MINISTRY OF PUBLIC WORKS
THE REPUBLIC OF LIBERIA

THE MASTER PLAN STUDY
ON
URBAN FACILITIES RESTORATION AND IMPROVEMENT
IN MONROVIA IN THE REPUBLIC OF LIBERIA

ENVIRONMENTAL IMPACT SURVEY
ON
THE PROJECT FOR RECONSTRUCTION
OF SOMALIA DRIVE
IN
THE REPUBLIC OF LIBERIA

FINAL REPORT

March 2010

JAPAN INTERNATIONAL COOPERATION AGENCY

YACHIYO ENGINEERING CO., LTD.
KATAHIRA & ENGINEERS INTERNATIONAL

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(As of September 2009)

EXECUTIVE SUMMARY

The Government of Liberia is undertaking extensive road rehabilitation/construction Projects to construct new roads, as well rebuild deteriorated road networks that were destroyed as a result of the past civil conflict or that have outlived their lifespan. Through financial assistance from the development partners, the Government wishes to expand or upgrade the existing 2-lane Somalia Drive, on the outskirt of Monrovia, into 4-lane motor road.

Purpose and Need

The Somalia Drive, between the Freeport of Monrovia to Red Light, Paynesville, in Montserrado County, Liberia, is a very important road. This 13.7 kilometers road links the largest seaport and industrial complex at Freeport/Freezone to the largest market at Red Light and the rest of the interior of Liberia. It is presently a 2-lane road with no standard sidewalk and drainage system.

The existing Somalia Drive is approximately 7.3 m by width and allows only one vehicle in each direction, with a broken center line to allow vehicles to pass slow moving traffic. The road was constructed in 1978 and originally intended to be 4-lane. However, only 2-lane was constructed and have been rehabilitated over the years, the most recent being a World Bank sponsored-Project in 2008.

The shoulder of the road is unpaved and there is no sidewalk. There is also no drainage system to allow for floodwater movement during periods of rain, which is nearly half of the year.

Economic and population growth in the settlements along the Somalia Drive have accelerated drastically since the construction of the existing road. With the rehabilitation of the port, expansion of stores and markets at Red Light and industrial activities in the interior, utilization of this road is expected to increase significantly over the coming years.

In 2009, the daily traffic volume on the Somalia Drive was calculated at 24,500 Passenger Cars Unit (PCU) per day at the eastern section of the road. It is estimated that the volume in 2014 will increase to over 150% of road capacity at all stretches and traffic condition will be more serious.

The present traffic congestion on the two-lane road is having significant economic losses and negative impact on the lives of the population in the settlements along the route. The upgrade of the road to a four-lane motor road will have immense positive impact and will ensure smooth traffic flow.

Policy, Legal and Administrative Framework

There are several policies, laws, and regulations specific to areas of environmental impact that affect the construction and rehabilitation of motor roads. As a matter of policy, Annex I (Section 6) (13) of the Environmental Protection Agency (EPA) of Liberia requires an Environmental & Social Impact Assessment (ESIA) for Projects that would have a significant impact on the environment. The construction and expansion/upgrading of road as indicated in Item 13 of the Annex is listed amongst those Projects requiring an Environmental Impact Assessment. As such, there is a statutory requirement for conducting an environmental impact assessment for the proposed Project. In addition, other existing pieces of international and national legislation and regulations have relevance to the development and implementation of this Project with regard to environmental and social concern.

Policies, regulations and administrative frameworks expected to be met for the Project include those of the World Bank, the Liberian government and the Guidelines of JICA.

Public and Site Stakeholder Participation and Comments

As a part of the environmental impact assessment, the social aspect of the Project was also considered. At present, the shoulder of the Somalia drive, particular the left flank of the right-of-way intended for the

expansion, is greatly occupied. It is used mainly for commercial purposes including markets, nearby stalls, open garages and some residential premises.. Public consultations and scoping studies were conducted in accordance with the Section 11 of the Environmental Protection and Management Law of Liberia. The purpose of the scoping process is to identify, inform, and receive input from the affected stakeholders and interested parties, determine and narrow the scope of issues to be addressed in the ESIA, identify and define the significant environmental and social impacts that may be caused by the Project, ensure public participation, and ensure all relevant issues and alternatives are adequately addressed.

During the public and site stakeholder meetings, various questions and concerns were raised regarding Project impacts mainly to PAP's, soil, surface water, groundwater, air quality, noise, traffic, and socioeconomics.

The Terms of Reference formulated from these processes assisted in the preparation of this ESIA and will also be utilized for a management plan.

Description of Proposed Action

The Government of Liberia requested the Government of Japan on the reconstruction and/or upgrade of the Somalia Drive into 4-lane motor road. The road will extend from the Freeport of Monrovia to the Red Light, Paynesville

The Ministry of Public Works is the executing agency to undertake the expansion of the road. The Project will also include the construction of drainage, bridges, and other features associated with road construction.

With a positive response and the provision of funding, a detail plan of the road will be undertaken. This will determine the exact land surface to be used, utilizing the present right-of-way on the left flank. A proper survey will be undertaken to accomplish this. If additional property must be purchased or PAPs to be relocated voluntarily, this will be done during this period, as would any review of environmental concerns or land in the area that might be impacted by the Project. Once the design plans are completed, the bids for the construction work will be solicited and awarded.

The time of the day that construction will take place and detours set will be determined so as not to totally obstruct the flow of traffic on the existing road, particularly during rush hours; so that people are not seriously inconvenient.

Alternatives to Proposed Action

The formulation of alternatives for analysis in the ESIA involved the review of prior studies. Alternatives were evaluated for their ability to attain the Project goals and objectives and as the alternative analysis process merged with the environmental process, the safety and environmental need for a motor road link between the Freeport of Monrovia and Red Light was evaluated with consideration of environmental and social needs.

Alternative 1 considers constructing 2-lane motor road north of the existing Somalia Drive. It will be a 12 kilometers road connected to the Monrovia-Kakata Highway, about 375 meters north of the Red Light Junction. Towards the Freeport of Monrovia, this road will link with the Jamaica Road and connect with the existing Somalia Drive. It is only 1.25 kilometers of the Somalia Drive that will be upgraded into 4-lane road.

However, this alternative was withdrawn from consideration at this time as it is expected to lead to the involuntary relocation of many legitimate property owners along that route, penetrate the Stephen Tolbert Housing Estate, a low-income housing Project, as well as temper with the Mesurado wetland, which is a Ramsar Projected area. It is also inconsistent with the Poverty Reduction Strategy being fostered by the Government of Liberia in that it will cause the displacement of many persons.

Alternative 2 considers constructing 2-lane motor road south of the existing Somalia Drive. It will be a 13 kilometers road connected to the Monrovia-Kakata Highway, about 325 meters south of the Red Light

Junction. It connects with the United Nations Drive at about 150 meters south of the Freeport junction.

This alternative was withdrawn from consideration as it is expected to lead to the involuntary relocation of many legitimate property owners along that route with the Paynesville and Bushrod Island areas. It is also expected to penetrate a vast portion of the Mesurado wetland, which is a Ramsar designated area. It is also inconsistent with the Poverty Reduction Strategy being fostered by the Government of Liberia in that it will cause the relocation of many persons.

Under the No-Action Alternative, the short- and long-term environmental impacts identified of this ESIA would not occur. Conversely, the objectives of the Project would not be met, and easing the traffic problem between the Freeport and Red Light corridor will not be solved. While an alternative scenario may be considered over subsequent years, increase in population in the settlements along the route and increase in PCU of the road is likely to increase over the years, as predicted. This is going to result in a serious transport problem for the communities and road users.

The proposed Project – expanding or upgrading the Somalia Drive to 4-lane motor road - will create a free flow of traffic along the route and ease the travel time for residents of settlements along the route. It will also lead to increase in revenue for the Government of Liberia due to increase in usage of the port by importers in neighboring countries.

The No Action alternative will retain the existing Somalia Drive in its present condition. This will therefore lead to the following drawbacks:-

1. It will not be consistent with the long-term objective of reducing congestion.
2. It will not provide sufficient capacity for Projected 2014 and beyond traffic.
3. It will not facilitate the efficient movement of goods and services through the area.
4. It will not complete the planned regional integrated transportation network between West African States.

