THE REPUBLIC OF GHANA
MINISTRY OF TRANSPORTATION
DEPARTMENT OF URBAN ROADS

EXECUTIVE SUMMARY

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

DESIGN OF GIFFARD, TESHIE LINK, AND BURMA CAMP ROADS
GOVERNMENT OF GHANA
MINISTRY OF TRANSPORTATION
DEPARTMENT OF URBAN ROADS

FEASIBILITY STUDIES AND DESIGN OF GIFFARD,
TESHIE LINK AND BURMA CAMP ROADS.

DRAFT ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

PREPARED BY:
MUNICIPAL DEVELOPMENT COLLABORATION LTD
ACCRA, GHANA

JUNE 2008
<table>
<thead>
<tr>
<th>ACRONYMS</th>
<th>Definition</th>
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<tr>
<td>AER</td>
<td>Annual Environmental Report</td>
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<td>AIDS</td>
<td>Acquired Immune Deficiency Syndrome</td>
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<td>BOQ</td>
<td>Bill of Quantities</td>
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<tr>
<td>BOST</td>
<td>Bulk Oil Storage and Transport</td>
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<tr>
<td>CBO</td>
<td>Community-Based Organisation</td>
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<td>DFR</td>
<td>Department of Feeder Roads</td>
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<td>DVLA</td>
<td>Driver and Vehicle Licensing Department</td>
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<td>DUR</td>
<td>Department of Urban Roads</td>
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<td>EA</td>
<td>Environmental Assessment</td>
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<tr>
<td>EAR</td>
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<td>ECG</td>
<td>Electricity Company of Ghana</td>
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<td>EIA</td>
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<td>EIS</td>
<td>Environmental Impact Statement</td>
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<td>EMP</td>
<td>Environmental Management Plan</td>
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<td>EMU</td>
<td>Environmental Management Unit</td>
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<td>Environmental Permit</td>
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<td>GPRS II</td>
<td>Ghana’s Growth and Poverty Reduction Strategy II</td>
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<td>GT</td>
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<td>GWCL</td>
<td>Ghana Water Company Limited</td>
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<tr>
<td>HIV</td>
<td>Human Immune Virus</td>
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<tr>
<td>L.I</td>
<td>Legislative Instrument</td>
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<td>MOT</td>
<td>Ministry of Transportation</td>
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<td>NGO</td>
<td>Non-Governmental Organisation</td>
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<td>PEA</td>
<td>Preliminary Environmental Assessment</td>
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<tr>
<td>ROW</td>
<td>Right-Of-Way</td>
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<td>RFS</td>
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<td>Resource Management Institutions</td>
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<td>STI</td>
<td>Sexually Transmitted Infections</td>
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<td>TOR</td>
<td>Terms of Reference</td>
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<td>USPI</td>
<td>Utility Service Providing Institutions</td>
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<td>VEC</td>
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<td>Wildlife Division</td>
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<td>WRC</td>
<td>Water Resources Commission</td>
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</table>
EXECUTIVE SUMMARY

Project Name: Feasibility Studies And Design of Giffard, Teshie Link and Burma Camp Roads: ESIA

Country: Ghana

Department: Department of Urban Roads

Date: June, 2008

Introduction

The Department of Urban Roads (DUR) of the Ministry of Roads and Transportation (MOT) is implementing part of the Road Sector Development Programme (RSDP), which among other reasons, aims at reducing congestion and facilitating the free movement of goods and people within the Accra East corridor and the capital at large to enhance accelerated growth of the national economy and poverty reduction. In view of this three (3 no.) roads have been selected in the corridor for that purpose and these include the Giffard, Teshie Link and Burma Camp Roads.

However, road projects (from development projects to minor maintenance activities) may have significant negative environmental and social effects. In view of these anticipated effects, it is required by the national environmental regulation (L.I. 1652) to register the project with the Environmental Protection Agency (EPA) for a detailed preparation of environmental and social assessment. This report forms part of the process to satisfy EPA’s requirement.

