

**AFRICAN DEVELOPMENT BANK  
AFRICAN DEVELOPMENT FUND**

**REPUBLIC OF GHANA**

**GHANA: AWOSHIE-POKUASE ROAD PROJECT**

**SUMMARY OF THE ENVIRONMENTAL AND SOCIAL  
IMPACT ASSESSMENT**

**INFRASTRUCTURE DEPARTMENT (OINF)**

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# **GHANA/ AWOSHIE-POKUASE ROAD PROJECT-ESIA SUMMARY**

## **1.0 Introduction**

1.1 The proposed project concerns the re-construction/construction of the 15km Awoshie-Pokuase road and some ancillary works in the Ga West District of the Greater Accra Region in Ghana. This project is a component of the Arterial Road Development Program (ARDP), which for Accra is targeted at linking the capital with by-pass roads to major highways leading to various parts of the country. Specifically, the road project is aimed at: i) providing an alternative route for vehicular traffic currently using the Pokuase-Achimota route to access the western parts of Accra and beyond, and vice versa; and ii) improving the transportation system between the two nodal towns (Pokuase and Awoshie), and adjoining settlements.

1.2 The project is classified in category 1, from the environmental and social perspective, taking into consideration the types of works to be undertaken, size and scale of project and, the potential direct and indirect impacts that may be induced. In line with: i) the Bank's Environmental and Social Assessment Procedures; ii) the Ghana Environmental Protection Agency (EPA) Act; iii) the EA Regulations; and iv) the Ghana EIA Procedures, an Environmental and Social Impact Assessment (ESIA) is required for this development. The ESIA was carried out by a qualified consultant and made available to the public by the Ghana EPA for public information and comments, in line with the EA Regulations. The present report is a summary of the ESIA.

## **2.0 Project Description and Justification**

The proposed components of the Awoshie- Pokuase project are as follows:

### **CIVIL WORKS**

- (a) Construction of about 15 km of paved road
- (b) Environmental impact mitigation measures
- (c) Sensitization of project area inhabitants to: i) road safety issues, environmental protection, malaria control, waterborne diseases, STDs and HIV/AIDS
- (d) Works supervision

### **URBAN DEVELOPMENT**

- (e) Drainage
- (f) Construction of local roads
- (g) Provision of water supply

- (h) Rehabilitation of the Anyaa market and the bus terminal
- (i) Construction/ Rehabilitation of socio-economic infrastructures (schools, health/recreation centers etc.)

## PROJECT MANAGEMENT

- (j) Project Coordination at DUR
- (k) Technical and Financial Audit.

2.2 The project is scheduled for implementation in two construction phases. The phase one constitutes the major component and will mainly involve the following:

1. Preparation of the entire 90m (cross-section) corridor (from Awoshie to Pokuase) for the construction of four-lane dual carriageway, four service lanes and bicycle lanes and walkways;
2. Construction of 10km (out of the 15km) of the two-lane carriageway and two service lanes in each direction, as well as bicycle lane and walkway (also in each direction) from Awoshie to Amamorley; and
3. Continuation of construction of only the two service lanes in each direction from Amamorley to Pokuase;
4. Provision of traffic signals at specific intersections
5. Construction of drains and culverts

2.3 The phase two will involve the mainly the future construction of:

1. The 5km of the two-lane main carriageways in each direction (reserved in phase one), from Amamorley to Pokuase
2. An overpass on the Accra-Nsawam rail line
3. A three-level inter-change connecting the Accra-Nsawam road and the ACP Junction

## **Project Justification**

2.4 Road infrastructure constitutes a major component of the transport system in Ghana. Road transport takes up about 98 % and 95 % of freight and passenger traffic respectively (MoT, 2007). The main objectives of the Arterial Road Development Program (ARDP) are to: i) assist the various Metropolitan, Municipal and District Assemblies (MMDAs) to develop their road infrastructure; ii) improve access to and from the capital city; iii) enhance productivity; and thereby iv) achieve accelerated poverty reduction. Development of the Awoshie-Pokuase road has become crucial as most vehicles moving towards the western part of Accra on the Nsawam- Accra road have to pass through the congested Achimota to the Apenkwa junction, and unto the Motorway Extension road. The project will: i) provide an

alternative route for vehicular traffic currently using the Pokuase-Achimota route to access the western parts of Accra and beyond; and ii) improve the transportation system between Pokuase and Awoshie, and adjoining settlements.

2.5 The construction of a faster, shorter alternative highway will lead to significant savings on fuel consumption and reduction in CO<sub>2</sub> emissions favoring the fight against climate change. The other benefits include reduced travel-time, vehicular wear and tear and lower maintenance and operational cost.

2.6 The low lying nature of some sections of the current road makes it flood-prone and unmotorable after heavy downpour. This affects traffic flow, causing traffic jam. Gullies created by severe erosion at sections of the road have led to narrowing of the road. This slows down movement of goods and people. The implementation of the project, however, will open up the area especially the rural agricultural section and provide a boost to socio-economic activities with its resultant benefits to the local communities and the nation as a whole.

