or of its characteristics, but not in a way to reduce them completely and irreversible.
- A weak intensity is associated with an impact generating only weak modifications to the component considered, without putting at risk some its utilization or its characteristics.

6.3.4 Impacts Severity

- Major Impact: An impact of major significance is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors. Repercussions on the environment are very strong and cannot easily be reduced.
- Moderate Impact: An impact of moderate significance is within accepted limits and standards. Moderate impacts may cover a broad range, from a threshold below which the impact is minor, up to a level that might be just short of breaching an established (legal) limit. Repercussions on the environment are substantial but can be reduced through specific mitigation measures.
- Minor Impact: An impact of minor significance is one where an effect will be experienced, but the impact magnitude is sufficiently small and well within accepted standards, and/or the receptor is of low sensitivity/value. Repercussions on the environment are significant but subdued and may or may not require the application of mitigation measures.

6.4 Evaluation of Potential Positive Impacts

The project will most likely offer employment opportunities for the locals during the construction phase. The contractor is expected to engage some local residents around the project sites as part of the expected workforce to be engaged for various aspects of construction activities, including excavation works, backfilling, construction of drains etc. This will provide employment for both skilled and unskilled youth in the area for the duration of the construction period. The provision of employment will keep the youth occupied and help focus their attention away from societal vices.

Local consultants will also potentially be contracted to carry out some activities during the planning and design stages, which will bring revenue to such local firms. Activities, which will require expert involvement, include preparation of the ESMP for environmental permit, carrying out hydrological investigations, right-of-way assessment etc.

For the proposed drainage improvement intervention, the following benefits which contribute to the overall improvement in the living standards of inhabitants in the catchment are expected:

1. Reduction of flooding and its consequent loss of property and lives.
2. Reduction health risks associated with poor discharge of grey water.
3. Prevention undermining of structures in the immediate environs of the drains
4. Reduction health risks associated poor drainage in the areas.
5. Enhancement the economic use of land space that are mostly flooded perennially.
6. Contribute significantly towards improving the quality of life of residents in the immediate environs of the drains upon completion of the storm drainage and sanitation infrastructure.
7. The improvement of environmental conditions will affect livelihoods, as residents experience reduced sanitation-related health challenges such as reduced productivity and financial expenditure.

6.5 Evaluation of Potential Adverse Impacts Associated with the Proposed Project

The potential adverse impacts are evaluated with respect to the four phases stated above.

6.5.1 Evaluation of Potential Preparatory Phase Adverse Impacts

The potential significant environmental/social impacts associated with preparatory phase activities include:

- Land/wayleave Acquisition and compensation issues; and
- Occupational Health & Safety and Traffic/Public Safety Issues

The identified impacts are evaluated in **Table 5-1**.

Table 6-1: Evaluation of potential adverse preparatory phase impacts

No.	Impact	Key receptor(s)	Evaluation	Significance
1.	Land/wayleave Acquisition and compensation issues	Adjacent land users	• Concrete structure Fence wall, wooden kiosk as place of abode and pit latrine • Plantain farm • Flower pot • Access to shop An ARAP is prepared to ensure that appropriate procedures will be followed to effectively manage all issues on compensation for Project-Affected-Persons (PAPs), to avoid conflicts and ensure unhindered	Major

No.	Impact	Key receptor(s)	Evaluation	Significance
			execution of the project.	
2.	Occupational Health & Safety and Traffic/Public Safety Issues	Worker/ Public	The survey works (during the demarcation and erection of site pillars) may pose risk of injury or accident to the personnel involved. However, the implementation of standard safety practices by experienced personnel will curb their occurrence, even though the impact is of minor significance.	Moderate

6.5.2 Evaluation of Potential Adverse Construction Phase Impacts

The potential significant environmental/social issues associated with constructional phase activities include:

- Loss of vegetation and impacts on fauna;
- Water Pollution/Soil Disturbance and Erosion and impact on aquatic life;
- Air quality deterioration;
- Vibration and noise nuisance;
- Visual intrusion;
- Generation and disposal of solid waste;
- Occupational health & safety;
- Public safety & health issues;
- Flooding;
- Impact from labour influx; and
- Sanitation and public health.

The identified impacts are evaluated in **Table 5-2**.

Table 6-2: Evaluation of potential adverse construction phase impacts

No.	Impact	Key receptor(s)	Evaluation	Significance
1.	Loss of vegetation	Flora, fauna, soil	The construction of the proposed drain will require limited vegetation clearance at some selected sites along the banks of the drain. The vegetation to be lost are mainly grasses or shrubs. The areas along the RoW for the drain is heavily encroached by human activity. The vegetation clearance will therefore not result in the loss of any species of conservation value. Insects and reptiles which may inhabit this vegetation may be disturbed and will escape to adjoining vegetation. Impact on vegetation is limited to project site and of local extent. The impact on fauna (insects and reptiles) is negligible as the project sites are already disturbed due to ongoing human activities.	Minor
2.	Water Pollution/Soil Disturbance and Erosion	Soil, drains	Excavation works, vegetation clearance, levelling and other ground works will expose and loosen the soil making it susceptible to erosion. Transported soil from erosion may end up in downstream portions of the drain and lead to stagnation. The excavation and dredging of the drains may temporarily increase turbidity and suspendered particle levels in the drains. The construction activities can also reduce water quality by releasing pollutants trapped in bottom sediments or by dramatically reducing the amount of dissolved oxygen. Improper handling and storage of fuel at the construction site could also result in contamination of the soil by to oil/fuel spills. The impact is temporary lasting during the construction works. But can be managed through good construction practices.	Moderate
3.	Air quality deterioration	Ambient air environment, construction workers, pupils and teachers	Loading, haulage and dumping of sand/stone aggregates as well as cement handling will generate dust that can increase the air borne particulate in the vicinity. Other sources may be from clearing activities, spoil handling, and exhaust emissions from construction vehicles/machines traversing the untarred roads. Any windblown dust from the site may affect ambient air quality. Gaseous emissions and dust levels will be temporary, local in extent and average in intensity depending upon weather conditions.	Moderate
4.	Vibration and noise nuisance	Air, fauna, workers, pupils and teachers,	The operation of concrete mixing machines, movement of delivery trucks, tooting of horns of delivery trucks and carpentry works will generate noise and vibration. Typical noise level from construction activities range from 80dBA to	Minor