ENVIRONMENTAL SETTING/IMPACTS AND MITIGATION

Hydrology

There are two (2) waterways within the Project area. The Stockton Creek is near the western flank of the Project area. It is the largest of the waterways. The Warner Creek is almost at the mid-section of the Somalia Drive. These water bodies are channelized, but have banks that are composed by mangrove swamps that are flooded seasonally.

Rainfall is very common. The rainy season runs for half of the year, from April to October. And the annual rainfall reaches up to 4,000 mm. Without drainage along the present Somalia Drive, washes are very common during the periods of rains. Floods, swamps and washes in the Project area, particularly formed during the rainy season drain into the 2 creeks, which eventually empty into the Mesurado River/Wetland. The groundwater system within the Project area consists of shallow aquifers. Groundwater can be encountered at depth as shallow as 1 meter.

Water Quality

The chemical quality of the water within the Project area is generally satisfactory for commercial and industrial uses. Water samples were collected from the two (2) streams, Stockton and Warner Creeks. A third sample was collected from water well within the Project area.

The results of the analyses show that the levels of total suspended solids generally range from 24 to 29 ppm, between 29.0 to 29.4º C. The pH ranges between 6.5 and 6.8. The conductivity ranges between 2.4 and 2.9.

Although present groundwater quality is satisfactory, there is a slow trend towards reduced water quality due to increased surface runoff, especially during the rainy season, septic tanks failures in the watershed'

utilization of swamps/wetland for excretions, and other un-hygienic treatment of floodwaters which settle in communities and eventually seep into the ground.

Flood Hazards

The right-of-way of the Somalia Drive is likely to flood at the Freeport and Cow Factory, especially during the rainy season. Without a drainage system constructed with the existing 2-lane motor road, run-off from the exposed road is common. The topography of the area also does not allow fast movement of water, as the area is a relatively flat plain.

Urban development in the communities along the existing Somalia Drive reduces the total ground absorption area by creating impermeable surfaces. Storm runoff, increased by the presence of impermeable surface from construction, contributes to flooding within the right-of-way. The amount and frequency of rain is variable, but the lack of drainage system in the Project area contributes to the flow problem. Rainfall is the Project area is sometime in the form of thunderstorms and other fast moving relatively intense storms, which may cause flash floods. There is a tendency for flash flood in the area. During periods of intense rainfalls, there are occasional occurrences of floodwater washing over the existing 2-lane in the Freeport area.

Due to the permeability and porosity of the soil in the Project area, flood water is likely to seep into the ground or discharge into the two major water bodies, or smaller water bodies. All of the water bodies subsequently drain into the Mesurado River.

BIOLOGICAL RESOURCES

Vegetation

There is very little vegetation, mainly near the two (2) main water bodies. Most of the vegetation is dominated by native grasses, ferns and common scrub-shrub species. Occasional few trees grow in the communities along the flank of the road. These provide shades from the sun for residents. There are also some cultivated vegetables planted as food supplements by residents. Among these are the cassava, 'potato greens', etc.

Along the banks of the two (2) water bodies in the Project area, there are secondary growth riparian vegetation, which includes the herbaceous wetland species of arrowhead, pickle weed, bulrush, and water lilies.

Wildlife

The main mammals known to the area are domestic animals, mainly dogs and cats. Very little or no other wild mammals can be found in the Project area. What may be found are likely domesticated.

Few avian species were identified from surveys throughout the Project area, most utilizing the open grasslands, scrub shrub, and wetland habitats. The red eye dove was the most abundant species within the Project limits; however, the cattle egrets were seen as cattle graze an area along the flank of the existing Somalia Drive. The birds are most abundant in the riparian and wetlands of the Project areas.

Herpetofauna include the species from the ectothermic (cold-blooded) animal families, amphibians and reptiles. Species from these families can be found only in the water bodies and wetlands. Interviews with local residents indicate that the overall herpetofauna population is poor, and only a few small lizards and frog species were directly observed.

Reptiles observed in the Project area included lizards; and amphibians observed included the toad frog and tadpoles. Though snakes were said to be seen in the riparian zones, none were observed during the surveys.

Fish species listed by the fishermen and residents were identified by the local names and included catfish, crayfish, tilapia, bonny, sunfish, and mudfish. Locals also indicated that there were crabs in the two (2) main water bodies.

Rare or Endangered Species

Crocodile

From a survey conducted in 1988, only the Nile crocodiles were found to habitat the Mesurado wetland. This includes the nearby wetlands of the Stockton and Warner Creeks. This habitat is completely surrounded by the City of Monrovia and its suburbs. The Somalia Drive runs across the entire northern flank of the Mesurado wetland.

Mangrove

On the southern flank of the Somalia Drive is the Mesurado wetland. This ecosystem is also found along the Stockton and Warner Creeks, in small strips in the Project area. The wetlands of the Mesurado River, Stockton and Warner Creeks are mangroves, trees and shrubs that grow in saline coastal habitats in the tropics and subtropics.

Relatively, no vegetation and wildlife in the area that will be immensely affect by the Project. The major area of concern for vegetation and wildlife will be in the riparian zone along the Stockton Creek, as a bridge is already constructed over the Warner Creek.

To help mitigate impacts to the vegetation and wildlife in the riparian zone along the Stockton Creek, the Project proponent will allow very little removal during the construction phase and replanting during the operation phase.

Animal species identified in this zone during construction will be recorded in a wildlife-sighting logbook and periodically reviewed to determine success of species abundance and/or distribution.
The proponent will enforce a "no killing" policy during construction.

Storm water runoff and any wastewater discharges will be managed and treated to minimize impacts to aquatic plants and animals in the two (2) major water bodies – the Stockton and Warner Creeks. These practices will include good housekeeping practices, sediment and erosion control structures, wastewater and process area storm water treatment, and oil/water separators. All hazardous materials will be located in secure storage facilities that are protected from and impervious to storm water runoff and, where necessary, stored with adequate secondary containment.

LAND USE SETTING

The length of the Somalia Drive, which expansion or upgrade is considered under this Project, is located within three (3) communities. The western extent from the Freeport of Monrovia to the Stockton Creek Bridge falls within the City of Monrovia, the extent between the Stockton Creek Bridge and the Warner Creek Bridge, commonly called the Double Bridge, falls within the Township of Gardnersville and the eastern extent between the Warner Creek Bridge and the Red Light falls within the City of Paynesville.

The land use along the Project area varies. There are urban residential, commercial, industrial areas and open space land use along the route. The land use is in no particular order. The cities and township councils have granted some land occupants squatter rights to occupy land near and within the right-of-way of the road with no specific usage condition. Hence, residential units are located between open air garages, shops and market stalls, filling stations and industrial facilities.

Housing

There are 172 residential units within the Project area. There were other units marked as unoccupied, which are under construction or abandoned. Some of these units will definitely be used as residential units. Only very few of these units existed at the time of the construction of the existing 2-lane road. The increase up to the present time is a result of the influx of people from many parts of the country due to the civil crisis during

the 1990's.

Commercial

There are 929 commercial units in the Project area. Further, most of the 156 units indicated as unoccupied are likely to be commercial units.

Some of the commercial activities undertaken within the Project area include open air garages, filling stations, merchandise shops and general market stalls.

If the Project is to be implemented, occupants of the structures in the Project area will have to be resettled to other locations.

Resettlement options to mitigate the impact of displacement may include replacement or cash compensation for lost assets and structure, as well as relocation allowance. Asset replacement measures will either be in kind which could involve provision of alternative land, residential and business structures, or in cash settlement that may involve monetary awards commensurate with the value of the lost assets.

Air Quality, Noise & Vibration

The Project site is located in an urban setting with many domestic and industrial activities in the immediate area. There are many sources of air pollution which contribute to degrading the ambient air quality of the area. Some of these sources include emissions from vehicular traffic (particulates and combustion emissions), combustion of diesel fuels to power small and large scale electrical generators in the absence of electrical supply, combustion of wood materials for cooking, and burning of miscellaneous wastes.

There is no national air quality standard. However, the EPA has a tentative standard that is acceptable.

At the moment, there is no national noise standard. Hence, the noise reading proposed for the Project is that set forth by Ghana, which is that noise level must not exceed 60 decibels (dBA), the maximum allowable exterior noise level in areas with some commercial or light industry.

During construction of the road, air emissions of particulates will be limited by spraying water on dirt roads and piles of cleared debris/loose soil during the dry season. Noise reduction measures on individual pieces of equipment (i.e. mufflers) will limit noise levels to below significance levels. Personnel working in areas of high noise will be required to wear ear plugs or muffs to protect against hearing loss, and those in areas of high particulate emissions will be required to wear a dust filter mask to protect against inhalation of particulates.