Expected Project Benefits

The expected benefits to be derived from the project include:

- Reduction in travel time and vehicle operating cost;
- Improved accessibility to markets for farm produce;
- Elimination of dust pollution;
- Reduction in traffic congestion pedestrian/vehicular conflicts;
- All-weather reliable roads;
- Better access to health care, education, market and other social services; and
- Enhance trade expansion, market integration and effective competition in the sub-region.
**Study Methodology**

The study was done in accordance with the requirements of the following:

- Federal Environmental Protection Agency EIA procedures and Guidelines.
- Water Resources Commission Regulations.

The preparation of the ESIA Report includes the following activities:

- Preliminary data collection / Desk studies;
- Visits to the project site;
- Consultations; and
- Analysis of key environmental and social issues resulting from the anticipated project activities.

**Project Location**

The Accra East Corridor is bounded on the north by the Accra – Tema section of the Kwame Nkrumah Motorway, on the south by the Accra-Tema Coastal Road, on the west by the Giffard Road and the east by the Tema General Hospital Road. Fig 3.1 shows the location map of the project roads.

The proposed feasibility studies and design of the projects involve three (3) roads of various lengths totaling about 19.3km.

The corridor is largely built-up, except for a few uninhabited area; even these are currently being rapidly developed. It is expected the completion of these roads will open the area up for further development.

Below is a summary of the road identities and their description.

- **Giffard Road** – From 37 Military Hospital through Burma Camp main entrance and Trade Fair to the T – Junction opposite La Palm Beach Hotel (6.0 km);
- **Teshie Link** – From the Teshie end of Tsui Bleo Road through Manet Court, across the rail line and the existing Spintex Road to the Motorway (7.6km);
- **Burma Camp Road** – From Giffard Road at the main entrance of Burma Camp to Teshie Link (5.7km)
The implementation of such projects is normally associated with some negative and positive impacts. Since the project activities of the three roads are expected to be similar it is anticipated the impacts to be similar. The positive impacts will enhance economic and social activities including easy access to markets, educational and health facilities as well as reduce travel time and vehicle operating costs. On the other hand, the construction of the road will result in destruction of the natural environment, demolition of properties, disruption in incomes and livelihoods.

Until recently, only the economic and traffic flow dimensions were considered when planning and designing roads in Ghana. Currently, the global concern regarding quality of life has intensified the need for rational identification, measurement and evaluation of these environmental impacts and need to propose mitigation measures to minimise or eliminate them.

Project Justification
The Accra East corridor covers a vast but rapidly developing area that borders Tema, Ghana’s industrial city. Economic and human activities within the corridor are significant, considering the number of industries, warehousing facilities and residential estates that are located within the corridor. The corridor also holds great potential for further development in the near future. More residential estates, schools and industries are being put up within the corridor. Thus, the need for a properly developed road network within the corridor cannot be underplayed.

Policy, Legal and Administrative Framework
The following national and World Bank environmental policies, legal and administrative frameworks were used as reference in the preparation of the ESIA.

- Ghana’s Environmental Policy, which defines a set of policy and other actions that will make Ghana’s development strategy more environmentally sustainable.

- The Environmental Protection Agency Act of 1994 (Act 490) which grants the Agency enforcement and standards setting powers as well as the power to ensure compliance with EA requirements and procedures for proposed as well as existing undertakings.

- The Environmental Assessment Regulations (LI 1652), and EIA procedures, which combine both environmental assessment and environmental management systems. The regulations prohibit commencing “and undertaking” without prior registrations all environmental permit, and define the relevant stages of the procedures for EA. The environmental management system includes Environmental
Certification and Annual Environmental Report. The World Bank has environmental and social policies and guidelines from which reference was made.

- The Ghana Poverty Reduction Strategy (GPRS) and the Growth Poverty Reduction (GPRSII) which are the framework sequence of policies and development strategy programmes and projects to facilitate macro-economic stability, sustainable growth and poverty reduction, among others.