No.	Impact	Key receptor(s)	Evaluation	Significance
		patients	112dBA (BS 5228-1:2009) within the operational areas and is expected to significantly reduce by up to about 30dBA at a distance of about 50m from the site. The proposed drain is located along the Kaneshie –Winneba Road, and is generally commercial and heavily influenced by traffic noise, estimated at about 70dBA to 80dBA (BS 5228-1:2009) and will therefore not be significantly altered by the construction activties. The noise The impact from construction related noise will be intermittent, temporary and of local extent.	
5.	Visual intrusion	Landscape, pupils and teachers	The presence of construction workers, equipment/machinery and construction materials at the site will disrupt aesthetics and landscape character and may appear intrusive to the public, road users and pedestrians along the RoW. Other sources of visual intrusion include unsughtly conditions resulting from the accumulation of waste materials in the uncompleted drains. Poor housekeeping practices at the site may also reduce the aesthetic value of the area. This impact will be local and temporary.	Moderate
6.	Disruption of Utility Services and Damage Public infrastructure		The project involves cutting of the outermost lane (north) of the Kaneshie –Winneba road. The Department Urban Roads has given approval for the proposed road cutting at First Light based on approval of a traffic management plan prepared by the Engineering Consultant. Access to the Accra Academy main entrance and from First Light will be limited during the construction period. This will mainly affect motorists going towards Accra Academy since there is access to the outer lane from the main Kaneshie-Winneba road at a distance of about 500m from First Light. Dredging of the drains could result in rupturing of service lines (water, electricity, telephone) which may be located within the RoW for the drains and temporarily interrupt service to the public. This would be a source of nuisance if not remedied promptly. Consultation with the Telecom providers, ECG and GWCL indicate that a major supply line of GWCL running parallel to the Winneba –Kaneshie road could be potentially ruptured by the proposed road cutting works. The lines of Comsys, a Telecom provider could also be affected by the proposed excavation and desilting works. Site visits confirmed that the initial construction works affected some lines of Comsys.	Major
7.	Generation	Soil, water	Sections of the drain are chocked with domestic waste, silt	Major

No.	Impact	Key receptor(s)	Evaluation	Significance
	and disposal of solid waste	bodies	and weeds. Garbage removed from the drains during excavations will have to be properly disposed of. Excavated materials comprising in-situ earth materials as well as silted materials are likely to form the bulk of waste to be produced from the construction activities. Removal of vegetation in and along sections of the RoW will also have to be disposed of. Cement paper, used sachet water plastics, food wrappers and other domestic refuse from food vendors and hawkers (who may be selling to construction workers) will be generated at the workplaces. The impact is of local extent and temporary, lasting during the construction phase.	
8.	Occupational health & safety	Workers	Construction and excavation activities, movement of equipment, material handling and lifting, dust generation, open trenches/excavations poses a threat to worker safety at project site. Occupational health and safety issues associated with the proposed project construction include: • Exposure of workers to excessive noise, vibrations and dust; • Accidents in the use and handling of equipment and machinery; • Injury to the body during the use and handling of equipment and machinery; and • Illness caused by exposure to wastes and odour. The extent of impact could be temporary or permanent.	Major
9.	Public safety issues	Public, school community	Movement of equipment and transportation of construction materials such as stone aggregates, cement, steel, sand etc. to the project sites may pose traffic safety concerns on the Kaneshie-Winneba road. Possible over speeding by construction vehicles and machines is a major concern due to its potential to cause accident on the roads and predispose the public, especially students and staff of Accra Academy, to accident risk. Any unattended mechanical breakdown of construction trucks and vehicles on the road can engender serious accidents.	Major
10.	Sanitation and public health	Land, water bodies, workers, public	The construction works could result in the interruption of flows in the drains and provide favourable conditions for breeding of mosquitoes and increased risk of water related diseases like cholera if not promptly resolved. In the event water supply lines are ruptured during construction, the leaks can reduce the pressure of the water	Major

No.	Impact	Key receptor(s)	Evaluation	Significance
			system compromising its integrity and ability to protect water quality (by allowing contaminated water to be drawn into the system). Oher key potential sanitation and public health issues that may arise from the proposed project include: • indiscriminate disposal of waste such as polythene bags, used water sachet, food packages, may create unsightly conditions. • free range defecation by some construction workers is also a public health concern.	
11.	Flooding	Land, public	The construction activities will result in a temporary restriction of flows as result of restriction of the drain channel width by the ongoing works. In the event of heavy rains during this period, the restricted flow will induce significant level of flooding as the increasing runoff in the drains backs up and eventually overflow the drain channel. Flooding could result in a significant damage to the property of nearby shops and business and pose safety risks to pedestrians and motorists. Rainwater currently accumulates behind the fence wall of Accra Academy and the single drain constructed to serve as outlet for the accumulated runoff has been blocked as result of the excavation works. A persistence of the situation during the construction period, especially during heavy rains, can cause a lead to a collapse of the school wall.	Major
12.	Impact from labour influx	Kaneshie First Light community	Generally, the influx of migrants to an area will greatly influence the security of the affected communities as migrants may not conform to the societal norms and cultural practices and may upset the social structure of these communities. The increased population will also put stress on the available resources such as drinking water, accommodation and even cause an increase in rent. Sexual Promiscuity is one of the main problems associated with influx of migrants to an area. Sexual harassment and other forms of gender-based violence, Sex with underage girls are factors that aggravate the spread of HIV/AIDS. The project is located in an urban area and cosmopolitan in nature. It is therefore devoid of the peculiar cultural characteristics more associated with rural communities in the country. The Kaneshie drain culvert construction will not	Minor

No.	Impact	Key receptor(s)	Evaluation	Significance
			result in an influx of workers since it would require only about twenty five (25.No) workers at a time (as stated in **Section 2.5**). No work camps will be constructed on site to house workers and all the workers will commute from their respective homes to site and return to their homes after completion of their daily assignments, thereby reducing the probability of illicit sexual behavior as a result of the proposed project. A code of conduct will however be included to guide the behavior of workers on site as well as their relationship with the commuters and pedestrians.	

6.5.3 Evaluation of Potential Operation/Maintenance Phase Adverse Impacts

The potential negative environmental impacts associated with operational and maintenance phase activities include the following:

- Waste disposal;
- Water quality deterioration;
- Public health and safety;
- Occupational health and safety; and
- Sustainability of the drains/risk of flooding.

The identified impacts are evaluated in **Table 5-3**.