During operation, particulate (dust) emissions from use of the road will be controlled by use of water sprays, particularly during the dry season.

Conclusion

With the use of the proposed mitigation, reconstruction and operation of the Somalia Drive in the City of Monrovia, Liberia would have limited adverse environmental impact and significant socioeconomic benefits. The primary reasons for this conclusion are:

- By reconstructing and expanding the Somalia Drive to 4-lane road, there will be a reliable and improved means of transportation in this part of Liberia.
- Air emissions, noise levels, and wastewater and storm water discharges will meet the World Bank, JICA and EPA standards.
- JICA will develop and implement an Environmental Management Plan to mitigate and monitor impacts on air and water quality, noise, wildlife, vegetation, traffic, and health and safety.
- An environmental inspection and mitigation monitoring program will be implemented to ensure compliance with all mitigation measures imposed by the Liberian EPA, World Bank and JICA Standards.

- Emission controls and water spraying will be utilized to reduce operational air emissions.
- Wastewater and storm water will be managed prior to discharge, thus minimizing impacts to the surrounding water bodies.
- JICA and MPW will provide training programs thereby enhancing the skills and employability of the local labor pool.
- The Project will create jobs for Liberians during construction, together with utilization of local goods and services to the extent possible allowing for creation of small and medium enterprise and cottage industries, thus creating additional employment opportunities.

ENVIRONMENTAL EVALUATION

Anticipated Environmental Impact

The following identifies physical, biological, social and economic factors, which might be impacted by the proposed Project. In many cases, the background studies performed in connection with this Project clearly indicate that it will not affect a particular item except an involuntary resettlement.

	No	Items of adverse impact	Scoping Stage	Assessment in EIA			Description
				Design Stage	Construction Stage	Operation Stage	
Social environment	1	Involuntary resettlement	A	A	B	B	* Relocation of PAPs
	2	Local economy such as employment and live-hood	B	B	B	B	* Loss of jobs of PAPs; * Loss of livelihood
	3	Land use and utilizations of local resources	B	D	D	D	* No local resources will be used for the Project
	4	Social institutions such as social infrastructures and local decision-making	B	D	D	D	* No decision-making infrastructure is located in the Project area.
	5	Existing social infrastructures and services	B	B	B	D	*Destruction & demolition of infrastructure
	6	The poor, indigenous of ethnic people	B	B	B	B	*There are many poor * No minority population was observed in the Project area
	7	Misdistribution of benefit and damage	B	D	D	D	* No misdistribution of benefit and damage is considered
	8	Heritage, Graveyard, Sanctuary	B	D	D	D	* No heritage site, graveyard or sanctuary was observed in the Project area.
	9	Local conflict of interest	B	D	D	D	* There exist no local conflict of interest
	10	Water usage	B	D	D	D	* The will be no use of water from project area
	11	Public Hygiene	B	B	B	B	* Occupation hazard associated with construction activities

	No	Items of adverse impact	Scoping Stage	Assessment in EIA			Description
				Design Stage	Construction Stage	Operation Stage	
	12	Infectious diseases such as HIV/AIDS etc.	B	C	B	B	*The surveys did not fully consider these
	13	Geographic features	B	D	D	D	Very minor change to topography
	14	Soil Erosion	B	D	B	D	* Seepage or spill of fuel/chemicals; * erosion due to runoff
	15	Groundwater	B	B	B	B	* Seepage or spill of fuel/chemicals
	16	Hydrology	B	B	B	D	* Seepage or spill of fuel/chemicals; * Pulling of concrete into waterway
	17	Seastrand	B	D	D	D	* The Project is not located along the seashore.
	18	Fauna, Flora, Ecosystem	B	D	D	D	* Minimal clearing of vegetation
	19	Climate	B	D	D	D	Little or no impact to the climate
	20	Landscape	B	D	D	D	* The landscape is relatively flat and no change expected.
	21	Global warming	B	D	D	D	* Little or no impact is expected
Pollution	22	Air pollution	B	B	B	B	* Emission of gases and particulates from vehicle movement and site clearing
	23	Water pollution	B	B	B	B	* Seepage or spill of fuel/chemicals
	24	Waste	B	B	B	B	* Solid or hazardous waste from construction
	25	Noise and vibration	B	D	D	D	* Increased noise emissions from road traffic and heavy equipment
	26	Accidents	B	B	B	B	* Accident associated with construction activities

SOCIO-ENVIRONMENTAL SURVEY WITHIN ROW

Findings of Social-Environmental Survey within ROW show that a great majority of PAPs are in favor of the proposed rehabilitation/expansion of the Somalia Drive, along with their required resettlement due to the implementation.

Survey Methodology and Approach

The survey focused on collection of primary data on demographic characteristics, income and livelihoods, and housing conditions. The primary data sources used to describe the existing socio-environmental situation are as follows:-

- Census of all project affected people;
- Structure survey based on units that are to be directly affected by the Project;
- Public/community consultations that provide qualitative data; and
- Inventory and valuation of structures and affected assets in the area.

ADVERSE IMPACTS ON PAPS BY THE PROJECT

The Project is likely to impact the lives of occupants within the Project area. The major adverse impacts include permanent losses of residential lands, homelessness, and loss of access to property and resources and joblessness. Despite the fact that PAPs are likely to relocate due to the implementation of the Project, the PAPs acknowledge that the road expansion is very useful to the country and are willing to make the sacrifice. Following **Table** and **Figure** show the willingness of the PAPs to the road expansion.

Table PAPs' willingness to the road expansion

Is the Road Expansion Useful?	Survey Report	
Yes	1,791	94.16%
No	13	0.68%
No Answer	98	5.15%
	1,902	100.00%

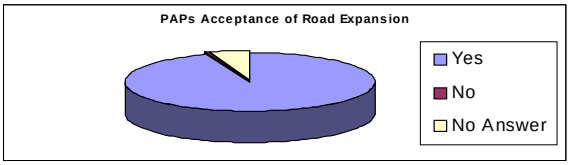

Figure PAPs' willingness to the Project.

Majority of the PAPs – 95.06% expressed willingness to move so as to facilitate commencement of the Project. Most of the PAPs – 89.85% requested to be given adequate notice and want to move within 1-2 months, if requested. In view of the urgency to commence the road expansion work, it is important to negotiate with the majority who are not disposed to leave much sooner to facilitate earlier start date of the Project.

Mitigation: Resettlement options to mitigate the impact of displacement may include replacement or cash compensation for lost assets and structure, as well as relocation allowance. Asset replacement measures will either be in kind which could involve provision of alternative land, residential and business structures, or in cash settlement that may involve monetary awards commensurate with the value of the lost assets.
And measure to reduce the number of PAPs in design stage is so much recommended.

Site Stakeholders Meetings

To obtain the fullest participation of PAPs and interested stakeholders, several meetings were planned in order to ensure that all possible concerns were addressed. Since the 13.7 km length of the Somalia Drive cuts across different communities, the meetings were scheduled in the different communities so as to ensure participation of all PAPs. The meetings were scheduled as shown in below.

1	Freeport of Monrovia to Battery Factory Junction - December 5, 2009 at 12:00 p.m. at the Faith & Victory School System, near Jamaica Road Junction.
2	Battery Factory Junction to Supermarket - December 5, 2009 at 3:00 pm at the Jimmy Jolocon School, near the Police Depot, Supermarket.
3	Supermarket to Chicken Soup Factory Junction - December 12, 2009 at 3:00 p.m. at the Jerusalem A.G. School, opposite M.T.A., Gardnerville.
4	Chicken Soup Factory Junction to St. Francis Junction - December 12, 2009 at 12:00 p.m., at the Monrovia Vocational Training Center (MVTC).
5	St. Francis Junction to 72nd Junction - December 19, 2009 at 12:00 p.m. at the Calvary Temple School.
6	72nd Junction to Red Light - December 19, 2009 at 3:00 p.m. at the Paynesville Central Academic School.

The comments of potentially affected persons, businesses, interest groups and the public at large were required by December 31, 2009. The majority of the comments dealt with ensuring PAPs should be informed adequately before the commencement of the road construction and that they are given some

assistance to relocate. A major comment from many PAPs is that the Project proponent reduces the width of the Project area from a distance of 150 feet from the mid-section of the existing road to a width of 100 feet. No one expressed opposition to the Project.