**Description of the Project Environment**

In order to assess both the negative and positive impacts of the projects as proposed, it was found necessary to collate for analysis the baseline information along the various roads. This section presents the baseline information of individual roads. In view of the similarity of the environmental and social setting of the three roads, it is expected that some aspect of baseline data will be the same, for example the bio-physical characteristics along the roads.

**Bio-physical characteristics**

- **Climate**
  The project roads area lies within the dry equatorial climatic zone and is characterised by two rainfall peaks and more marked dry seasons. Mean annual rainfall ranges between 74 and 90 centimeters with the prime season (which begins in March and ends in mid-July) accounting for about 67% of the annual rainfall. The second season starts in mid-August and ends in October.

- **Topography and Drainage**
  Mean monthly temperature is highest (about 30°C) between March and April and lowest (about 26°C) in August. Average monthly relative humidities are higher in the rainy seasons than during the rest of the year. However, the highest monthly relative humidity in the project corridor does not exceed 75%, while the lowest is about 60%.

The project corridor is located in the south-east coastal plains which are generally flat with few isolated hills. On the whole, the general elevation is not more than 75 metres above sea level. The coastline is often cliffed or fairly smooth and marked by sandbars and lagoons. There are, however, no major streams or rivers in the study area.

- **Geology and Soils**
  The rocks underlying the project area are of the Dahomeyan series of the Precambrian era which forms the basement complex of Ghana. The rocks are mainly metamorphic, consisting of gneisses and schists. The major soil groups found in the project corridor include coastal savanna, ochrosols, lateritic sandy soils, tropical black clays or Akuse soils and coastal sands.
Vegetation
The project area is located within the Coastal Savanna, Scrub and Grassland vegetational zone. The vegetation consists of short grassland with small clumps of bush and a few trees, namely, Baobab (Adonsonia digitata), Neem (Azadirachta indica) and the fan and wild oil palms. The grass species include Andropogon gayanus, Imperata cylindrica, Heteropogon contortus, Sorghum arundinaceum, C. occidentalis.

Fauna
The diverse species of fauna inhabiting the project area include:
(a) Birds—such as the Common Hooded Vulture (Neophran Monachus), Harrier Hawk (Polyboroides Radiatus), West African Black Kite (Milvus Migrans);
(b) Reptiles - e.g. Nile Monitor (Varanus miloticus), Agama lizard (Agama agama), Green mamba (Dendroaspis viridis), Black Cobra Naj(a melanoleuca), African Python (Python sebae);
(c) Anura - comprising the Clawed Toad (Xenopus tropicalis) and the Giant Frog (Ran Occipitalis); and
(d) Mammals - e.g. Pouched Common Giant Rat (Cricetomys gambianus).

Socio-economic characteristics
(i) Population and Settlement
The selected roads form part of the Accra East Corridor roads. The main communities within the road corridor are: Osu, La, Teshie, Nungua, Lashibi, Sakumono and Tema. Table 5.1 shows the main communities along the project corridor.

<table>
<thead>
<tr>
<th>No</th>
<th>Settlement</th>
<th>Population</th>
<th>Total</th>
<th>Population Density</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Osu</td>
<td>21,168</td>
<td>22,859</td>
<td>44,027</td>
</tr>
<tr>
<td>2</td>
<td>La</td>
<td>39,726</td>
<td>41,958</td>
<td>81,684</td>
</tr>
<tr>
<td>3</td>
<td>Nungua</td>
<td>30,827</td>
<td>32,075</td>
<td>62,902</td>
</tr>
<tr>
<td>4</td>
<td>South Teshie</td>
<td>35,417</td>
<td>17,279</td>
<td>18,131</td>
</tr>
<tr>
<td>5</td>
<td>North Teshie</td>
<td>27,815</td>
<td>29,134</td>
<td>56,949</td>
</tr>
<tr>
<td>6</td>
<td>Lashibi</td>
<td>15,383</td>
<td>14,810</td>
<td>30,193</td>
</tr>
<tr>
<td>7</td>
<td>Tema</td>
<td>68,467</td>
<td>73,012</td>
<td>141,479</td>
</tr>
<tr>
<td>8</td>
<td>Tema New Tow</td>
<td>28,894</td>
<td>29,892</td>
<td>58,786</td>
</tr>
</tbody>
</table>