Table 6-3: Potential impacts during Operation/Maintenance Phase

No.	Impact	Key receptor(s)	Evaluation	Significance
1.	Waste Disposal	Community/	Due to the poor solid waste management practices in the communities and the city in general, drains are frequently choked with both silt and garbage. Periodic removal of garbage from the drains and possibly desilting de-silting will be required to ensure proper functioning of the drain. Loose de-silted materials and waste collected from the drain channel and drain culverts during de-silting/maintenance activities may be deposited near the shoulder of the drain. If such loose desilted materials are not disposed of promptly and properly, they will be washed back into the drain in its loose form, and significantly increase turbidity and suspended solid content of the water bodies.	Major
2.	Water Quality	Surface water	Drainage maintenance activities, including dredging, may	Moderate

No.	Impact	Key receptor(s)	Evaluation	Significance
	Deterioration	bodies	temporarily increase turbidity and suspendered particle levels in the drains. The maintenance activities can also reduce water quality by releasing pollutants trapped in bottom sediments or by dramatically reducing the amount of dissolved oxygen. Sediment released during maintenance activities can disrupt downstream habitat by clogging gravels and filling in pools, side channels, and riffle areas that are necessary for spawning and the development of juvenile fish. The lubricant/fuel/oil requirement for the equipment, usually backhoe, used in carrying out de-silting works will have to be handled ad stored appropriate to prevent any oil spillage into drain.	
3.	Public health and safety	Public	Irregular maintenance of the proposed drains would result sediment and waste accumulation in the drains which may eventually restrict flow of the drain. Stagnant waters serve as a good breeding ground for mosquitoes and promote the spread of malaria. The inappropriate sanitation practices such as disposal of solid waste and dislodgement of human excrement into drains, coupled with stagnant drains could increase the risk of outbreak of water related diseases such as cholera and typhoid fever. Maintenance desilting/dredging of the drains could also result in rupturing of service lines (water, electricity, telephone) if they are not properly marked or relocated during the construction which may be located within the RoW for the drains and temporarily interrupt service to the public. In the case of water supply lines, leaks can reduce the pressure of the water system compromising its integrity and ability to protect water quality (by allowing contaminated water to leak into the system). Uncovered drains could pose the risk of falling to and injury to passersby if the necessary precautions are not taken to safeguard the public.	Major
4.	Occupational Health and Safety	Workers	Backhoe excavators used for desilting drains are usually positioned very close to the drain during operation of the equipment. The engagement of inexperienced operator to carry out desilting of drain could result in accidents and injury to workers.	Moderate
5.	Sustainability of the drains/ Risk	Public/ Government	There is a high risk of accumulation of silt and solid waste in the proposed box drain since the upstream portions of the	Major

No.	Impact	Key receptor(s)	Evaluation	Significance
	of Flooding	of Ghana	drain are open. The accumulation of silt and solid waste can alter the capacity of a box drain to convey water and increase upstream flooding by narrowing the volume of the drain. Therefore, while ostensibly created to facilitate flow of water and prevent flooding, the efficiency of the proposed drain could be compromised by the negative attitude of indiscriminate solid waste disposal.	

6.5.4 Evaluation of Potential Adverse Decommissioning Phase Impacts

The drainage facility is not expected to be decommissioned, because the river is a perennial natural water body that drains the area. Decommissioning will be associated with the contractor facilities after completion of construction works.

The potential negative environmental impacts associated with such decommissioning phase activities include the following:

- Occupational/public safety and traffic concerns; and
- Waste management and disposal.

The identified impacts are evaluated in **Table 5-4**.

Table 6-4: Potential Impacts during Decommissioning Phase

Potential Impacts	Description	Significance
Occupational/public safety and traffic	The relocation of all construction facilities and remaining materials including the concrete mixer, trucks, water tanks to new sites or to his/her head office for future works could result in accident and injury to workers. The removal and transport of such equipment and materials could also pose traffic risks and public safety concerns within the vicinity of the drain. The duration of the impact is temporary and local extent.	Moderate
Waste disposal	The dismantling and removal of work camp facilities, equipment and materials at the site could generate waste such as scraps metal, wood, concrete debris and garbage (pieces of plastic bags, food wrappers, etc.). The duration of the impact is temporary, the extent local and the severity minor.	Moderate

7.0 ENVIRONMENTAL AND SOCIAL MITIGATION AND MANAGEMENT PLAN

7.1 Mitigation/Action Plan

Mitigation and management measures for the significant adverse impacts (rated as moderate or major) identified from the analysis and evaluation of the potential impacts from the proposed project activities are provided in **Table 7-1**.

Table 7-1: Mitigation measures/actions for potential significant adverse impacts

No.	Identified Impact	Project Activities	Proposed Mitigation Measures/Actions	Responsibility	Cost Estimates per project site (GhȻ)
PLANNING/PREPARATORY PHASE					
1.	Land/wayleave Acquisition and compensation issues	• Site clearing • Excavation works	• Complete the preparation of an ARAP for the project prior to the resumption of construction. • Consult affected property owners/users and seek their consent prior to commencement of construction works. • The contractor will be required to allow the affected person to harvest any matured plantains before destroying or removing the plant. • Ensure fair and adequate compensation is paid to all affected persons prior to commencement of construction activities	MLGRD-PCU	Refer to ARAP for the Project
CONSTRUCTION PHASE					
1.	Loss of vegetation and impacts on fauna	• Site clearing • Excavation works	• Vegetation clearance will be limited to only the area required for construction. • The drain will be constructed in sections of between 50m to 100m and the same applies for clearing of vegetation in order to control or minimize impact on fauna within the drain corridor.	Contractor/ Engineering Consultant	No additional cost required aside BoQ
2.	Water Pollution/ Soil Disturbance and Erosion	• Site clearing • Excavation works • Transport of construction materials	• Works will not be executed under aggressive weather conditions such as rains or stormy conditions. • No solid waste, fuels, or oils will be discharged into any section of the drain or waterway. • Construction will be done in sections to minimize impacts and exposure of soil.	Contractor/ Engineering Consultant	No additional cost required aside BoQ

No.	Identified Impact	Project Activities	Proposed Mitigation Measures/Actions	Responsibility	Cost Estimates per project site (GhC)
		• Cutting of roads • Concrete works to line the drains • Waste generated and disposal	• heaped sand delivered for construction works will be covered with tarpaulin to prevent wind and water transport of soil particles • Excavated materials and soil, which cannot be used will be disposed of at sites approved by the AMA Waste Management department. • Works on exposed trenches and earth materials will, as much as possible, be completed before new earth dug and trenches are created. • Temporary sediment barriers to be installed on slopes to prevent silt from entering water courses. • Maintenance, fuelling and cleaning of vehicles and equipment to take place at off-site workshop with adequate leakage prevention measures		
3.	Air quality deterioration	• Site clearing • Excavation works • Transport of construction materials • Cutting of roads • Concrete works to line the drains • Waste generated and disposal	• Soil/sand and cement loads in transit will be well covered to reduce dust levels rising above acceptable levels. • Stockpiles of exposed soil and unpaved access roads will be sprinkled with water to regulate dust levels. • Use of good quality fuel and lubricants in vehicles, equipment and machinery. • Engines of vehicles, machinery, and other equipment will be switched off when not in use. • Regular scheduled maintenance and servicing will be carried out on all vehicles and equipment to minimise exhaust emissions. • Construction and civil works will be phased out or controlled to reduce emissions from equipment and machinery in use.	Contractor/ Engineering Consultant	No additional cost required aside BoQ
4.	Vibration and noise nuisance	• Site clearing • Excavation works • Transport of construction materials • Cutting of roads • Concrete works to line the drains • Waste generated and	• Excavation and construction activities will be carried out during daylight hours. • Concrete mixer and other construction machines and equipment will be located away from sensitive environmental receptors. • Construction equipment and machinery will be regularly maintained and serviced to reduce noise generation when in use. • Engines of vehicles, equipment and machinery will be turned off when not in use. • Earthworks and other construction activities will be phased out or controlled to reduce noise generation during construction.	Contractor/ Engineering Consultant	No additional cost required aside BoQ