THE MESURADO WETLAND

The Impacts on the Mesurado Wetland

Liberia contains coastal and inland wetlands which are under intensive threats due to community livelihoods activities, land reclamations/refill for human habitation, agricultural activities, infrastructure development and economic activities. Degradation of the Wetland may affect the availability of ground and surface water in the long run. Generally, knowledge of the ecological values and services of wetlands in the Country is inadequate, owing to weak technical and human capacity, inadequate institutional framework, and inadequate assessment. The Wetland and other wetlands in the Country are located at sites of eco-tourism interest, a situation which could be explored and developed to contribute to the national poverty reduction efforts now being implemented by the Liberia Government and her international partners. According to the Environmental Protection Agency of Liberia (EPA, 2009), there exist five (5) RAMSAR sites in Liberia; which includes the Marshall, Lake Piso, Kpatawee, Gbedin and the Mesurado Wetlands.

The Government has plans to manage these sites which have received less awareness except for Lake Piso which received significant level of awareness in the last eight years. Despite this, major threats still exist. There is a need for national instruments and mechanisms to deal with threats to wetlands in Liberia.

Liberia as a Contracting Party to the Ramsar Convention on Wetland of International Importance is under obligation to manage sustainably all wetlands of international significance. The over all objective of the Convention is to prevent the net loss of wetlands. The Ramsar Convention was created on February 2, 1971 in the City of Ramsar, Iran and it came into force on December 21, 1975. It major outcome is the adoption of strategic plans to preserve wetlands.

Recommendation for Strategic Priorities for Clean-up and Remediation

The first priority action by the NWC is to seek relevant legislations for the legislative enactment of the proposed policy. The policy after enactment becomes the tool for addressing the issues of wetland problems in Liberia. The committee can be then lobby for other laws that may be needed for critical situations.

The second priority action will be establishing full management authority over all Rasmar sites. In order to do this, several projects will be designed for each site that will involve the local authorities and expertise. This will require high level assistance from donors.

The third priority action will seek to integrate wetland issues in the national planning process that will ensure the protection of wetland by all sectors. This means mainstreaming wetland issues.

The fourth action of priority will seek a national mobilization process through a national awareness program that aims at behavioral change towards wetlands. This will target wetland communities and policy makers.

The fifth priority action will seek international cooperation with neighbors of shared water resources. The cooperation will focus on joint projects around management authority and communication strategies.

The sixth priority action is the issues concerning the boundary definitions of Rasmar sites and

compensation of wetland habitats.

Since it has been observed that boundary of the Mesurado Wetland has to be well defined, therefore EPA is recommended to define the actual preservation area in accordance with the Resolution VII.23: Issues concerning the boundary definition of Ramsar sites and compensation of wetland sites;

Article 1 of Resolution: AWARE that Article 2.1 of the Convention obliges Contracting Parties to describe precisely and delimit on a map the boundaries of the wetlands designated for inclusion in the List of Wetlands of International Importance and RECALLING Resolution 5.3 which recognized that some wetlands were designated for the List before any criteria or information recording system had been developed under the Convention.

Article 4 of Resolution: NOTHING that at present there is no guidance provided by the Convention to assist Contracting Parties considering the deletion or restriction of the boundaries of a Rasmar site to establish a true and internationally acceptable case of urgent national interest, and therefore how to meet their obligations under Article 4.2 in terms of listing suitable compensatory habitat.

Article 8 of Resolution: RECOGNIZES that there are situations, other than the urgent national interest provision of Article 2.5 of the Convention text, where Ramsar site boundary may warrant further definition, for example, where boundaries were erroneously or inaccurately defined at the time of listing.

FRAME OF ENVIRONMENTAL MANAGEMENT PLAN

The construction of the Somalia Drive road will enhance basic economic activities and social services in Monrovia and its environments. This requires the Government of Liberia to prepare and implement an Environmental Management Plan (EMP), to prevent, minimize or mitigate site specific environmental impacts.

The Environmental Management Plan framework is one of the several required field surveys to be undertaken prior to commencement of works on construction or rehabilitation of new roads that linked the Central Business District, Bushrod Island, and other sub-urban areas of Monrovia. The Project is being undertaken by the Government of Liberia through the Ministry of Public Works. The Environmental Management Plan (EMP) is prepared in fulfillment of requirements of the Environmental Protection Agency (EPA) of Liberia. Potential impacts on air, water, soil, aquatic life, landscape, as well as vegetation and corresponding mitigation measures are considered, in addition to socio-economic impacts of the Project and the appropriate plan for people that will be affected by the Project.

The Environmental Management Plan (EMP) for the reconstruction of the Somalia Drive will define roles, responsibilities and procedures in the preparation of an Environmental Management Plan Framework (EMPF) for the reconstruction of the Somalia Drive Road.

Objective of the EMP

The primary objective of the EMP is to identify possible adverse environmental and social impact associated with the Project and proposes mitigating measures to prevent, minimize, or remedy such problems in order to ensure environmental sustainability. The specific objectives include:

- To describe and assess the existing environment likely to be impacted;
- To identify and assess the types and magnitude of the potential impacts;
- To prepare plans for managing impacts so that they are kept within acceptable levels; and
- To identify adverse, social impacts.

Resettlement Action Plan (RAP)

This Resettlement Policy Framework (RPF) provides the guidelines for the implementing Agency (MPW) on how, to recognize needs for resettlement planning and how to conduct it and implement the result. This Resettlement Policy Framework (RPF) is specifically for the conditions of the Proposed Reconstruction of the Somalia Drive Road Project.

The Resettlement Policy Framework includes:

- Principles and Standards from the Japan International Cooperation Agency (JICA) Guideline for Environmental and Social consideration;
- Procedures for analyzing situations and preparing Resettlement Action Plan (RAP) or abbreviated RAP; and
- Sample Terms of Reference (TOR) for RAP including outline of content of the RAP Document.

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RECOMMENDATION TO THE GOVERNMENT OF LIBERIA

Involuntary Resettlement

① To establish inter-ministerial organization which is solely responsible for involuntary resettlement. The proposed organization is presented as follows;
② To identify the PAPs in accordance with the physical field survey and facility design on reconstruction and formulate both EMP (Environmental Management Plan) and RAP (Resettlement Action Plan), and take necessary actions in accordance with EIA procedures required in the country.
③ To obtain the agreement from PAPs on involuntary resettlement and carry out compensation and relocation in accordance with prepared RAP before implementation of the Project.

Environmental Monitoring

① To provide sufficient materials to carry out environmental monitoring such water analysis, ambient air analysis, noise/vibration analysis those to evaluate the sustainable pollution level those stipulated in Liberia.
② To improve management capability by involving the wetland technicians, local community members and other stakeholders in; enhancing of knowledge and understanding of the ecological processes, values and services of wetlands; training of how to manage and use their wetlands; developing an appropriate wetlands legislative framework for Liberia; developing planning and management systems for Liberia's wetlands.

Table of Contents

Table & Figure

LIST OF ACRONYMS

AIDS	-	Acquired Immune Deficiency Syndrome
CO_2	-	Carbon Dioxide
CO	-	Carbon Monoxide
COD	-	Chemical Oxygen Demand
COI	-	Corridor of Impact
dBA	-	decibels
EA	-	Environmental Assessment
EPA	-	Environmental Protection Agency of Liberia
EIS	-	Environmental Impact Statement
EMP	-	Environmental Management Plan
EMPF	-	Environmental Management Plan Framework
ESIA	-	Environmental & Social Impact Assessment
FDA	-	Forestry Development Authority
FM	-	Frequency Modulation
GPS	-	Global Positioning System
ha	-	Hectacres
HIV	-	Human Immunodificiency Virus
IIU	-	Infrastructure Implementation Unit
IRC	-	Inter-ministerial Resettlement Committee
JICA	-	Japanese International Cooperation Agency
JBIC	-	Japan Bank for International Cooperation
km	-	kilometer
LRRRC	-	Liberia Refugee Resettlement and Reintegration Commission
M&E	-	Monitoring and Evaluation
MPW	-	Ministry of Public Works
MTA	-	Monrovia Transit Authority
MUTCD	-	Manual of Uniform Traffic Control Device
MVTC	-	Monrovia Vocational Training Center
NO	-	Nitrogen Oxide
NO_2	-	Nitrogen Dioxide
NOx	-	Nitrogen Oxides
PAPs	-	Project Affected Persons
PCU	-	Passenger Car Unit
PM	-	Particulate Matters
PPE	-	Personal Protective Equipment
PRW	-	Provisional Road Width
RAP	-	Resettlement Action Plan
RMZ	-	Riparian Management Zone
ROW	-	Right of Way
RPF	-	Resettlement Policy Framework
RPM	-	Reparable Particle Matter
SD	-	Somalia Drive
SO_2	-	Sulfur Dioxide
SPM	-	Suspended Particulate Matter
Sq	-	Square
TSS	-	Total Suspended Solids

CHAPTER 1

INTRODUCTION

1.1 PURPOSE AND NEED FOR THE PROJECT

The Somalia Drive, between the Freeport of Monrovia to Redlight, Paynesville, in Montserrado County, Liberia, is a very important road. This 13.7 kilometers road links the largest seaport and industrial complex at Freeport/Freezone to the largest market at Redlight and the rest of the interior of Liberia.