(ii) **Land Use**
Land Use in the project corridor is varied, ranging from various business activities to residential premises, civil and military structures. The busiest road in terms of economic activities among the three roads is Giffard and is followed by the Teshie Link road.

(iii) **Public Health Care**
The La Poly Clinic, the 37 Military Hospital and the Tema General Hospital are the main providers of health care to the communities along the project corridor. There are however a few private clinics and pharmacy shops along the project corridor. In formation obtained from the management of the poly clinic as well as the hospital revealed that common ailments reported include the following: Malaria, Diarrhoea, and Intestinal worms.

Records from the Ghana Aids Commission shows some statistics on regional as well as district on the prevalence of HIV/AIDS for 2007. in Greater Accra where the project is located the rate is 2.3%. The ratio of female to male HIV/AIDS infection is 2:1.

(vi) **Economic Sectors**
Both formal and informal businesses operate in the project corridor. The former include government and private institutions that are officially registered with Registrar General’s Department. Business in this category includes the following organizations: hotels, government agencies and institutions, filling stations, health facilities, etc.

The informal business which dominate the corridor is mainly made up of traders and artisans.

**Commerce**
Several business activities take place along the project corridor. An inventory of road side commercial activities undertaken by the survey team indicate the main ones as below:

Traders, operate in various structures and open spaces such as:

- Racks
- Kiosks / Metal containers
- Shops (permanent structures)
- Pavements

Economic activities operated along the corridor include the following:
• Welding;
• Spraying
• Fitting
• Electrical works (Auto / Electrical)
• Carpentry works
• Tailoring/Seamstresing
• Hair dressing/Barbering
• Food selling/Chop Bar Operating
• Hotel operating/Entertainment Spots
• Fuel Stations

Road and Transport System

• Haulage Trucks
Trucks, including heavy duty articulated trucks use the road to transport goods from Tema port through some of the roads in the eastern corridor to other parts of the country. Goods that the trucks carry include consumer durables and petroleum products etc.

• Public Transport
The most popular public transport is “trotro” which are mostly light vehicles such as taxi cabs and buses.

Despite these facilities, some people walk to their destinations, citing irregularity of the transport system and high cost of transport fares as the reason.

• Terminal Facilities
Transport Unions mainly Ghana Private Transport Union (GPRTU) and Progressive Transport Owners Association (PROTOA) the Ghana Co-operative Transport Association operate in the corridor. They are mainly concentrated at La, Teshie, Nungua, Lashibi and Tema.

(vii) Gender and Development
Along the road corridor women are active in the trade network. Women mostly sell manufactured goods as well as cooked food to supplement their incomes. This is particularly true on the Giffard Road.

Consideration of Alternatives

“No Development Scenario”
The “no development scenario” assumes that there will be no alternative to the road. This would imply that the road would be left in its present state and geometry. The vertical and horizontal alignments, which are sub-standard for the class of road, would be left unimproved, and the pavement which is in urgent need for rehabilitation throughout its length would be left unimproved too. The
capacity of the road section from Accra East Corridor would remain inadequate for the heavy traffic load.

Due to the increasing traffic, the “no action alternative” would lead to increasing problems in handling the traffic. If the road is left unimproved the number of conflicts created by heavy Lorries along the road will increase. Furthermore, the number of conflicts between pedestrians/cyclists and cars will remain high and increase the number of traffic accidents with the expected increasing motor traffic.