No.	Identified Impact	Project Activities	Proposed Mitigation Measures/Actions	Responsibility	Cost Estimates per project site (GhC)
		disposal			
5.	Visual intrusion	• All construction phase activities	• Construction activities will be done in sections to reduce impacts of change and visual intrusions to the general public. • The construction sites will be hoarded off from public view. • Good housekeeping measures, such as regular cleaning, will maintained at the construction site. • Ensure an acceptable post-construction site as per provisions in the contract.	Contractor/ Engineering Consultant	No additional cost required aside BoQ
6.	Disruption of Utility Services; Damage Public infrastructure and road diversions.	• Cutting of roads • Drain excavation works	<u>Road Cutting</u> • The contractor to ensure strict adherence to the requirements of the Department of Urban for road crossing as provided in their approval letter and the approved Traffic Management Plan. • MLGRD-PCU will cause public notice of rod cutting to be made in the national newspapers to inform motorist of the schedule for the proposed road cutting and proposed diversion plans. • Contractor/ Engineering Consultant to closely ccollaborate with the Regional and Metropolitan Urban Roads Department to ensure that the highest standards are implemented for the road cutting and reinstatement. <u>GWCL Pipelines</u> • Contractor to collaborate with the regional engineer of the GWCL to prevent blind encroachment of the Weija-Kaneshie water supply transmission line and provide supervision of excavation works to ensure the pipelines are protected during road cutting at First Light. In this regard the Contractor must ensure the engineers from the DUR are present during road cutting. <u>Comsys Ghana Telecommunication Cables</u> • Contractor to collaborate with the engineers of Comsys Ghana Limited to temporarily relocate their cables to allow for the excavation and construction	Contractor/ Engineering Consultant/MLGRD-PCU	No additional cost required aside BoQ

No.	Identified Impact	Project Activities	Proposed Mitigation Measures/Actions	Responsibility	Cost Estimates per project site (GH₵)
			works. The cables will be reinstated on land after completion of works and provide two concrete chambers with steel plates and galvanized pipes at agreed locations. • Collaborate with the engineers of the Comsys Ghana Limited to ensure any lines damaged inadvertently are promptly repaired. Ensure the engineers		
7.	Generation and disposal of solid waste	• All construction activities	Apply the principles of Reduce, Recycle, Reuse and Recover for waste management through the following actions: • Excavated earth materials will, as much as possible, be re-used for back filling purposes to reduce waste • Excavated solid waste from the drain channel that are unsuitable for backfilling will be collected onsite, allowed to drain and collected for disposal at sites approved sites in collaboration by the AMA. • Ensure that the required amounts of construction materials are delivered to site to reduce the possibility of the occurrence of excess material • Provide bins on site for temporary storage of garbage such as lubricant containers, drinking water sachets and carrier bags/packaging materials. • Ensure judicious use of construction materials such as pipes, laterites, sand, etc. to reduce waste • All metal scrap waste will be disposed of at sites approved by the AMA or sold to approved third party agents for use by metal companies. • Contractor to prepare and abide by an agreed Solid Waste Management Plan to guide during the construction period.	Contractor/ Engineering Consultant	No additional cost required aside BoQ
8.	Occupational health and safety (OHS) issues	• All construction activities	• Engage experienced artisans for construction works. • All workers should be given proper induction/orientation on safety. • The contractors/engineering consultant to develop a Health & Safety Policy and procedures to guide the construction activities. • Regularly service all equipment and machinery to ensure they are in good working condition. • Ensure there are first aid kits on site and a trained person to administer first aid.	Contractor/ Engineering Consultant	No additional cost required aside BoQ

No.	Identified Impact	Project Activities	Proposed Mitigation Measures/Actions	Responsibility	Cost Estimates per project site (GH₵)
			• Provide and enforce the use of appropriate personal protective equipment (PPE) such as safety boots, reflective jackets, hard hats, hand gloves, earplugs, nose masks, etc. • Proof of competence for all equipment/machine operators will be required and established through inspection of valid drivers or operator's license or documents.		
			• Comply with all site rules and regulations. • Apply sanctions where safety procedures are not adhered to. • Site meetings should create awareness on OHS.	Contractor/ Engineering Consultant	
9.	Public safety issues	• All construction phase activities	• Hoard off the construction sites to prevent access by unauthorised persons. • Transport of materials to the site will not be done during peak traffic hours and outside the arrival and closing times for Accra Academy i.e. between 7am to 9am and 4pm to 6pm. • Warning signs and notices will be placed at all dangerous sites, including open trenches meant for culvert construction. • Provide adequate signage to warn motorists of blockage of the outer lane (to Accra Academy) of the Kaneshie-Winneba road • Transport of materials to the site will not be done during peak traffic hours between 7am to 9am and 4pm to 6pm. • Speed limit for all vehicles and construction equipment should be less than 20km/h within the drain construction corridor. • Ensure delivery trucks hired/contracted are in good condition to prevent breakdowns on roads.	Contractor/ Engineering Consultant	No additional cost required aside BoQ
10.	Sanitation and public health impacts	• All construction phase activities	• As a policy, open defecation is prohibited, and any construction worker found violating this policy will be sacked. • Provide waste bins at project site to minimise littering of the site, and final disposal of waste will be done at the AMA approved waste dump sites only. • Provide mobile toilet facilities for use by construction workers. The mobile toilet facilities must be regularly maintained and cleaned.	Contractor/ Engineering Consultant	No additional cost required aside BoQ