When the Somalia Drive was first constructed in 1978, the population of the settlements along the route was far less. Over the last three (3) decades, the population has risen to more than 200,000, by virtue that the recent census has reported increase of five (5) districts of 40,000 persons each, for the communities along and nearby the route. The two-lane road that served the population then can not properly serve the present population. As a result, there is much traffic congestion along the route. The distance of 13.7 kilometers that should take approximately 15 minutes to travel presently takes about 2 hours or more during peak periods of the day. Further increase in the population and/or users of the road in the near future will result into long travel times.

Before the Liberian civil crisis in 1990, Liberia was the conduit for the transportation of goods to the interiors of the neighboring countries of Sierra Leone, Guinea and Ivory Coast. The Somalia Drive serves as the major route from the Freeport of Monrovia to the interior of Liberia, and into neighboring countries. With the return of normality, the Freeport is once more going to serve as a gateway to neighboring countries because of the shorter distance and transportation cost from the Freeport to the interior of neighboring countries as compared to seaports of those countries. This is going to increase hauling trucks on the Somalia Drive, and at the present situation, lead to further congestion in the traffic on the route. The use of the Freeport of Monrovia by neighboring countries will lead to revenue generation by the Government of Liberia.

It is also expected that a regional road network should connect West African States. The main route connecting Western Liberia to the north and east where other major regional routes are connected is the Somalia Drive. However, the 2-lane road falls short of international standard of a regional road network. Upgrading the Somalia Drive to 4-lane motor road will enable it meet international standard of a regional road network.

The proposed Project – expanding or upgrading the Somalia Drive to 4-lane motor road will create a free flow of traffic along the route and ease the travel time for residents of settlements

along the route. It will also lead to increase in revenue for the Government of Liberia due to increase in usage of the port by importers in neighboring countries.

It is presently 2-lane road with no standard sidewalk and drainage system. The proposed Project is therefore intended to achieve the following:-

- expand the existing two-lane road to four-lane;
- facilitate the effective and efficient flow of people, goods and services through this important area; and,
- improve safety of road users and pedestrians;

The existing Somalia Drive is 2-lane motor road of approximately 7.3 m by width. It allows only one vehicle in each direction, with a broken center line to allow vehicles to pass slow moving traffic. The road was originally intended to be 4-lane motor road. However, only 2-lane was constructed and have been rehabilitated over the years, the most recent being a World Bank sponsored-project in 2008. **Figure** 1-1 is a map showing the location of The Project area in Liberia, while **Figure** 1-2 shows the existing road.

Figure 1-1 Map showing location of The Project area.

Figure 1-2 Existing Somalia Drive and Project area.

In 2009, the daily traffic volume on the Somalia Drive was calculated at 24,500 Passenger Cars Unit (PCU) per day at the eastern section of the road. It is estimated that the volume in 2014 will increase to over 150% of road capacity at all stretches and traffic condition will be more serious.

The present traffic congestion on 2-lane road is having significant economic losses and negative impact on the lives of the population in the settlements along the route. The upgrade of the road to 4-lane motor road will have immense positive impact and will ensure smooth traffic flow. **Figure** 1-3 shows the designs of the existing Somalia Drive and 4-lane proposed by The Project.

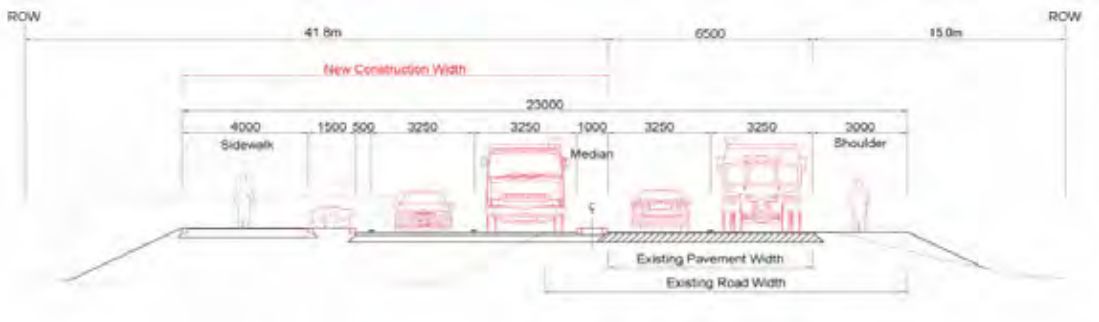


Figure 1-3 Typical cross section of proposed Project

1.2 PRESENT POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

There are several policies, laws, and regulations specific to areas of environmental impact that affect the construction and rehabilitation of motor roads. As a matter of policy, Annex I (Section 6) (13) of the Environmental Protection Agency (EPA) requires an Environmental & Social Impact Assessment (ESIA) for projects that would have a significant impact on the environment. The construction and expansion/upgrading of road as indicated in Item 13 of the Annex is listed amongst those projects requiring an Environmental Impact Assessment. As such, there is a statutory requirement for conducting an environmental impact assessment for the proposed Project. In addition, other existing pieces of international and national legislation and regulations have relevance to the development and implementation of this project with regard to environmental and social concern. In this section, the relevant policies, statutory requirements, and guidelines that would impact the environmental assessment of this proposed Project are outlined.

(1) Policy Framework

1) National Environmental Policy (2003)

This Policy aims at improving the physical environment, quality of life and coordination between economic development, growth, and sustainable management of natural resources. Key objectives of the policy include:

- The systematic and logical framework with which to address environmental issues;
- Benchmarks for addressing environmental problems in the medium- to long-term;
- Context for financial/donor support to particular sectors and non-sector;
- The means for generating information and awareness on environmental problems; and
- To demonstrate Liberia's commitment to sustainable management of the environment.

2) World Bank Policies

The World Bank's social and environmental safeguard policies seek to prevent and mitigate potential adverse impacts associated with the Bank's lending operations that may adversely affect people and their environment. The road rehabilitation project warrants the World Bank's

safeguard policies on Environmental Assessment OP 4.01 and Involuntary Resettlement OP 4.12.

3) OP/BP 4.01-Enviornmental Assessment

The World Bank requires environmental screening of each proposed Project to determine the appropriate extent and type of EA process. OP 4.01-Enviornmental Assessment outlines the policy and procedure for environmental assessment of the Bank's lending operations. The road rehabilitation project is classified as Category A, which could have potential adverse environmental impacts on human population as well as the environment.

4) OP 4.12-Involuntary Resettlement

The policy deals with direct economic and social impacts that may result from internationally-sponsored projects, and are likely to cause the involuntary taking of land resulting in relocation or loss of shelter; loss of assets or access to assets or loss of income sources or means of livelihood, whether or not the affected persons must move to another location. This policy applies to the road expansion/upgrading anticipated under the proposed Project.

(2) Regulatory Framework

The Liberian Constitution and other laws provide for resettlement and compensation. This section provides a detailed description of the legal framework for the implementation of involuntary resettlement projects in Liberia, taking into account the following applicable Liberian Laws.

1) Liberian Constitution of 1986

Article 22 (a) and (b) of the Constitution gives right to all individuals to own property, either on individual basis or in conjunction with other individuals, as long as they are Liberian citizens. The right to ownership of property however does not extend to mineral resources on, or beneath the land.

2) Land Acts

Before independence, land acquisition and distribution in Liberia was done on the basis of relationship and class system. This system of land tenure was seriously opposed and it led to the establishment of a set of rules known as the 'Digest of Law' to govern the affairs of the settlers in terms of land distribution'. This subsequently culminated into the Land Distribution Act of 1856, which removed the restriction to land distribution on the basis of citizenship. Later, this Act was repealed by the 1950 Land Act which restricted land ownership to citizens and naturalized citizens, especially those of Negro descent.