### **3.0 Policy, Legal and Administrative Framework**

3.1 As per the Ghana EIA Procedures and the Environmental Assessment (EA) Regulations, as ESIA is required for the construction of a road project. The Awoshie-Pokuase road, therefore, requires an EIA. The EA Regulations provides various schedules of “undertakings” and levels of assessment, and also sets out the processes to follow to comply with the regulations and to ensure that the project is implemented in an environmentally sound and sustainable manner.

3.2 The relevant policy, legal and administrative framework within which the ESIA was carried out are listed and further reviewed in summary below. These are: i) Ghana EIA Procedures; ii) Environmental Protection Agency (EPA), Act 1994 (Act 490); iii) Environmental Assessment (EA) Regulations, 1999 (LI 1652); iv) Local Government Act, 1993 (Act 462); v) National Museum Decree, 1969 (NLCD 387); vi) Lands (Way Leaves) Act, 1963 (Act 186); vii) The Road Reservation Management – Manual for Coordination, 2001; viii) Environment and Social Management Framework (ESMF) for the Road Sector, 2007; ix) Resettlement Action Framework for the Road Sector, 2007; x) African Development Bank Environmental Policy; and xi) The Bank Group Involuntary Resettlement Policy.

3.3 The EPA Act mandates the Agency to ensure compliance with the EA Regulations. The EA Regulations make it an offence to commence certain “undertakings” (including road projects), without prior EIA and environmental permit. The development control functions are principally carried out under the Local Government Act 1993, Act 462, Town and Country Planning Law Cap 84 of 1945 and, the Building Regulations 1996, LI 1630. In case of a finding

of any archaeological artifact in the course of the road construction, the National Museums Decree, 1969 (NLCD 387) will apply.

3.4 The construction of a road project raises issues of acquisition of way-leaves (Right-of-way). The determination of the route and the acquisition of the right-of-way of the project will be undertaken within the framework as set out in the Lands (Way Leaves) Act. The Road Reservation Management Manual for Coordination is a comprehensive document developed for the various utility service providers and, the relevant statutory and regulatory agencies, for the efficient management of road reservations for the installation of public utility services. Specifically, the manual outlines procedures for the handling of disruptions of utilities.

3.5 The ESMF provides a corporate environmental and social safeguard policy framework, institutional arrangements and capacity available to identify and mitigate potential safeguard issues and impacts of road projects. The ESMF also represents a statement of policy, guiding principles and procedures of reference, agreeable to all key stakeholders such as the EPA, the World Bank, MoT and the implementing Agencies. It brings consistency with the OP4.01 and OP4.12 and other applicable safeguard provisions of the World Bank.

3.6 The Environmental Policy of the African Development Bank sets out the broad strategic and policy framework under which all Bank Group lending and non-lending operations will be made to promote environmentally sustainable development in Africa. Its overall goals include helping preserve and enhance the ecological capital and life-support systems across the continent. The Bank's policy on disclosure requires that all the people residing in the given areas of a project have the right to be informed and their concerns taken into consideration, for a proposed development in their respective areas. The Bank Group involuntary resettlement policy is intended to address the involuntary displacement of people caused by Bank funded operations in public and private sector.

#### **4.0 Description of the Project Environment**

4.1 The Ga West District (the project district) is bordered to the west by the Central Region and north by the Eastern Region. The Tema Municipality and the Gulf of Guinea/Accra Metropolis border the east and south respectively. The estimated population of the district is 280,656 (2000 PHC), with a growth rate of 6.2%. Population density (2000) stood at 326.7 persons per square km. The prominent settlements within the project corridor include: Awoshie, Anyaa, Ablekuma, Ayawaso, Amamorley and Pokuase. All the major utility services – electricity, water and telephone are present in the project corridor, especially within the first 7 km from Awoshie to Ablekuma. There are two hospitals, one health centre and four maternity homes in the area. Various socio-economic activities have given rise to several land-use types

along and within the project corridor, including commercial, residential, agricultural, cultural, civic and mining (quarrying). Other activities undertaken are carpentry, hairdressing, construction, trading, mechanics, artisan, craftsmanship, etc.

4.2 The chiefs own the lands in the affected communities customarily. The main cultural/historical resources identified to be close to the RoW are two shrines in Ablekuma - the “male and female” shrines, one in Ayawaso and another at Awoshie village. At Anyaa is the royal burial ground for Naa Dode Aki. These sites cover areas on the average 10 m<sup>2</sup>. Some have raised walls or structures which house various ritual objects, with compounds to receive visitors and surroundings with or without trees.