No.	Identified Impact	Project Activities	Proposed Mitigation Measures/Actions	Responsibility	Cost Estimates per project site (GH₵)
			• Food vendors and hawkers will be sensitized to use the public toilet facilities in the vicinity of the project area to prevent open defecation. • Drain off all trenches or excavations made during the construction to avoid the occurrence of stagnant water • Potable water in filtered water sachets from certified sources will be made available at workplaces as workers' drinking water.		
11.	Flooding Issues	• All construction phase activities	• Ensure the drain channel is not blocked during construction to allow for continuous and flow downstream and also prevent flooding as a result increased runoff volumes during rains. • Regularly remove accumulated waste in the drains during the construction period. • Desilt the existing drain from the Accra Academy wall and provide two additional drains to channel accumulated water behind the school fence wall into the main culvert when feasible. • Ensure existing drain and its outfall is not blocked by dumping of excavated spoil on the drain corridor.	Contractor/ Engineering Consultant	Already captured in BoQ
12.	Impact from the Influx of Labour	• Kaneshie First Light Community	• Workers will be made aware of the Code of Conduct at Induction, weekly safety meetings and Project monthly meetings. • Contractor will ensure all workers comply with the Code of Conduct on site • Appropriate punitive measure will be applied in the event of any misbehaviour by workers on site. • Open communication channels will be maintained through the grievance redress mechanism to enable the community members report on any misbehaviour by workers.	Contractor/ Engineering Consultant	Already captured in BoQ
OPERATIONAL AND MAINTENANCE PHASE					
1.	Waste generation and disposal	• Desilting/maintenance of drains	• Waste Management Department of the AMA and Okaikoi South Sub Metro to provide and implement a schedule for the maintenance and desilting of all drains within their jurisdiction	Contractor for Desilting (Contractor)/	8,000.00

No.	Identified Impact	Project Activities	Proposed Mitigation Measures/Actions	Responsibility	Cost Estimates per project site (GH₵)
			• Silt and waste from the desilting/maintenance of drains should promptly removed from the drain corridor to prevent them from being washed back into drain by runoff and also prevent nuisance to motorists and pedestrians. • Segregate waste from maintenance/desilting of drains (i.e. separate sand/silt materials from garbage), • Make available sand/silt materials obtained from desilting of drain to interested local communities and private individuals for their private projects. • Identify land requiring reclamation and send any excess silt materials to such places instead of to landfill sites. • Dispose of plastic and other garbage from maintenance and desilting activities at approved dump sites if it cannot be reused.	Drainage Maintenance Unit (DMU), Waste Management Dept. (WMD) and EHSD of AMA & Okaikoi South Sub Metro	
2.	Water Quality Deterioration	• Desilting/maintenance of drains	• Maintain vegetation along the drain corridor to retard erosion • Ensure that contractors do not dispose of any waste oil, or refuse into the drain. • Ensure prompt removal piles of soil and desilted materials left along drain corridor during drain maintenance/desiliting • Conduct public education and awareness campaigns on the impacts of inappropriate sanitation practices such as disposal of solid waste and dislodgement of human excrement into drains.	Contractor/ DMU, WMD & EHSD of AMA/ Okaikoi South Sub Metro	6,000.00
3.	Public health and safety impacts	• Desilting/maintenance of drains	• No free range defecation will be allowed within the drain corridor during maintenance for desilting works. • Keep record of the location all water pipelines in the drain RoW Identified and marked during construction to prevent rupturing during maintenance. • Ensure that clear signage are provided for uncovered drain	Contractor/ DMU, WMD & EHSD of AMA/ Okaikoi South Sub Metro	1,000.00

No.	Identified Impact	Project Activities	Proposed Mitigation Measures/Actions	Responsibility	Cost Estimates per project site (GH₵)
4.	Occupational Health and Safety	• Desilting/maintenance of drains	• Engage experienced artisans for maintenance works. • All workers should be given proper induction/orientation on safety. • Ensure contractor have a Health & Safety Policy and procedures to guide the construction activities. • Ensure there are first aid kits on site and a trained person to administer first aid. • Provide and enforce the use of appropriate personal protective equipment (PPE) such as safety boots, reflective jackets, hard hats, hand gloves, earplugs, nose masks, etc. • Proof of competence for all equipment/machine operators will be required and established through inspection of valid drivers or operator's license or documents.	Contractor/ DMU, WMD & EHSD of AMA/ Okaikoi South Sub Metro	7,000.00
5.	Sustainability of the drains/ Risk of Flooding	Operation and maintenance of the drain	• Conduct public education and awareness campaigns on the impacts of inappropriate sanitation practices such as disposal of solid waste and dislodgement of human excrement into drains. • Sensitise the public to ensure all solid waste and silt are removed from the public drains on the national sanitation day (first Saturday of each month). • Develop and implement a monitoring and maintenance regime for the drains.	Contractor/ DMU, WMD & EHSD of AMA/ Okaikoi South Sub Metro	3,000.00
DECOMMISSIONING PHASE					
1.	Occupational/public safety and traffic	• Dismantling and relocation of equipment and work camps	The contractor will be required to ensure that: • personal protective gear are provided to workers involved with decommissioning of facilities and camp. • toilet facilities are available throughout the decommissioning period. • workers still have access to public toilet facilities in the communities or can be conveyed to such facilities where needed, if mobile toilet facilities have been relocated. • final movement of its vehicles and equipment comply with approved speed limits within the communities. • all community complaints are resolved before handing over drain project.	Contractor/ Engineering Consultant	No additional cost required aside BoQ
2.	Waste disposal	• Dismantling and relocation	• Ensure that all waste streams created during construction of the drain are	Contractor/	No additional

No.	Identified Impact	Project Activities	Proposed Mitigation Measures/Actions	Responsibility	Cost Estimates per project site (GhC)
		of equipment and work camps	collected from work sites and properly disposed of before handing over the project. • inspect the site to ensure that the contractor has properly cleaned up all construction sites before final payment is made to the contractor.	Engineering Consultant	cost required aside BoQ
	TOTAL COST				**25,000.00**

7.2 Environmental And Social Monitoring Plan and Reporting

7.2.1 Environmental and Social Monitoring Plan

The environmental and social monitoring plan proposed for the implementation of the ESMP for the Kaneshie Drain is presented in **Table 6-2.**