(3) Administrative Framework

The administrative institutions or agencies of Government that have the statutory roles in implementation of the proposed Project are as follows:

1) Ministry of Public Works

This ministry has the statutory responsibility to design, construct and maintain roads, highways, bridges, storm sewers, public buildings and other civil works. Additionally, it is also responsible to carry out urban and town planning, as well as provide architectural and engineering supervision of infrastructure required for waste management. The Ministry has an Infrastructure Implementation Unit (IIU), charged with the implementation of Urban Works Project on behalf of the Ministry.

(4) Ministry of Planning and Economic Affairs

This Ministry has the statutory mandate to coordinate national and regional developmental planning and monitor their implementations.

1) Ministry of Lands, Mines and Energy

This Ministry, besides its pivotal role in mineral resource development, is also charged of administering and regulating public and private lands. This includes land tenure, land policy, land reform, land use, planning, and other aspects of land administration.

2) Environmental Protection Agency (EPA)

The EPA is responsible for monitoring, coordinating, and supervising the sustainable management of Liberia's environment. It is mandated to ensure the conduct of EIA for projects and programs that are likely to have significant adverse effects on the environment.

1.3 PUBLIC AND SITE STAKEHOLDER PARTICIPATION AND COMMENTS

As a part of the environmental impact assessment, the social aspect of The Project was also considered. At present, the shoulder of the Somalia drive, particular the left flank of the right-of-way intended for the expansion, is greatly occupied. It is used mainly for commercial purposes including markets, nearby stalls, open garages and some residential premises. Stakeholders meetings and scoping studies were conducted in accordance with the Section 11 of the Environmental Protection and Management Law of Liberia. The purpose of the scoping process is to identify, inform, and receive input from the affected stakeholders and interested parties, determine and narrow the scope of issues to be addressed in the ESIA, identify and define the significant environmental and social impacts that may be caused by The Project, ensure public participation, and ensure all relevant issues and alternatives are adequately addressed.

Comprehensive site stakeholder meetings were conducted between November and December 2009 to identify priority concerns of people that may be affected by The Project and more accurately identify the full range of potential impacts to be evaluated in the ESIA. Representatives of the Environmental Consultant and the Ministry of Public Works met with affected and concerned community members from the settlements along the length of the Somalia Drive at six (6) site stakeholder meetings. Before then, a full demographic survey was conducted to obtained information from affected persons. A comprehensive database of Interested and Affected Parties was also developed.

During the public and site stakeholder meetings, various questions and concerns were raised regarding project impacts mainly to PAPs, soil, surface water, groundwater, air quality, noise, traffic, and socioeconomics.

The Terms of Reference formulated from these processes assisted in the preparation of this ESIA and will also be utilized for a management plan.

CHAPTER 2

PROPOSED ACTION AND ALTERNATIVES

2.1 DESCRIPTION OF PROPOSED ACTION

The Government of Liberia requested the Government of Japan on the reconstruction and/or upgrade of the Somalia Drive into 4-lane motor road. The road will extend from the Freeport of Monrovia to the Red Light, Paynesville, as shown in **Figure** 2-1 below.

Figure 2-1 Location of Somalia Drive in and outside Monrovia.

The Ministry of Public Works is the executing agency to undertake the expansion of the road. The Project will also include the construction of drainage, bridges, and other features associated with road construction.

Figure 2-2 shows the tentative diagram and cross section of the proposed road. It will consist of four (4) lanes of 3.25 meters each. There will be a meridian of 1 meter separating the traffic in both directions. There will also be 1.5 meter space separating the right lane from 4 meter sidewalk to be construction.

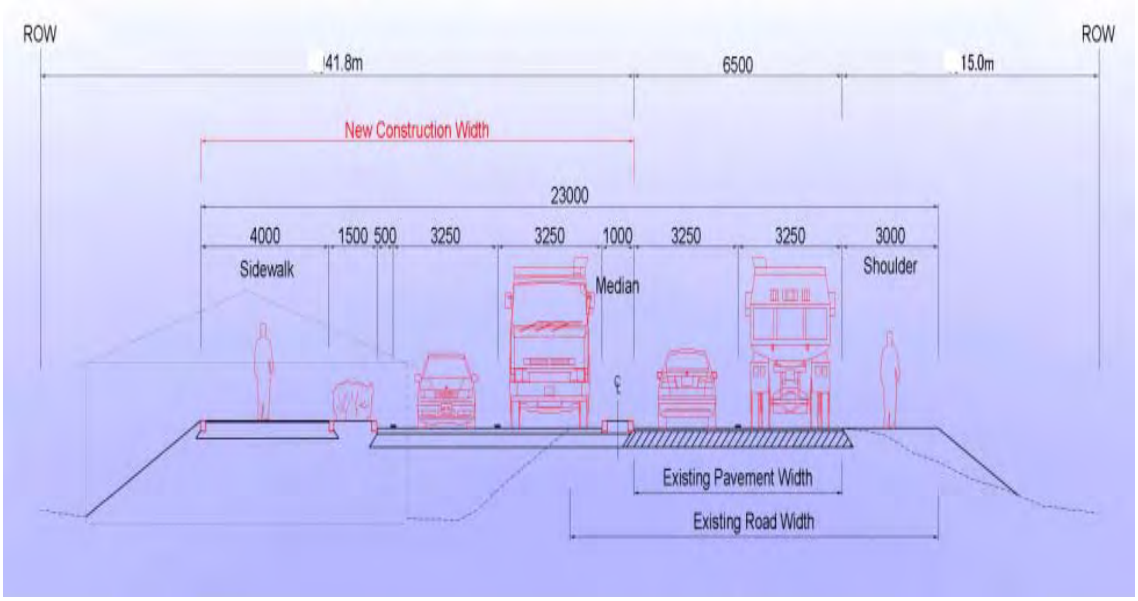


Figure 2-2 Tentative diagram and cross section of the proposed Somalia Drive (after Project completion).

2.1.1 Proposed Process Description

The need for improving the transportation problem along the Somalia Drive has already been identified. Preliminary study has determined the expansion of the existing 2-lane road into 4-lane road. The best undertaking will be to utilize the left flank of the right-of-way and nearby lands for the purpose.

The environmental and social impact assessment is now being done to determine the environmental and social effects that the Project will have.

With a positive response and the provision of funding, a reconstruction design of the road will be undertaken. This will determine the exact land surface to be used, utilizing the present right-of-way on the left flank. A detailed measurement survey to assess the affected property will be undertaken to accomplish this. If additional property must be purchased or PAPs to be relocated involuntarily, this will be done during this period, as any review of environmental concerns arisen or private land in the area that might be affected by the Project.

Once the design plans are completed, the tender for the construction work will be solicited and awarded.

2.2 ALTERNATIVES TO PROPOSED ACTION

This section describes the alternatives analysis by which the preferred alternative was identified. It also describes how this process complies with the applicable requirements of the Environmental Protection Agency and other international environmental conventions and

concerns. Alternatives that were considered at different sites are also described, along with the reasons why they were rejected.

The formulation of alternatives for analysis in the ESIA involved the review of prior studies. Alternatives were evaluated for their ability to attain the Project goals and objectives and as the alternative analysis process merged with the environmental process, the safety and environmental need for a motor road link between the Freeport of Monrovia and Red Light was evaluated with consideration of environmental and social needs. **Figure 2-3** shows the proposed Project and alternatives.