4.3 The Awoshie-Pokuase area experiences a bi-modal rainfall pattern. The major rainy season is from March to July, with the peak rainfall in May-June, followed by a short dry spell in August and parts of September. The dry period is followed by the minor rains, from September to November, after which the main dry season sets in. The average maximum temperatures in Accra lie between 28°C and 33°C. The air quality of the project area is generally affected by the existing untarred road, which generate considerable amount of dust through vehicular movement.

4.4 The vegetation in the project corridor, especially the rural section is mainly coastal shrub and grassland. The trees commonly found are *Azadirachta* spp and *Cassia* spp in the compounds of houses along the project route. The route between Ablekuma and Pokuase (about 8 km rural stretch) traverses a predominant vegetation of grass comprising *Typha* spp, *Panicum* spp and *Vertiveria fulvibarbi*. The animal species that are found in the project area include rainbow lizard and burrowing viper (reptiles), pied crow and the cattle egret (birds), and the giant rat and the striped grass mouse (small mammals). These animals are very common in coastal savanna grassland areas and in rural settings. These are very active and mobile animals without rigid habitat restrictions.

4.5 The topography within the project area is gentle-rolling as is typical of the coastal areas. The Awoshie-Pokuase corridor has a mean height ranging mostly between 20 - 40 m above sea level. There are some sections around Anyaa, Ablekuma and areas towards Pokuase, where the land rises to about 90m. Along the rural section, the Nsaki is the major stream draining the area. There are also network of drains linked to the Nsaki stream. The southern portion of the project area at Awoshie is drained by the Lafa stream. The streams overflow their banks during rainy periods and many areas are liable to flooding and inundation.

## **5.0 Project Alternatives**

### **‘No action’ option**

5.1 The development of the road is expected to be part of a future link to Tema from Awoshie through Ashalley Botwe and East Legon. The road currently provides a viable but poor route for diverting traffic heading towards the western part of Accra and beyond. If the 'no action' option was chosen, from the economic standpoint and motor traffic and social considerations, the following benefits will be foregone: i) improved access roads; ii) boost in economic activities in the area; iii) enhanced development and improvement in housing and other amenities; iv) improvement in drainage and aesthetics; v) reduced flooding; and vi) improvement in the value of property and higher class status of the communities and surroundings. The 'no action' option was not considered as a viable alternative.

### **Using the existing road and RoW throughout**

5.2 The proposed road will follow the existing route from Awoshie through Anyaa to Ablekuma. However from Ablekuma onwards, the road is proposed to traverse a vegetated stretch to Pokuase. The alternatives considered for this stretch are - using the existing road from Ablekuma to Pokuase as opposed to routing the road through the vegetated stretch. A large number of developments, some speculative, have sprung up since 2000 when Department of Urban Roads (DUR) initiated its previous plans to develop this section of the road. Over the years more permanent structures have replaced them. The availability of undeveloped land (for human settlement) from Ablekuma to Pokuase provides a suitable alternative that avoids most of the permanent structures. Alignment through the vegetated corridor is considered more environmentally and socially friendly and cost effective option. Other reasons are: i) minimal property loss; ii) more vegetation cover loss along this RoW, but of less conservation value; iii) more flexibility and freedom in selecting and maintaining a direct (straight) road corridor; and iv) less litigation from contending land, property owners and tenants.

### **Rail-road crossing at the same level**

5.3 The two options considered with regard to the alignment of the route at the point of intersection with the rail line linking Accra-Nsawam are: i) project road and rail line at the same level; and ii) project road above the rail line. The Awoshie road may be constructed to cross the railway lines and link with the Accra-Nsawam road at Pokuase, by embedding into the road where they cross each other. Though the option will have minimal effect on the environment, the potential risk of accidents (vehicular, train and pedestrian) would be high. Furthermore, for a highway of its nature, this will be less desirable, especially by stopping and slowing down traffic for trains to pass. The option of constructing a bridge over the rail line to join the Accra-Nsawam highway in order to form a round-about at the point of intersection, suspended on solid concrete columns is the desired option. Some big trees around the Nsawam-Pokuase interchange area in the RoW will, however be affected. Some negative ecological impact will be higher with this option. The first option will be used in the first phase of the

project construction. The road bridge-over-rail option will be implemented in the second phase of the project.

## **6.0 Potential Impacts and Mitigation/Enhancement Measures**

### **Positive Impacts**

6.1 The DUR is implementing the Arterial Road Development Program (ARDP) of the Government of Ghana (GoG). The beneficial impacts include: i) assisting the various Metropolitan, Municipal and District Assemblies (MMDAs) to develop their road infrastructure; ii) improving access to and from the capital city; iii) enhancing productivity; and iv) accelerating poverty reduction. The proposed Awoshie-Pokuase highway is part of a future link to Tema from Awoshie through Ashalley Botwe and East Legon, by-passing population centers in the city.