Table 7-2: Environmental and Social Monitoring Plan

No.	Environmental/ Social Component	Monitoring Parameters	Monitoring Site	Frequency	Responsibility (Implementation/ Supervision)	Cost Estimate/ Year (GH¢)
PPREPARATORY/ PLANNING PHASE						
2.	Land/wayleave Acquisition and compensation issues	- evidence of compensation payment - evidence of reinstatement of affected property	Drain corridor	Monthly. After valuation	MLGRD	-
CONSTRUCTION PHASE						
3.	Loss of vegetation	- Presence of vegetation within drain corridor	Drain corridor	Daily	Contractor/ Engineering Consultant	No additional cost required aside BoQ
4.	Water Pollution/Soil Disturbance and Erosion	- Observable change in turbidity of water - Observable oil sheen - presence of stagnant water	Drain		Contractor/ Engineering Consultant	No additional cost required aside BoQ
5.	Air quality/ Noise	-observation of air borne particulates (dust) and exhaust fumes -complaints on noise nuisance from community	-Construction site -Immediate environs	Daily	Contractor/ Engineering Consultant	No additional cost required aside BoQ
6.	Visual intrusion	Hoarding in place	-Construction site -Immediate environs	Daily	Contractor/ Engineering Consultant	No additional cost required aside BoQ
7.	Disruption of Utility Services and Damage Public infrastructure	- Indicators and record of the location of utility service lines - Evidence of consultations with service providers	Construction site	Daily	Contractor/ Engineering Consultant	No additional cost required aside BoQ

No.	Environmental/ Social Component	Monitoring Parameters	Monitoring Site	Frequency	Responsibility (Implementation/ Supervision)	Cost Estimate/ Year (GH¢)
		- Record of affected service and action taken				
8.	Waste Management	- Availability and use of bins - Records on frequency and location of waste disposal site of domestic and construction waste	Construction site	Daily	Contractor/ Engineering Consultant	No additional cost required aside BoQ
9.	Occupational health and safety	- Availability and proper use of PPEs - Adherence to health and safety procedures - Records on frequency, type and source of illness/accident/injury - Records on non-compliances	Construction site	Daily	Contractor/ Engineering Consultant	No additional cost required aside BoQ
10.	Public safety and traffic issues	- Hoarding of project site - Records on frequency, type and source of accident/injury - Warning signs and notices in place - Schedule for transport of materials	Construction site	Daily	Contractor/ Engineering Consultant	No additional cost required aside BoQ
11.	Sanitation and public health impacts	- mobile toilet facilities in place - presence of stagnant water in drains - availability of potable water to worker	Construction site	Daily	Contractor/ Engineering Consultant	No additional cost required aside BoQ
12.	Flooding	- Open outlet for runoff from the drain under construction - Extent of flooding after rains - Absence of waste from drains	Construction site	Daily	Contractor/ Engineering Consultant	No additional cost required aside BoQ
13.	Impact from the influx of Labour	- Workers provided with a copy of the code of conduct for site	Construction site	Daily	Contractor/ Engineering Consultant	No additional cost required aside BoQ
14.	Public Complaints/ Grievances	- Type and nature of complaints and concerns; - Complaint records (Record of grievance and	Project community	Weekly	Contractor/ Engineering Consultant	No additional cost required

No.	Environmental/ Social Component	Monitoring Parameters	Monitoring Site	Frequency	Responsibility (Implementation/ Supervision)	Cost Estimate/ Year (GH₵)
		number resolved/unresolved) - Management and Stakeholder Meetings				aside BoQ
OPERATIONAL PHASE						
6.	Waste generation and disposal	- Drain desilting schedule developed - Records of inspection and desilting of drains - Options for reuse of collected silt	Drain corridor	-Monthly	Contractor/ Drainage Maintenance Unit of (AMA) & Okaikoi South Sub Metro Waste Management	1,000.00
7.	Water Quality Deterioration	- vegetation along the drain corridor maintained - presence of desilted material on drain corridor	Drain corridor	-Monthly	Contractor/ Drainage Maintenance Unit of (AMA) & Okaikoi South Sub Metro	1,500.00
8.	Public health and safety impacts	- Availability of signage for uncovered drain - Complaint records (Record of grievance and number resolved/unresolved)	Drain corridor/ Community	Monthly Weekly	Contractor/ Drainage Maintenance Unit of (AMA) & Okaikoi South Sub Metro	800.00
9.	Occupational Health and Safety	- Availability and proper use of PPEs - Adherence to health and safety procedures - Records on frequency, type and source of illness/accident/injury - Records on non-compliances	Drain corridor	-Daily	Contractor/ Drainage Maintenance Unit of (AMA) & Okaikoi South Sub Metro	1,500.00
10.	Sustainability of the drains/ Risk of Flooding	- Availability of schedule and plan awareness creation and sensitisation - Record of awareness creation and sensitization activities carried out - Monitoring and maintenance regime for the	AMA & Okaikoi South Sub Metro/ Community	Monthly	Metro Drainage Maintenance Unit/ Metro Waste Management Department/ Okaikoi	1,000.00

No.	Environmental/ Social Component	Monitoring Parameters	Monitoring Site	Frequency	Responsibility (Implementation/ Supervision)	Cost Estimate/ Year (GH₵)
		drains developed			South Sub Metro	
DECOMMISSIONING PHASE						
3.	Occupational/public safety and traffic	- Availability and proper use of PPEs - Adherence to health and safety procedures - Records on frequency, type and source of illness/accident/injury	Drain corridor	-Daily	Contractor/ Drainage Maintenance Unit of (AMA) & Okaikoi South Sub Metro	No additional cost required aside BoQ
4.	Waste disposal	- Availability and use of bins - Records on frequency and location of waste disposal site of domestic and construction waste	Drain corridor	Daily	Contractor/ Engineering Consultant	No additional cost required aside BoQ
TOTAL:						**5,800.00**

7.2.2 Environmental and Social Monitoring Reporting

Environmental monitoring is an essential component to ensure the successful implementation of the ESMP. A report on the monitoring programme will provide the contractor and the MLGRD with relevant data and information to better understand the extent of implementation of the ESMP. All monthly and progress reports should capture health, safety and environment issues arising from the implementation of the ESMP.

The ESMP monitoring report requires the implementing body to specify evidence of completion for each mitigation measure (e.g. a document that proves the completion of the measure or a short description of the expected achievement or pictures). If implementation is ongoing, the status of implementation should be described. The monitoring report concludes by summarizing the main findings and by indicating the overall status of ESMP implementation using a three-point ranking scale: on track (green), slightly delayed (yellow) or delayed (red). Opportunity is provided for indicating any additional environmental or social risks that may have emerged since the project start and the appropriate mitigation measures taken or planned for any significant new risk.

7.3 Grievance Redress Process

Grievance redress mechanism (GRM) is the institutions, instruments, methods, and processes by which a resolution to a grievance is sought and provided. The consultations of project affected persons and other key stakeholders will ensure that their concerns are taken care of during project implementation and would help minimize disputes or conflicts arising from implementation of any project activity. Nevertheless, avenues have been created for project affected persons to express a grievance against any resettlement or compensation related issue or procedures, or directly against improper construction activities.