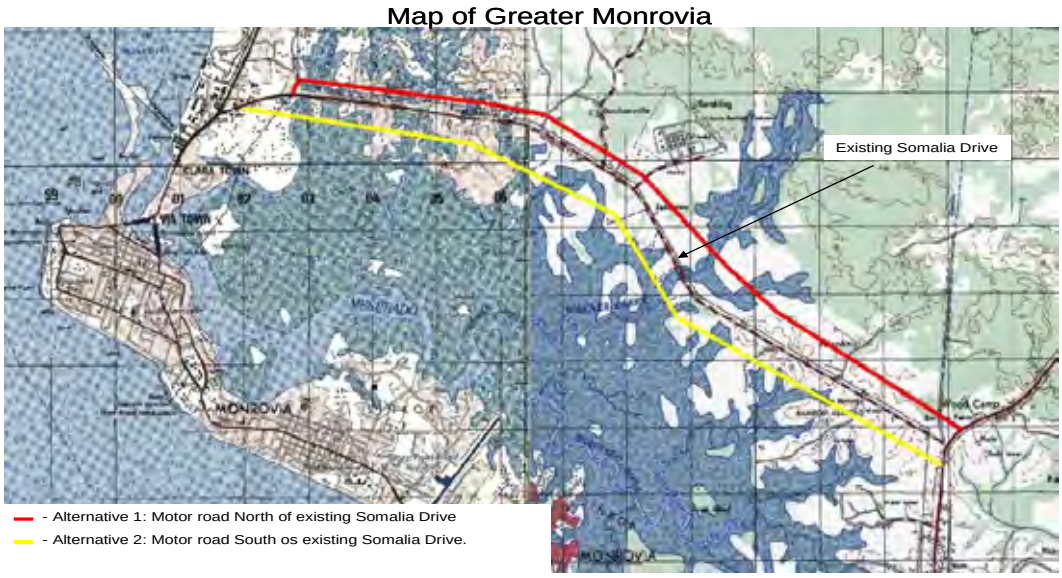


Figure 2-3 The existing Somalia Drive and Proposed alternatives.

2.3 ALTERNATIVE 1: 2-LANE ROAD NORTH OF THE EXISTING SOMALIA DRIVE.

This alternative considers constructing 2-lane motor road north of the existing Somalia Drive. It will be 12.0 kilometers new road connected to the Monrovia-Kakata Highway, about 375 meters north of the Red Light Junction. Towards the Freeport of Monrovia, this road will link with the Jamaica Road and connect with the existing Somalia Drive. It is only 1.25 kilometers of the Somalia Drive that will be upgraded into 4-lane road.

However, this alternative was withdrawn from consideration at this time as it is expected to lead to the involuntary relocation of many legitimate property owners along that route, penetrate the Stephen Tolbert Housing Estate, a low-income housing project, as well as temper with the Mesurado wetland, which is a Ramsar projected area. It is also inconsistent with the Poverty Reduction Strategy being fostered by the Government of Liberia in that it will cause the displacement of many persons.

2.4 ALTERNATIVE 2: 2-LANE ROAD SOUTH OF THE EXISTING SOMALIA DRIVE.

This alternative considers constructing 2-lane motor road south of the existing Somalia Drive. It will be 13.3 kilometers road connected to the Monrovia-Kakata Highway, about 325 meters south of the Red Light Junction. It connects with the United Nations Drive at about 150 meters south of the Freeport junction.

This alternative was withdrawn from consideration as it is expected to lead to the involuntary relocation of many legitimate property owners along that route with the Paynesville and Bushrod Island areas. It is also expected to penetrate a vast portion of the Mesurado wetland, which is a Ramsar projected area. It is also inconsistent with the Poverty Reduction Strategy being fostered by the Government of Liberia in that it will cause the relocation of many persons.

2.5 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the short-term environmental impacts identified of this ESIA would not occur. Conversely, the objectives of the Project would not be met, and easing the traffic problem between the Freeport and Red Light corridor will not be solved. While an alternative scenario may be considered over subsequent years, increase in population in the settlements along the route and increase in PCU of the road is likely to increase over the years, as predicted. This is going to result in a serious transport problem for the communities and road users and result the serious social and environmental adverse impacts as well as serious economic damage. For the reasons detailed below, the No-Action Alternative was considered but rejected. **Table** 2-1 shows the comparison between the proposed Project, the alternatives and no action.

The No Action alternative will retain the existing Somalia Drive in its present condition. This will therefore lead to the following drawbacks:-

It will not be consistent with the long-term objective of reducing congestion.
It will not provide sufficient capacity for projected 2014 and beyond traffic.
It will not facilitate the efficient movement of goods and services through the area.
It will not complete the planned regional integrated transportation network between West African States.

Table 2-1 Comparison between the proposed Project, alternatives and no action.

Description	Facility	Project Cost (mil. $)	Economic impacts (rating)	Social impacts (rating)	Pollution (rating)	Comprehensive (rating)
Proposed Project	• 13.7 km of road expansion • 2 bridge improvement	22.8	• Enhance economic activity (Good)	• Number of Involuntary resettlement is moderate • Available to mitigate the adverse impact when RAP is properly applied (Fair)	• Noise and air level will be stable when EMP is properly applied (Fair)	Good
Alternative 1: 2-lane road north	• 12.0km of new construction and 1.25km of expansion • 4 new bridges	41.7	• Enhance economic activity (Good)	• Affected structure will be five times or more of proposed one • Required land acquisition is estimated as 48ha (Very Bad)	• Noise and air pollution level to inhabitants along new road will increase (Bad)	Bad
Alternative 2: 2-lane road south	• 13.3km of new construction • 9 new bridges	51.2	• Enhance economic activity (Good)	• Affected structure will be two times of proposed one • Required land acquisition is estimated as 53.2ha (Bad)	• Noise and air pollution level to inhabitants along new road will increase • Adverse impact to Mesurado wetland will increase (Bad)	Bad
No Action Alternative	Nil	Nil	• Aging of bridges and traffic congestion will affect economic activity very seriously (Very Bad)	• Affect the local economy, land-use, infrastructure etc. and living standards of inhabitants will be affected in a medium and long-term (Very Bad)	• Air pollution level will increase due to the gaseous emission (Very Bad)	Very Bad

CHAPTER 3

EXISTING ENVIRONMENT OF THE PROJECT AREA

Liberia is located on the west coast of Africa and is bordered on the north by Guinea, on the east by Côte d'Ivoire, on the south and southwest by the Atlantic Ocean, and on the northwest by Sierra Leone.

Monrovia is the capital and country's largest city, and is located in Montserrado County. Monrovia has an estimated population of about 1.1 million inhabitants. Liberia is divided into 15 counties with an estimated country wide population of 3.5 million.The proposed expansion of the Somalia Drive runs from west to east of the northern outskirt of the City of Monrovia. **Figure** 3-1 shows the map of the Project area.

Figure 3-1 Map of the Project area

3.1 TOPOGRAPHY

Liberia can be divided into three distinct topographical areas. First, a flat coastal plain which extends up to 80 km inland, with creeks, lagoons, and mangrove swamps; second, an area of broken, forested hills with altitudes from 180–370 m, which covers most of the country; and third, an area of mountains in the northern highlands, with elevations reaching 1384 m.

The proposed Project will occur in the region of Liberia known as the flat Coastal Plain. It is the land region of the country just next to the Atlantic Ocean. In fact, the length of road is between 5 and 7 kilometers from the ocean.

The Project area is a relatively flat terrain with an average altitude of approximately 11 meters. There is no highland or fault in the surrounding. The area is instead surrounded by

marsh/swamp land, which eventually drains into one of two (2) major water bodies, the Stockton Creek and Warner Creek, both of which subsequently empty into the Mesurado River or Mesurado Wetland.

3.2 GEOLOGY AND SOILS

The Project area is located in what is known as the Pan African Age Province. The rock type in this region is less than 500 million years. The proposed length of road of 13.7 kilometers cuts across several local geological zones as shown in **Figure** 3-2. There is a zone of fluvial and deltaic deposit which extends from the Freeport of Monrovia. This zone comprises buff silt and sand deposits, which are characteristic of very low terrain along the coast. This zone probably includes some beach sand too.

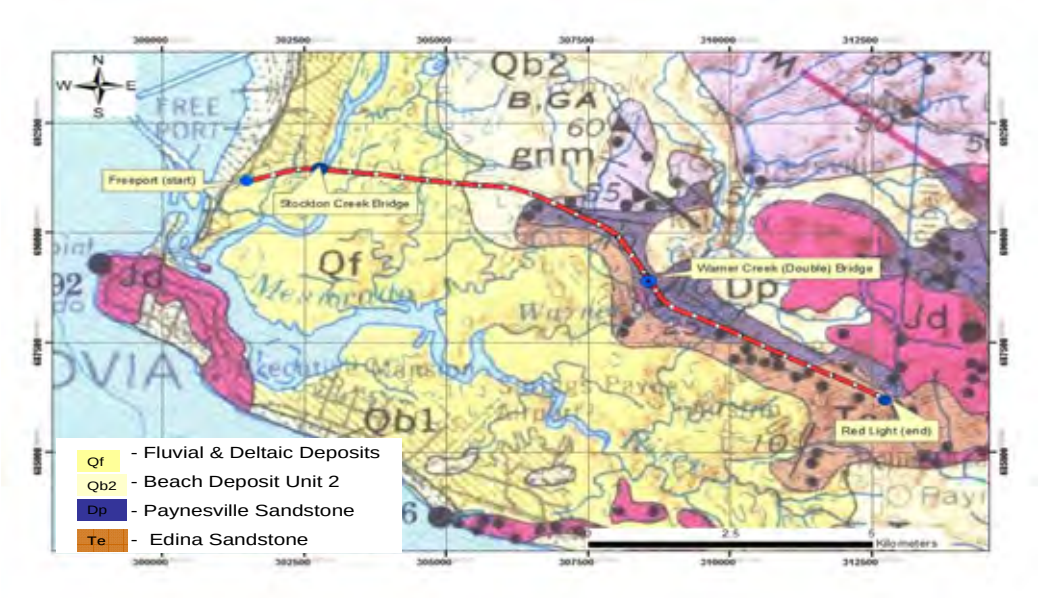


Figure 3-2 Geologic map of the Project area.