Development opportunities such as easy movement of agricultural produce, timber, passengers and reduced operating costs of transportation will not be realised.

**Project Development Scenario**
The “Development Scenario” assumes that the road will be improved in accordance with the rehabilitation/reconstruction project described in section

The rehabilitation/pavement strengthening of the road is required due to increased traffic loading and inadequate maintenance. The road project will furthermore reduce road accidents and user costs and improve road safety for vehicles and safety for pedestrians and cyclists.

There is however the risk of accident severity increasing with higher speeds as a result of improvement in riding quality and better geometry. Nevertheless with improved safety measures such as better sight distance and road pavement markings, potential accidents could be reduced.

Development opportunities such as easy movement of agricultural produce, timber and passengers and reduced operating cost of transportation will also be realised.

From the above, the advantages with the Rehabilitation of Road alternative scenario far outweigh the disadvantages of the “No-Action” scenario. Even though the initial cost of the construction would be high, the accrued benefits to be derived from the “Build Alternative” socially, culturally and economically, far supersede the “No-Action” scenario.

The preferred alternative is therefore the Rehabilitation/Strengthening of Road Pavement Alternative. The environmental impacts of this option are discussed in Section 6.

**Potential Impacts and Mitigation/Enhancement Measures**
Since project activities for the three roads are expected to be similar, impacts are also expected to be the same.
The anticipated negative impacts include:
- Air pollution
- Hydrology
- Noise and vibration
- Disruption of local businesses
- Impact on properties
- Disruption of Utilities
- Waste Generation and Disposal
- Health and Safety
- Local Transportation
- Landscape and Aesthetics

The anticipated positive impacts are:
- Provision of all weather roads
- Reduction in dust pollution
- Reduction in vehicular – pedestrian conflicts
- Decrease in Traffic Congestion
- Improved Road Safety and Pedestrian Facilities
- Reduction in Travel Times
- Improved surface and driving conditions
- Reduction in vehicle operating costs
- Improved availability of on-street parking and bus bays
- Improved social setting

Each of these impacts are discussed in the report and mitigating measures, as required, are proposed. These measures from the report are summarised below:

Summary of Socio-Economic Mitigation Measures

➢ **Affected Properties**
All properties that will be affected will be valued by DUR Environmental Unit in conjunction with the Land Valuation Board (LVB) for compensation to be paid to the affected persons, in accordance with the State Property Contracts Act 1960 (State Lands Act 125, 1962) and the Lands Act (Statutory Measures) Act, 1963.

➢ **Access Problems**
In order not to disrupt movement of people as a result of the contractor’s activities, the contractor should inform the public and road users about the road works and any access problems through meetings, road signs, the media and any other means. The contractor should also provide alternative access routes or diversions wherever the construction work conflicts with public movement.

➢ **Public Health and Safety (PHS)**
   i) Department of Urban Road (DUR)
• To educate the contractor on the need to control pollution and on the benefits of equipment maintenance.

  ii) Contractor to:
• Minimize dust by watering working surfaces adequately and at regular intervals;
• Restrict dust producing activities (e.g. haulage of materials on construction traffic) and the use of noise or dust generating machinery to normal working hours.
• Avoid creating areas with stagnant water (which risk becoming breeding sites for mosquitoes).
• Enforce speed limits especially in and near settlements during the construction range.

➢ **Occupational Health and Safety (OHS)**
• Contractor to comply with work-site safety requirements
• Supply of Personal Protective Equipment (PPE) to be included in the Contract.
• Effective monitoring of OHS issues by DUR.
• Promotion and implementation of HIV/AIDS programmes on site

➢ **Disruption to Utilities**
• Relocation of utility lines with the minimum inconvenience to consumers.
• Inform public about disruption through newspaper, radio, TV and public announcement services.

➢ **Inadequate Social Benefits**
• Ensure affected properties are realistically assessed and compensation paid promptly to the owners.
• Contractor should employ people from the various communities along project corridor.