7.3.1 Objective and Purpose of the Grievance Redress Mechanism

The objective or purpose of the Grievance Redress Procedure is to address and resolve grievances or complaints from affected persons promptly, fairly, and in a manner that is, to the extent possible, acceptable to all parties. It is intended to use alternative ways to resolve complaints/disputes/conflicts arising out of the implementation of the ARAP in an amicable way and to avoid or minimise litigation.

7.3.2 Potential grievances/disputes

Potential issues of grievances and disputes envisaged during the project implementation are expected to be related to the following:

- Disruption of local transportation and business along RoW;
- Destruction of property along RoW;
- Identification and enumeration of project affected persons;
- Noise generation;
- Dust dispersal;

- Poor housekeeping at the project site; and
- Improper behaviour by the workers towards community members (commuters and pedestrians).

7.3.3 Redress Mechanism

The general steps of the grievance process comprise:

- Registration of complaints;
- Determining and implementing the redress action;
- Verifying the redress action; and
- Monitoring and Evaluation.

Registration of complaints

Complaints can be lodged verbally or in writing or phone call to the GAMA Project Coordinator at the Metropolitan Assembly. The elected local Assemblyman for the area can also receive complaints from PAPs (because the Assemblyman lives within the community and may be closer to the PAPs and some PAPs prefer to route their complaints through the Assemblyman and avoid undue transport and time cost to the Assembly) and ensure that such complaints reach the GAMA Project Coordinator at the Assembly. The GAMA Project Coordinator shall receive all complaints and shall officially log these complaints in a dedicated log book for that purpose. The GAMA Project Coordinator will inform the team leader for the grievance redress committee within 24 hours on any complaint lodged.

Determining and implementing the redress action

When a grievance/dispute is recorded as per above-mentioned registration procedures, the grievance redress team will be called into action, and mediation meetings will be organized with interested parties. Minutes of meetings will be recorded.

The grievance redress team will determine the redress action in consultation with the complainant if necessary. The proposed redress action and the timeframe in which it is to be implemented will be discussed within 3 working days of receipt of the grievance. The grievance issue will be resolved within 5 working days of receipt of complaints.

Verifying the redress action

The grievance redress team will visit the affected property site or get in touch with the complainant to confirm that the redress action is carried out. If the complainant is not satisfied with the outcome of the redress action, additional steps will be taken to resolve the issue or reach an amicable agreement. Verification will be completed within 7 days of the execution of the redress action.

Monitoring and Evaluation

The Monitoring and Evaluation Team will monitor the activities of the Grievance Redress Team to ensure that complaints and grievances lodged by PAPs are followed-up and resolved amicably as much as possible.

7.3.4 Membership and Function of Grievance Redress Team/Committee

The Grievance Redress Committee/Team will include the following:

- Okaikoi South Sub-Metro Director, will chair the Committee;
- Graham Sarbah, GAMA SWP Project Coordinator (0243235530/ 0202019170);
- Hon. Davis Abalo, the elected local Assemblyman (0244103275); and
- Headmaster of Accra Academy, representative of the PAPs (0244485851).

In addition to the main function of resolving grievances, disputes, complaints and conflicts, the Grievance Redress Team will:

i. ensure smooth implementation of the ESMP;
ii. establish dialogue with the PAPs; and
iii. Ensure that their concerns and suggestions are incorporated and implemented during the construction phase.

7.3.5 Additional Steps and Court of Law

If the complainant is not satisfied with the decision of the grievance redress team, he/she can bring it to the attention of the Chief Director at the Ministry of Local Government and Rural Development, or the GAMA PCU Coordinator will draw the attention of the Chief Director at the MLGRD about the unresolved grievance. The Chief Director at the Ministry will mediate on the issue within 5 days from the date of receipt of such a decision by the Ministry. If such a timeline is not possible, the Chief Director should inform the PCU accordingly giving reasons and possible new date.

If the complainant remains dissatisfied with the mediation effort of the Ministry, the complainant has the option to pursue appropriate recourse via judicial process in Ghana. The Constitution allows any aggrieved person the right of access to Court of law. However, noting that court cases can be cumbersome and time consuming, all effort must be made to reach amicable settlement with the affected person(s).

7.3.6 Cost for Grievance Redress Activities

A lump sum of Ghc5, 000.00 has been estimated to take care of the activities of the Grievance Redress Team.

7.4 Capacity Building and other Requirements for Implementation of ESMP and Permit Conditions

Training Workshop will be organized to guide the implementation of the ESMP, Permit Schedule, Triggered World Bank Safeguards Policy and environmental management. The training on the ESMP implementations will include the Code of conduct for contractor and his/her labour force, public health and safety issues, Grievance Redress Mechanism for the project, ESMP monitoring and reporting. The training is to ensure that the stakeholders have knowledge of the ESMP issues and be able to play their roles and responsibilities during the project implementation.

7.4.1 Objectives of the training

The main objective of the capacity building and training activities is to create, enhance and develop the necessary skills and abilities for successful implementation of the proposed project.

7.4.2 Methodology for the training:

The methodology to implement the training will include:

- Workshops and site meetings;
- Sensitization for the community with the help of the Municipal Assembly and Assembly members.

It is recommended that the site meetings discuss the ESMP issues and any health and safety issues identified during the month. Non-compliances identified during monitoring should reviewed and corrective actions taken. A capacity building measure proposed to achieve this is provided in **Table 7-3.**

Table 7-3: Capacity building plan for implementation of ESMP and Permit Conditions

No.	Activity	Target Group/Participants	Timeline/Duration	Proposed Facilitator	Cost (GHS)
Construction					
1.	Training Workshop on ESMP, Permit Schedule, Triggered World Bank Safeguards Policy	• Weruw Consulting - Resident Engineer - Clerk of Works • Vuulux Company Ltd - Manager - Foreman • AMA - Waste Management Department - Drain Maintenance Unit - Environmental Health and Sanitation Department - Sewage Unit	Prior to resumption/ commencement of construction works	Metropolitan Assembly/ Safeguards Specialist/ Consultant	15,000.00
2.	Induction on health& safety and environmental management	• All construction workers	Prior to commencement of construction works	Vuulux Company Ltd/ Weruw Consulting	8,000.00
3.	Project monthly meetings (review of environmental monitoring plan and report)	Weruw Consulting, Vuulux Company Ltd and Representatives of Okaikoi South Metro and AMA - Waste Management Department - Drain Maintenance Unit - Environmental Health and Sanitation Department (EHSD)	During construction period	Weruw Consulting/ AMA Works Department	12,000.00

No.	Activity	Target Group/Participants	Timeline/Duration	Proposed Facilitator	Cost (GHS)
		- Sewage Unit			
Operational Phase					
4.	Training on management of drains	- Waste Management Department - Drain Maintenance Unit - Environmental Health and Sanitation Department (EHSD) - Sewage Unit - Okaikoi South Metro	Prior to commissioning and handing over	-Engineering Consultant -GAMA Coordinator -Municipal Works Engineer/ Municipal Waste Officer	10,000.00
5.	Sensitization and awareness creation on waste disposal and maintenance of drains	General Public	Throughout operation of drains	Municipal Waste Management Department	As part of duties of EHSD
TOTAL					**45,000.00**

7.4.3 Output of the Training

Capacity building on the health, safety, environmental and social management measures provided in this chapter is required to ensure the effective implementation of the ESMP and the permit conditions. All monthly and progress reports should capture health, safety and environment capacity building activities carried out.