6.2 The road will provide an alternative route for vehicular traffic currently using the Pokuase-Achimota route to access the western parts of Accra and beyond, and vice versa. This will make tremendous savings on general fuel consumption and reduction in vehicular emission pollution, by avoiding the traffic-congested Pokuase-Achimota-La Paz route. It will also improve the transportation system between the two nodal towns (of Pokuase and Awoshie) and adjoining settlements, by opening the area up. For instance, farming communities such as Nsakena and Oduman will become easily accessed for their farm produce. Access to educational, health, socio-cultural activities and administrative facilities will also be improved. Many more people will be attracted to the communities where the road traverses, with increased economic activities.

6.3 The project will on the whole contribute to poverty reduction and improvement in living conditions of the communities. The largely rural character of the Ga West District will change to an urbanised one. The communities and commercial interests along the RoW will no longer suffer from dust pollution, seasonal flooding, gulley erosion and eroded and dangerous roads and long travel time, after construction. Construction activities are expected to generate hundreds of direct jobs for both skilled and unskilled labour in the communities. Women are engaged in income generating activities e.g. restaurants, trading in farm produce, fruits and vegetables along the corridor. Such activities will become more commercialized with the improved access and increased population. Children, especially the school-going, who bear the blunt of dust pollution and risks on the existing dangerous corridor, will travel faster, feel safer and better protected by road safety and traffic management measures.

### ***Gender and Development***

6.4 Along the road corridor, women are active in trading activities, e.g. hawking of food stuff and selling of cooked food items, to supplement their incomes. The level of education among these women is generally very low. To enhance the social benefits of the project to women the following will be implemented: i) Health awareness (including breast cancer and HIV/AIDS); ii) Girl-child education promotion; iii) Environmental cleanliness and hygiene; iv) Provision of alternative sources of potable water during periods of supply interruption; and v) Provision of toilet facilities in markets close to the road corridor, etc.

### *Climate Change*

6.5 Climate Change has great significance for sustainable development, life and livelihoods in Ghana. The rough nature of the road as it is now leads to longer travel time, increased wear and tear of vehicular parts, and thus increased emissions, especially greenhouse gases, impacting climate change. The upgrading to four lanes dual carriageway will result in reduced travel time and emission (carbon dioxide and other greenhouse gases). More travelers can now use the shorter, faster by-pass Pokuase-Awoshie road with reduced fuel consumption and CO<sub>2</sub> emission. As part of the ancillary activities, the environmental expert will facilitate sensitization campaign in schools along the project corridor on many subjects including climate change, and also engage corridor tree planting, especially in communities.

### **Potential negative Impacts at Construction Phase**

6.6 Earthworks involving excavation, filling and compaction could generate much vibrations and particulate/dust. These will be particularly pronounced where machines are old and poorly serviced. The effects will be excessive pollutants emission (particulate, SO<sub>2</sub> and NO<sub>x</sub>), with accompanying respiratory disorders, especially asthmatic attacks in residential areas, and impact on commercial and educational facilities and cultural resources along the RoW. It will also pose a significant occupational health concern.

6.7 The use of heavy construction machinery e.g. bulldozers, excavators, concrete mixers, graders, etc. will generate considerable noise, which impact will be significant on workers, and also the public in the built-up segment (first 7km) of the corridor. Clearing of the RoW for construction will generate substantial volumes of waste, including huge quantities of demolished, old road surface, vegetative materials and top soil. Non-segregation and disposal of the different types of waste indiscriminately will be a major source of concern. This can affect water and drainage courses, causing flooding and creating conditions and sites for mosquito breeding (responsible for malaria).

6.8 The rural segment of the corridor is covered mainly with shrubs, grass and a few trees. Clearing of a 90 m wide corridor for road construction and site camps, etc. would lead to loss of vegetation cover and trees (Cassia sp), and impact on plant communities in the area. The

fauna which depend on the vegetation for food and habitat will have their feeding and breeding ranges disrupted leading to potential displacement of susceptible animal species.

6.9 The quality of streams (crossed the project road) will be adversely affected. The Lafa stream crosses the road at about 0.9 km from the Awoshie junction. Along the rural section, the Nsaki is the major stream draining the area, with a network of drains linked to these streams. Erosion, common in the area will become worse from exposed land surfaces. Sediment-laden run-off could deposit materials into the Lafa and the Nsaki streams, and other drains and low lying areas causing siltation. This would adversely affect water quality, alter drainage channels, reduce their capacity and, expose larger areas to flooding in Awoshie and nearby communities.

6.10 In the rainy season, the most segments (untarred) from Anyaa market to Pokuase become muddy and slippery, increasing the risk of accidents. In the dry season, it is very dusty, reducing visibility. During the construction phase, huge trucks will compete with private cars and commercial vehicles on the already narrow road. Traffic flow problems could be compounded, causing severe congestion, inconvenience and accidents.

6.11 There could be potential impacts on cultural/historical resources and tourist sites along the RoW, including two shrines in Ablekuma, one each in Ayawaso and Awoshie village, the Asofoman Presbyterian cemetery and the royal burial ground for Naa Dode Akai at Anyaa (close to the abandoned CP quarry). Other religious/sacred sites such as church buildings, mosques, schools and other civic buildings also along the main settlements will be impacted. A mosque at Ch 8+850 in particular will be affected by the project.