**Management and Monitoring Plans**
Management and monitoring plans have been proposed to ensure the efficient and effective implementation of the recommended mitigation measures. Management of the negative impacts will best be achieved through incorporation of suitable clauses in the contract document. This will enable the supervising engineer to control activities of the contractor. The conditions to be incorporated in the contract document are modelled in the General Conditions of Contract prepared by the International Federation of Consulting Engineers (FIDIC 1984 – 4th Edition).

The key stakeholders in the environmental management of the various roads projects are therefore the DUR (designer and supervisor), the contractor, public authorities and to some extent the public. The DUR responsibilities have been
catered for during the feasibility and detailed designed stages while the contractor’s responsibilities are to be undertaken during mobilization and project execution (construction).

Monitoring will ensure that negative impact was accurately predicted and that mitigation measures are effective. The DUR, supported by other stakeholders such as the EPA will monitor and recommend actions.

These responsibilities are summarised below:

<table>
<thead>
<tr>
<th>PARTY RESPONSIBLE</th>
<th>PARAMETERS TO BE MONITORED</th>
<th>OUTPUT</th>
<th>ACTION TIME FRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA</td>
<td>- Overall Environmental Performance of the project</td>
<td>Instructions to contractor and DUR</td>
<td>Throughout project life cycle</td>
</tr>
<tr>
<td>Department of Forestry</td>
<td>- Impact on vegetation and alley trees</td>
<td>Instructions to contractor and DUR</td>
<td>On-going responsibility throughout construction phase.</td>
</tr>
</tbody>
</table>
| Department of Urban Roads | - Overall Environmental Performance of the project  
- Community relations  
- Payment of appropriate compensation  
- HIV/AIDS awareness raising campaigns | Monthly Environmental Reports | Once a month but responsibility runs throughout the project life cycle |
<table>
<thead>
<tr>
<th>PARTY RESPONSIBLE</th>
<th>PARAMETERS TO BE MONITORED</th>
<th>OUTPUT</th>
<th>ACTION TIME FRAME</th>
</tr>
</thead>
</table>
| The Designer     | - Construction methods and material  
- Environmental management of construction sites  
- Implementation of mitigation measures for air, water, soil, traffic, occupational health and safety, trees etc.  
- Environmental management of construction camps  
- Environmental management of borrow pits and quarries  
- Contractor's waste management  
- Staged rehabilitation of impact areas  
- Environmental performance of contractors equipment  
- Accidents (traffic, spills etc)  
- Environmental performance of mitigation measures | Monthly Environmental Reports  
Incident Reports as and when required (spills, accidents and the like). | On-going responsibility throughout construction phase. |
| The contractor   | - Environmental performance of equipment and plants.  
- Implementation of interim and permanent mitigation measures.  
- Occupational Health and safety measures  
- Air quality  
- Accidents of any kind | - Maintenance records  
- Accidents Reports  
- Mitigating actions eg. Sprinkling of water, traffic signs, safety barriers | On-going responsibility throughout construction phase. |
| MTTU Police      | - Traffic nuisances  
- Traffic safety measures  
- Traffic accidents | Police reports and instructions to contractor and DUR | On-going responsibility throughout construction and operational phases |
| Health Authorities | - Change of frequency of diseases  
- Occurrence of new disease in the area | Health reports | Upon observation of incidence of diseases |
| Local Communities | - Negative environmental impacts.  
- Social disturbance | Complaints to DUR | Throughout project life cycle |

The main report also details the clauses that must be inserted into the contract document to give effect to the recommendation; these clauses will be included in the contract documentation in the relevant section.

**Public Consultations**
As part of the scoping study, discussions have been held with the relevant Departments, institutions, opinion leaders and individuals along the route. The purpose was to collect and collate the opinions of all other stakeholders as part of the public/community participation process on the project. The discussions centered on issues such as:
- Land-use planning and zoning;
- Proposed road alignment;
- Environmental concerns for flora and fauna;
- Effects of the project on supply of utilities;
- Historical or cultural areas of concern, and
- Resettlement/compensation (where appropriate).