7.5 Estimated Budget for ESMP Implementation.

The environmental and social management actions described above require detailed cost analysis after project development to determine the budget needed for implementation. It is estimated that an amount of **Eighty Thousand and Eight Hundred Ghana Cedis (GH¢80,800.00)** will be required to implement the provisions of the ESMP for the Kaneshie First Light Culvert construction as shown in **Table 7-4**. This figure is subject to review following confirmation from cost studies.

Table 7-4: ESMP Budget.

No.	Programme	Cost/year(GH⊄)
1.	Mitigation Action for Identified Impacts (**Table 7-1**) (Operational Phase)	25,000.00
2.	Environmental and Social Monitoring Plan (**Table 7-2)** (Operational Phase)	5,800.00
3.	Grievance Redress (Construction Phase)	5,000.00
4.	Capacity Building (**Table 7-3**) (Construction phase=35,000.00 and Operational Phase = 10,000.00)	45,000.00
Total		**80,800.00**

7.6 Reinstatement and resettlement issues

For those property and livelihoods that the project implementation will affect requiring resettlement and reinstatement, an Abbreviated Resettlement Action Plan (ARAP) has been prepared to address them.

8.0 CONCLUSION

The Project Coordinating Unit of MLGRD is committed to ensuring sustainable environmental management and safeguarding the health and safety of the construction workers and the public during the implementation of the proposed project. The Project Coordinating Unit is also aware of the provisions in the Environmental Assessment Regulations 1999, LI 1652 and the World Bank Operational Policies. In keeping with these laws, this ESMP has identified and assessed key environmental and social impacts and concerns that may arise from the implementation of the proposed project.

Consultations with stakeholders, review of relevant literature, field inspections and studies underpinned the identification of the project adverse environmental and social impacts. A monitoring programme to help detect changes arising from the predicted adverse impacts has also been presented in this ESMP. The recommendations outlined in the ESMP for the project will ensure a high level of health, safety and environmental management for the proposed project. The cost of implementation is estimated at **GHS80,800.00.**

The proposed project has the potential to provide numerous benefits to the beneficiary institutions and the national economy. These include improved sanitation, hygiene and waste management in the beneficiary institutions, improved access to sanitation facilities for vulnerable groups and employment opportunities.

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Annex 1 Evidence of Stakeholder Consultations

Stakeholders consulted at Kaneshie Drain culvert site

No.	Name	Phone #
Accra Academy	a. Mr. Samuel Ofori- Adjei, Headmaster	0244223133
	b. Mr. Samuel K. Oduro, Assistant Headmaster	0248668898
	c. Mr. Patrick Mensah, Assistant Headmaster Administration	0208258529
PAPs (individuals)	Opanyin Kofi Owusu and family	0273789566
	Isaac U. Kofi	0548471434
	Nana Kweku Duah	0244485851
Neighbours	a) Annie Ujan	a) 0242107871
	b) Eric Antwi	b) 0549241203
	c) Robert Bonney	c) 0266885288
	d) Ben Dasomo	

Institutions, Consultants, Contractors consulted

Stakeholder	**Contact Person**	**Role**	**Contact number**
Ministry of Local Government and Rural Development/ Project Coordinating	George Awudi	Safeguard Specialist	0506152780
Accra Metropolitan Assembly	Graham O. Sarbah	Director, Drains Maintenance Unit/ GAMA SWP Project Coordinator (AMA).	0243235530/ 0202019170
Weruw Consulting Engineering	a. Mr. Wise Ametefe, Consulting Engineer, b. Richard Amekor, Project Engineer c. Felix Selanase Tsinase, Project Engineer d. Boateng, Quantity Surveyor	Engineering Consultants	a. 0244384254 b. 0244378082 c. 024467794 d. 0277781201
Vuulux Company Limited	a. Site Engineer, Richard b. Eric Yaw Agyemang, Foreman for masons	Contractors	a. 0244378082 b. 0243621854
Assembly member, Bubui Electoral Area	Honourable Davis Abalo	Assembly member,	0244103275

Stakeholder	Contact Person	Role	Contact number
Department of Urban Roads	Patience Onny	Traffic Engineer	
Electricity Company of Ghana	a. Mr James Teye, Project Engineer Accra West. b. Nat Fleischer, Principal Drafts Man Accra west c. Mawuli Sallah, Electrical Engineer/ Project supervisor Accra West d. Gabriel Narteh, Electrical Contractor.	Service Providers/ RoW user	a. 0243438027 b. 0244125789 c. 0244992903 d. 0200263936
Ghana Water Company Limited	Engineer Francis Lamptey	Service Providers/ RoW user	0205221912 0244531715
National Communications Authority	Edward Sunderland, Officer (Engineering)	Telecom regulator	0574497157

Attendance at Stakeholder Meeting held between NCA, Weruw Consulting Engineering, owners of Fibre Optic Cable Infrastructure on 22 And 29 March, 2017 at NCA Head Office

No.	Name	Organization	E-mail	Contact
1.	Emmanuel Acquah	SAL Consult Ltd.	eacquah@gmail.com	0277114700
2.	Nana Otu Ansah	SAL Consult Ltd.	nyotuansah@salconsultgh.com	0277867831
3.	Goerge Awudi	MLGRD- PCU	gawudi@lgpcu.org	0545231324
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15.	Albert Mate- Kole	Tigo	-	0277551593
16.	Angela Quartey	Tigo	-	0277600086
17.	George Adjarko	Tigo	-	0277600174
18.	Angela Anison	Tigo	-	0277600036

Meeting with Opanyin Kofi Owusu at Kaneshie first light

Meeting with Nana Kwaku Duah at Kaneshie first light

Safeguards Specialist, Consultants, ECG and NCA after site inspection

Meeting with GWCL Accra West Region Distribution Manager

Meeting with Telcos at the offices of the NCA (22 March 2017)

Meeting with Telcos at the offices of the NCA (29 March 2017)