6.12 A number of utility facilities within the RoW e.g. pipelines and electricity poles will be affected. Supplies will be disrupted as the RoW is prepared for construction. Services to over 53,000 people in the following communities will be affected – Awoshie, Anyaa, Ablekuma and Olebu. These communities will be exposed to potential health risks and inconveniences.

6.13 The project may attract people seeking employment. This will render the project neighbourhood vulnerable to the spread of STIs/HIV. The influx of migrant workers could also impact negatively on the traditional values and morals of the local people.

### ***Quarry Materials***

6.14 Boulders, rocks, and stones will be required for the construction activities. Quarrying will undertaken for provision of construction materials. The main impacts of quarry developments and transportation of products to project locations include: i) Air quality and emissions; ii) Noise and vibration impacts; iii) Effect on water resources and drainage; and iv) Impacts on terrestrial ecology. The main sources of dust are drilling holes for blasting, the

movement of trucks and the dumping of materials onto stockpiles. Dust affects air quality and it is a major source of public and occupational health concern (e.g. silicosis and asthmatic attacks). Noise and vibration will emanate from drilling, blasting, crushing and transportation operations. These can cause cracks in building structures and potentially irritate nearby residents. Water Resource concerns include suspended solid (mud and silt) in run-off, oil waste from trucks and machinery and nitrates in ground water from explosives. (Quarry and other construction materials will be sourced from existing approved sites (list provided in the main ESIA). The contractor will ensure the strict observance of environmental standards by the Quarries)

### **Expropriation**

6.15 The expansion of the existing single-lane road of about 8 m RoW to a 90 m RoW-four-lane dual carriageway will lead to varied extent of social and economic impacts. About 1,019 buildings/structures (including residential, commercial, mixed-use, utility facilities and bare or undeveloped land) falling within the new RoW will be affected. Businesses, brisk mostly in Awoshie, Anyaah and Ablekuma will lose their location. The identified project affected persons (PAPs) are 707, with 57% males and 43% females. The impacts will include: i) loss of income during the re-location period; ii) loss of business goodwill; and iii) transfer of trading stock and chattels.

### **Potential negative impacts in the operational phase**

6.16 The operational phase will generate vehicular air emissions (pollutant) from combustion fuel, vehicle exhaust, tyre wear, spills, etc. on the new highway which are significant public health concerns. These pollutants can also lead to the deterioration of surface and ground water quality.

6.17 Improved road quality will lead to a higher frequency of traffic and increase in speed, posing potential accident risks for vehicles, roadside dwellers and traders, pedestrians (particular children), domestic animals. There will also be potential increase in heavy vehicles traffic, e.g. those transporting dangerous or hazardous substances, petroleum products, chemicals, etc, that may constitute an environmental risk, in case of spillage.

6.18 The shoulders and embankments of the newly constructed road may experience sheet erosion during rainy seasons due to large volumes of run-off from increase in paved surfaces, obstruction of drainage system, etc. This will be particularly pronounced in elevated (hilly) sections of the corridor.

6.19 During the operational phase, there is tendency of constructed drains to get choked with silt, refuse and other materials carried in the run-offs. This could eventually lead to flooding of the roads and the environs.

### **Mitigation Measures**

6.20 Beyond Ablekuma, the RoW is diverted westwards off the existing earth road through vegetated open grassland, with low density of constructed properties. In Olebu the alignment avoids the fairly developed sections in order to have less impact on structures. Similarly, impact on structures within Pokuase is minimal as the road traverses partly an undeveloped area.

6.21 An adjustment of the RoW will be considered in some sectors, without compromising on road safety, e.g. at the CP quarries on either side of the existing road at Anyaa, and potential tourist and cultural sites such as the Okaikoi Shrine at Awoshie village, the Asofoman Presbyterian cemetery and shrines.

6.22 Dust suppression will be carried out by sprinkling water along the untarred sections of the road and other adjoining sections, and the enforcement of speed limits, programme of servicing for all vehicles and equipment implemented.

6.23 Proper storm water drainage facilities (culverts) have been designed to prevent any erosion that may contribute to the increase of suspended solids. Clearing of the site will be done progressively and restricted to the RoW and its associated servitude. Vetiver grass would be planted along drainage channels and on steep slopes to reduce scouring effect of water.

6.24 Noise levels shall be minimised at source through better equipment (noise level specifications are available from suppliers). Where applicable, some machinery will be isolated e.g. mixers and generators (shall observe appropriate separation distances from residences). The work schedule of workers will be adjusted to ensure limited exposure time. Ear muffs will be provided to workers.

6.25 Alternative arrangements will be made during disruption of water supply and shortages. Water tankers shall be supplied by the Ghana Water Company. These will normally be announced using information vans to the affected communities in advance.