The following table contains brief summaries of outcomes of initial consultations with relevant stakeholders on the project.

### Summary of Consultations

<table>
<thead>
<tr>
<th>PARTIES CONSULTED</th>
<th>PROJECT APPRECIATION</th>
<th>PROJECT CONCERNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. District Assemblies (ie. Accra Metropolitan Assembly and Tema Municipal Assembly - Metropolitan and Municipal Chief Executives - Metropolitan and Municipal Coordinating Directors - Metropolitan and Municipal Town Planning Officer Military Authorities)</td>
<td>• Improved road condition • Improved transportation • Increased social and economic interaction • Increased commercial activities • Employment opportunities for unskilled labor</td>
<td>• Air Pollution • Noise Pollution • Pollution of water bodies • Destruction of natural vegetation • Disturbance to natural habit of wildlife • Location of borrow areas • Pedestrian consideration • Project compatibility with general planning schemes and Adjoining land uses.</td>
</tr>
<tr>
<td>b. Environmental Protection Agency</td>
<td>• Improved road condition</td>
<td>• Adequate consultation with relevant stakeholders • Proper location of borrow areas and their einstatement • Water pollution • Construction traffic and safety • Noise and air pollution • Adequate compensation for Persons/families. • Destruction of agricultural lands</td>
</tr>
<tr>
<td>c. Assemblemen and Communities of major settlements.</td>
<td>• Development of their respective towns • Creation of employment opportunities • Increase commercial activities • Improved road condition</td>
<td>• Adequate compensation for person whose properties would be affected by the project. • Pollution of water bodies • Reinstatement of borrow areas • HIV/AIDS</td>
</tr>
</tbody>
</table>
d. Utility Companies (ie. Electricity, Water and Ghana Telecom).

- Development opportunities
- Relocation of affected utility lines and facilities
- Disruption to supply of services during construction phase
- Envisaged changes (if any) in project alignment and likely effect on nearby land uses.

e. Project Planners/Designers

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**Estimated Cost**

The overall cost associated with adverse environmental and social impacts shall be included in the design of the road. To this effect the mitigating measures earmarked shall be integrated into the design and budgeting of the project. However the tables below present the summary of the estimates, based on similar projects, of the proposed mitigation measures.

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**Summary of Costs of Mitigation Measures**