6.26 Dust-generating activities (e.g. drilling) may be reduced or suspended during windy conditions. Haulage trucks will be covered with tarpaulin to prevent dust and material escape. During tipping and heaping a system of water sprinkling will be used to suppress dust. Heaped quarry and other materials will be periodically dowsed with water. Haulage will be restricted to

day time to prevent noise nuisance to the communities and the high risk of accidents in the night.

6.27 The DUR and the Ga West District Assembly will organize periodic desilting of the drains especially before the onset of the rainy seasons. The construction will also introduce silt traps and metal mesh at appropriate locations of the drains to trap suspended solids (polyethylene bags, pieces of paper, rags etc) in the run offs.

### **Eligibility and Notification**

6.28 All affected properties have been valued and assessed. Details of extent of dislocation and compensation due are provided in the RAP. Persons who work from temporary structures who need to relocate their premises will also be eligible for supplementary assistance, just as squatters and encroachers. In appraising the properties affected, a combination of the Replacement Cost and the Direct Capital Comparative Methods were used in arriving at the open market capital value of the building and land respectively. Disturbance and other incidental contingencies are also paid based on the level of inconvenience, which are quantified and expressed as percentage of the total reinstatement cost of the property. The summation of the above estimated values of the building/structure, land and the disturbances, gives the adequate and fair amount of compensation payable to the PAPs.

### **Permanent Structures**

6.29 Offers for the 303 permanent structures have been made to property owners. Cash compensation will be paid based on assessed values for land, cost of replacement of structure and disturbance. DUR will pay initial estimated assessed values to enable the PAPs look for alternative accommodation or resettlement in advance. The local authorities will be fully involved in providing necessary assistance for their relocation. The difference will be paid when the determined values are received from the LVB. Estimated compensation values for affected landed assets are summarised below (from the Properties Impact Assessment). An additional 25% contingency will be available to offset cost for unexpected expropriation, increase of property value, help to vulnerable groups, monitoring, capacity building, etc.

	<b>Permanent Properties Affected</b>					<b>Grand Total</b>
Suburbs	Awoshie	Anyaaah	Ablekuma	Olebu	Pokuase	
Number	91	52	50	74	36	303
Total	4,049,715.2	929,103.51	717,045.27	1,177,781.53	864,486.53	7,738,132.11

### **Temporary Structures**

6.30 The mode of resettlement of the 716 occupants of temporary structures is as follows: i) Compensation for displaced residents; ii) Compensation for land taken; iii) Supplemental assistance to shop owners; iv) Supplemental assistance to enable relocation of temporary structures. The supplemental assistance will be made up of the following components: i) Cost of movement; ii) Disconnection/reconnection of power; iii) Land acquisition fee; iv) Average monthly expenditure; v) District Assembly Annual license fee; vi) Thirty (30) percent of total cost of movement estimated as cost of monthly loss of income. Each recipient will be paid an equivalent of three months lost income.

A summary of permanent structures affected and supplemental assistance estimates is given below.

	Permanent Properties Affected					Grand Total
	Awoshie	Anyaaah	Ablekuma	Olebu	Pokuase	
No.	91	52	50	74	36	303
<b>Total</b>	<b>4,049,715.2</b>	<b>929,103.51</b>	<b>717,045.27</b>	<b>1,177,781.53</b>	<b>864,486.53</b>	<b>7,738,132.11</b>

A summary of temporary structures affected and supplemental assistance estimates is given below.

Type of Structure	Awoshie	Anyaaah	Ablekuma	Olebu	Pokuase	Total
Kiosk	59	84	39	0	5	187
Container	27	42	20	0	0	89
Container (Concrete Base)	52	169	65	2	1	289
Kiosk	15	85	25	0	2	127
Shed	5	13	5	0	0	23
Total	158	393	154	2	8	715
<b>Total Compensation (GH¢)</b>	<b>120,687.2</b>	<b>302,567.15</b>	<b>120,728.73</b>	<b>1,477.2</b>	<b>5,583.0</b>	<b>551,043.28</b>

## 7.0 Environmental and Social Risk Management

7.1 During the road construction and operation phases, the environmental and social risks will essentially concern: i) risk posed to vehicles, the public and domestic animals by unmarked construction excavations and trenches; ii) accidents caused by road diversions without reflective directional and warning signs posted at reasonable distances; iii) spillage of oils (petroleum) and bituminous and other substances used by construction machinery and in road construction; iv) frequent vehicular accidents on the narrow alignment during construction; v) high rate of accidents from speeding on the new highway at the operation phase; vi) worse flooding situations at Awoshie and other low lying areas during construction; vii) fire out

breaks at bitumen and fuel depots; viii) risk of mismanagement of the compensation money can lead to PAPs becoming destitute and social liability; ix) public health risk of the local communities falling on contaminated surface water sources e.g. the Nsaki and Lafa following water supply/pipeline disruption; x) risk of demolition and construction waste disposed of indiscriminately in environmentally sensitive areas.