<table>
<thead>
<tr>
<th>Item</th>
<th>Proposed Mitigation</th>
<th>Provision in BOQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Resources</td>
<td>Ensuring proper sanitary facilities at construction camps and preventing contamination of surface water bodies and groundwater</td>
<td>No separate cost item for clauses in Contract Document $35,000 estimated</td>
</tr>
<tr>
<td>Earth Works</td>
<td>Plan and execute any earth works with due diligence to prevent, alternatively minimize, soil erosion</td>
<td>No separate cost item for clauses in Contract Document $200,000 estimated</td>
</tr>
<tr>
<td>Air Quality</td>
<td>Minimize emission of hydrocarbons and generation of dust at work sites, access roads and borrow pits</td>
<td>No separate cost item for clauses in Contract Document $20,000 estimated</td>
</tr>
<tr>
<td>Structures</td>
<td>Proper and adequate compensation promptly paid to the owners. Payment should take place before structures and farmlands are taken over by the project.</td>
<td>Final budget to be made available after LVB approval of DUR’s $167,000 estimated</td>
</tr>
<tr>
<td>Establishment of Borrow Pits</td>
<td>Adequate operation and rehabilitation of borrow pits and other landscape modifications</td>
<td>Item for landscape modification included in BOQ. $50,000 estimated</td>
</tr>
<tr>
<td>Trees</td>
<td>Trees to be felled should be replaced with trees of the same or appropriate species</td>
<td>Cost to be included in the BOQ. $40,000 estimated</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Noise Pollution</td>
<td>Ensure that the EPA Guideline on ambient noise and air (especially dust) is observed.</td>
<td>No separate cost item for clauses in Contract Document for noise. $30,000 estimated</td>
</tr>
<tr>
<td>Public Health</td>
<td>Ensure that the contractor implements all measures for ensuring safe passage of traffic around or through the construction site at all times</td>
<td>Cost included in the BOQ. $10,000 estimated</td>
</tr>
<tr>
<td>Construction Camps</td>
<td>Ensure that construction camps are carefully sited and arranged to minimize their impacts on the environment</td>
<td>Cost covered under he BOQ. Item $25,000 estimated</td>
</tr>
<tr>
<td>Traffic Safety and Traffic Diversion</td>
<td>Oblige the contractor to keep the road open for traffic during the project implementation</td>
<td>Cost included in the BOQ. $30,000 estimated</td>
</tr>
<tr>
<td>Environmental and Safety Campaigns</td>
<td>Environmental information, HIV/AIDS, STI’s and malaria control and awareness raising campaign</td>
<td>Cost to be included in the BOQ. $20,000 estimated</td>
</tr>
<tr>
<td>Effect on Women and Roadside Business</td>
<td>Provision of five (5no.) sheds and sanitary facilities for women trading along the road.</td>
<td>Cost to be included in the BOQ. An amount of $30,000 proposed.</td>
</tr>
<tr>
<td>Monitoring by by DUR</td>
<td>Cost of Logistics and Monitoring by DUR</td>
<td>Cost included in the BOQ. $20,000 estimated</td>
</tr>
<tr>
<td>TOTAL (ESTIMATED)</td>
<td>$677,000</td>
<td></td>
</tr>
</tbody>
</table>

**Provisional Estimate for Affected Properties.**

**Overall Compensation Requirement of Compensation Action Plan.**

<table>
<thead>
<tr>
<th>Type of Structure</th>
<th>No. of PAPS</th>
<th>Total Compensation to be Paid (GH¢)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully Impacted Permanent Structures*</td>
<td>14</td>
<td>407,393.02</td>
</tr>
<tr>
<td>Partially Impacted Permanent Structures*</td>
<td>43</td>
<td>279,274.95</td>
</tr>
<tr>
<td>Fence Wall*</td>
<td>9</td>
<td>47,189.72</td>
</tr>
<tr>
<td>Temporary Structures</td>
<td>7</td>
<td>26,915.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td>243</td>
<td>760,752.69</td>
</tr>
</tbody>
</table>
Final figures yet to be determined

**Conclusion**

To conclude, it is worth mentioning that environmental and social considerations are increasingly taking centre-stage in development planning and policy decision-making process at all levels. This is because of the growing awareness of the damage being done to the environment in man’s quest for social progress and economic development. The report describes the complete process by which the Accra East Corridor road will impact on the environment and social settings and how these impacts were assessed.

A No-Development Scenario indicates that there will be greater environmental and socioeconomic is advantages than advantages if the proposed project is not allowed to proceed.

After critically identifying, analyzing and evaluating the potential environmental and social impacts expected to result from the proposed project.

Mitigating measures have however been recommended to help eliminate or minimise the adverse impacts identified, in order to enhance the environmental benefits of the project. Some of the factors that dictate the strategies for the choice and implementation of the mitigation measures include; technical know-how, finance, settlement patterns, climate and cultural beliefs.

A proposed programme for managing and monitoring the mitigating measures were outlined. This is to ensure effective implementation of the project on a sustainable basis without causing any adverse effects on the environment.

There are several potential socio-economic benefits to be derived from the implementation of the project, which far outweigh the potential negative impacts, most, which can even be mitigated.

The impacts of the proposed project on the environmental will therefore be minimal and negligible if the mitigation measures proposed are fully implemented.