7.2 To reduce the incidence of occupational accidents, adequate training and education sessions will be organized for all workers as regards to the health and safety precautions associated with such developments. Personal Protective Equipment (helmets, earmuffs, gloves, etc) shall be made available to employees and their usages enforced. Non-compliant staff will be appropriately reprimanded. As a matter of principle, the contractor will ensure that Safety First is the rule that governs all activities and operations within the camps and along the route.

7.3 Safety measures such as provisions of safety signals, temporary barriers, night beacon lamps, personnel stationed for traffic control and mobility, etc. and training on road safety are envisaged with the support of relevant national institutions. The required measures relate to: i) sensitization and training of project officials and the workers; ii) rapid intervention techniques in the event of disasters; iii) safety procedures to follow in risky areas and in handling risky activities; iv) ascertaining and approving waste disposal sites, and to monitor the waste management contractor; v) installation and supply of first aid kits and PPEs; vi) sensitization of local population with regard to HIV/AIDS and STIs risks and road safety; vi) deployment of standby vehicle and establishment of other contingency plan for emergency cases.

## **8.0 Monitoring Program**

8.1 Monitoring is designated to check the effective implementation during the construction and operation phases of: i) proposed mitigation measures; ii) requirements specified in the various laws and regulations; iii) commitments of DUR and contractors to effectively implement and follow up these measures; iv) requirements of the other laws and regulations related to public health, improvement of living conditions of the PAPs, environmental protection, water quality management, sensitive areas protection.

8.2 The key verifiable indicators which will be used to monitor the impacts will be: i) air quality, with focus on PM<sub>10</sub>, and also SO<sub>2</sub> and NO<sub>2</sub> in the construction and operation phases; ii) noise levels and the provision and use of PPEs; iii) water quality parameters (pH, Dissolved Oxygen (DO), Conductivity, Total Dissolved Solids (TDS), Total Suspended Solids (TSS), heavy metals, and oil and grease, and flow characteristics) of the Nsaki River and Lafa, prior to, during and after project construction; iv) effectiveness of the drainage system (culverts and drains function); v) effectiveness of the erosion prevention measures; vi) waste disposal strategies at the pre-construction and construction phases; vii) sanitary facilities for

staff/workers (including construction sites); viii) road safety measures (adherence to road signs, markings, accidents, traffic diversions and maintenance works; ix) employment opportunities for the local community members; x) rate of disruption of power and water supply and relocation of services; xi) disturbance of religious and cultural sites and associated conflicts; and xii) frequency of HIV/AIDS and STIs awareness programs.

8.3 A Resettlement Monitoring Committee (RMC) will be formed, made up of DUR, an NGO, the Environmental Expert, a representative of the LVB, the EPA and representatives of PAPs. The RMC will meet monthly to monitor the effects of resettlement on the project corridor. The RMC, supported by an NGO will be responsible also for the monitoring of the resettlement program including: i) number of PAPs successfully relocated; ii) problems facing PAPs in their new locations; and iii) solutions found for problems of the relocated PAPs.

8.4 DUR, supported by an NGO will be responsible for performance and other monitoring activities including: i) negotiation procedures and compensation calculations by the Land valuation Board (LVB); ii) dismantling of structures and disconnection of utility services; re-plotting all government acquired land and registration processes along the corridor by Survey Department; iii) reporting on resettlement issues and restoration of livelihoods by the RMC; iv) induced developments close to the new road and enforcement of planning regulations by the Ghana West District Assembly (GWDA); and v) grievance redress procedure and its functioning and effectiveness of other litigation avoidance measures.

8.5 The DUR, an NGO and the EPA will be responsible for the implementation of the monitoring measures. DUR will oversee road safety, erosion, drainage measures and HIV/AIDS awareness programs, etc. The EPA will be in charge of air quality/dust generation, noise, wastes and water quality monitoring plans, among others. DUR will engage the services of a consultant to assist in DUR's monitoring role to ensure that livelihoods are maintained and or restored. In monitoring displaced persons, the consultant will locate all PAPs, organise follow-up visits and meetings, and monitor PAPs at half yearly intervals till the project is closed.

8.6 The overall monitoring cost is summarized as follows, which include follow up of mitigation measures by an environmental expert, sensitization campaigns, capacity building of the DUR's etc.

Total Estimates for the Three (3) monitoring Stages, including environmental and social follow-up, capacity building sensitization campaigns and ancillary works are:

<b>Description</b>	<b>Amount US (\$)</b>
Pre-construction Phase	123,500

Construction Phase	450,000
Operational Phase	100,000
<b>Total</b>	<b>673,500</b>

## 9.0 Public Consultations and Public Disclosure

9.1 The ESIA was carried out applying a participatory approach throughout as well as field and literature survey. Consultations carried out with affected groups and other key stakeholders in the project areas and the villages covered by the traditional chiefs, through public forums, are summarized below. Besides, the chiefs, opinion leaders and members of Unit Committees within the affected communities were consulted. All PAPs were consulted in discussing the project implications for them and the area, including economic, social, cultural and environmental issues, mitigation and improvement measures, as well as compensation for the different category of PAPs. The inputs, comments and concerns of the local population and the PAPs are incorporated in the ESIA and the ESMP.

9.2 As is the norm in EIA, a participatory approach to this study was adopted. A number of stakeholders, whose input are considered crucial for the sustainable implementation of the project were identified and consulted. Some of the chiefs, village heads and traditional leaders were consulted:: Unit Committee member, Awoshie; Sub Chief, Anyaa; Unit Committee, Ablekuma; Unit Committee, Ablekuma; Sub Chief, Olobu; Unit Committee, GWD Armoley; Opinion leader, GWD Amorley; Unit Committee, Pokuase; Nii Tettey Kojo II and Elders Ayawaso. Besides, all Project Affected Persons (PAPs) have been consulted.

9.3 Formal consultations with some Government institutions, Departments and Agencies have been initiated. Initial consultations revealed the following,

No	Consulted Institutions	Concerns
1.	Ghana Water Company Limited	Water is supplied by the GWCL in the urbanised areas and Community Water and Sanitation Agency in the rural areas.  Less than half of the population is served with pipe borne water by GWCL from the Weija Dam
2.	Ghana Telecom	They are not aware of the project. There are no telephone poles in the district. The people rely on mobile phones
3.	Ghana Railway Corporation	The Ministry of Harbours and Railways has instituted a new policy which states that “roads should not be at the same grid  (as demonstrated at Circle and Graphic roads) as rail”. This policy stresses, the new road being constructed should either be below (as demonstrated by the rail leading from Accra to Tema) or above (as

		shown by the Alajo overpass) the rail.
4.	Electricity Company of Ghana	The developed parts of the district are connected to the national grid. The ECG also has the capability to supply uninterrupted power once there is sufficient energy for the whole country. The development plan however, does not make any projections for the supply of electricity to the rest of the District.
5.	Environmental Protection Agency	The Environmental Protection Agency is aware of this project and has received no complains so far.  They have also received the scoping report to be reviewed.
6.	Ghana National Fire Service	The Ghana National Fire Service made a request and a list of precautionary measures to be adopted by workers to prevent any fire outbreak.  The road markings and road safety measures should be taken into account and a packing place created close to the fire hydrants.  This will allow easy access to water by fire trucks thereby preventing any form of traffic around the fire hydrant area.  All underground electrical cables, pipelines and telephone lines must be in ducts to be protected from fires.  Construction equipments must be greased and oiled regularly to prevent friction which might lead to fire outbreak.  Fire extinguishers must be available.  Personnel must possess at least minimum knowledge of fire prevention and the handling of fire extinguishers.  Electrical poles can be protected from fire by weeding around them.

## 10.0 Complementary Initiatives

10.1 Some complementary initiatives will be included in the project to further enhance the beneficial impacts. This will be in addition to the comprehensive resettlement implementation package. To avoid the likelihood of compensation money mismanagement by some PAPs, the project will set up Business Advisory centre to provide financial management guidance and services to the PAPs.

### Ancillary Works and Measures

10.2 Fencing (wall) will be provided for schools, church buildings, mosques and other civic buildings along the main settlements of the corridor. Access road from the project road to the schools, religious and civic buildings along the corridor will be tarred and the areas properly drained. Furniture will be provided for nearby rural schools. Upgrading facilities and provision of ornamental trees will be provided for the shrines. The Asofoman Presbyterian cemetery and the royal burial ground for Naa Dode Akai at Anyaa will be beautified with fence walls to promote their tourist attraction. Public toilet facilities will be provided for the rural communities along the corridor.

## **11.0 Conclusion**

10.1 The state of the road (narrow, go-slow alignment, dusty, seasonally flooded and muddy) presents serious health and safety risks to commuters and adjoining communities. A 'no-project option' indicates that the road will remain in its deteriorated state, long travel-time, no improvement in housing and other amenities, low community class status, low economic output in the area, poor drainage, high incidence of gully erosion and frequent flooding. The development will no doubt improve the quality of life of the population living at and around the zone, besides inducing a sustainable development in the region. It is recommended that the project be implemented taking into account the mitigation of the environmental measures and a close monitoring of these measures. The present summary is submitted to the Board of Directors for information.

## **12.0 References and Contact**

- Department of Urban Roads (2008). Environmental Impact Assessment of the Awoshie-Pokuase Road in Accra.
- Department of Urban Roads (2008). Resettlement Action Plan of the Awoshie-Pokuase Road in Accra.
- ADB (2001) – Environmental and Social Assessment Procedures – Public Sector Operations
- ADB- (2003) Involuntary Resettlement Procedures

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