The fluvial deposit zone is followed by beach deposit unit. This zone is composed of nearly pure white quartz sand averaging 1 meter in thickness and forming large savannah.

After the beach deposit unit is the Paynesville Sandstone. This unit is composed of light-colored fine- to medium-grained well-rounded and well-sorted cross-bedded quartz sandstone. There are also subordinate cross-bedded siltstone and shale included in this zone.

A small portion of the road length is composed of a local geologic zone the Edina Sandstone. This zone is composed of white to light brown coarse- to medium-grained gritty sandstone, generally less than a few meters thick.

The main types of soils found in Liberia include: latosols, which are of low to medium fertility, sandy soils or regosols, which are infertile; shallow, coarse lithosols found in hilly and rugged

terrain; highly fertile alluvial soils which are suitable for agriculture; and humus-rich swamp soils. In general, the soils are characterized by a shallow layer of humus content and high acidity as a result of deficiency in magnesium and calcium

The soil profile in the Project area is not uniform. In the section within the zone of fluvial and deltaic deposit which is closer to the Atlantic Ocean, the soil is usually shallow. There is mostly one unit of soil, the sandy soil. In the zone of beach deposit, the soil profile is usually several meters thicker and is underlain by Jurassic dykes or granitic gneisses.

3.3 CLIMATE

The climate of the Project area, as is the case with the rest of Liberia, is tropical and humid, with little change in temperature throughout the year. The temperature rarely exceeds 36^{o} C (97^{o} F) or falls below 20oC (68oF), with a mean annual temperature of 27^{o} C (81^{o} F). **Figure** 3-3 shows a graph of the annual climate distribution of Liberia.

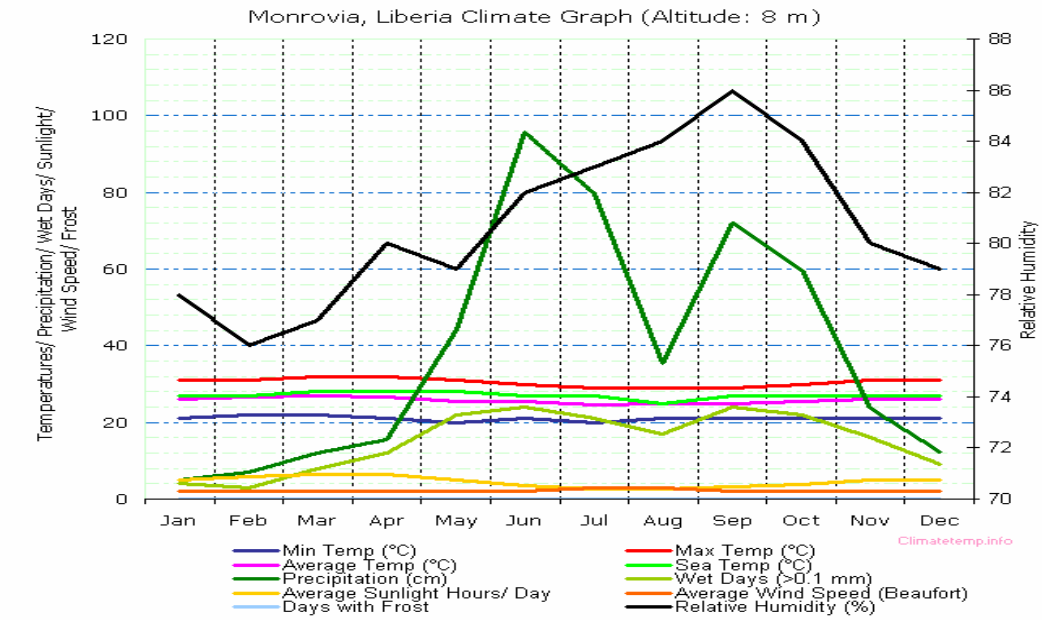


Figure 3-3 Annual climate distribution of Liberia

The climate of the area is characterized by a monsoon (wet) season and a dry season. The monsoon season extends from late April through October, with the majority of the rainfall occurring between mid-April and mid-October. During this time frame the average humidity is about 82%. The dry season extends from mid-October to mid-April.

During the dry season, the average humidity is 78%; however, it may drop to 50% or lower between December and March when the dust-laden Harmattan winds blow from the Sahara.

Wind velocity is greatest in the rainy season and lowest in the dry season.

3.4 WATER RESOURCES

3.4.1 Hydrology

There are two (2) waterways within the Project area. The Stockton Creek is near the western flank of the Project area. It is the largest of the waterways. The Warner Creek is almost at the mid-section of the Somalia Drive. These water bodies are channelized, but have banks that are composed by mangrove swamps that are flooded seasonally.

Rainfall is very common. The rainy season runs for half of the year, from April to October. And the annual rainfall reaches up to 4000 mm. Without drainage along the present Somalia Drive, washes are very common during the periods of rains. Floods, swamps and washes in the Project area particularly formed during the rainy season drain into the 2 creeks which eventually drain into the Mesurado River/Wetland.

The groundwater system within the Project area consists of shallow aquifers. Groundwater can be encountered at depth as shallow as 1 meter. This was observed during the survey from water wells in communities within the right-of-way.

3.4.2 Water Quality

The chemical quality of the water within the Project area is generally satisfactory for commercial and industrial uses. Water samples were collected from the two (2) streams, Stockton and Warner Creeks. A third sample was collected from water well within the Project area. **Figure** 3-4 shows the water samples collection points.

Figure 3-4 Water samples collection stations

The results of the analyses show that the levels of total suspended solids generally range from 24 to 30 ppm. The pH ranges between 6.5 and 6.8. The COD ranges between 22 and 24. The quality of water within the Project area is shown in **Table** 3-1 below.

Table 3-1 Water quality of Project area

Parameter	Unit	Stockton Creek	Warner Creek	Water Well
pH	pH	6.8	6.5	6.8
Conductivity	S/m	2.9	2.4	4.2
Temperature	^{0}C	29.4	29.0	29.5
Odor		musty	musty	Chlorine
Color		brownish	brownish	colorless
Chemical Oxygen Demand	ppm	24	24	22
Dissolved Oxygen	ppm	8.5	8.7	8.5
Total Suspended Solids	ppm	29	24	30

Following **Table** 3-2 presents fresh-related water quality standards which will be applied for Mesurado wetland.

Table 3-2 Fresh-related water quality standards

Type of Water				Marine water (Coastal segment)
				CLASS SW-1*
Parameter (Unit)	pH			6.5-8.5
	Dissolved Oxygen***		(mg/l)	5.0
			(%)	60
	Color and Odor			No noticeable color or offensive odor
	Floating Matters			Nothing obnoxious or detrimental for use purpose
	Suspended Solids			None from sewage or industrial waste origin
	Oil and Grease*		(mg/l)	0.10
	Heavy Metals	Mercury (Hg)	(mg/l)	0.01
		Lead (Pb)	(mg/l)	0.01
		Cadmium (Cd)	(mg/l)	0.01
		Zinic (Zn)	(mg/l)	-
		Dissolved Copper (CU)	(mg/l)	-

3.4.3 Flood Hazards

The right-of-way of the Somalia Drive is likely to flood between the Freeport and Cow Factory, especially during the rainy season. Without a adequate drainage system have constructed with

the existing 2-lane motor road, run-off from the exposed road is common. The topography of the area also does not allow fast movement of water, as the area is a relatively flat plain.

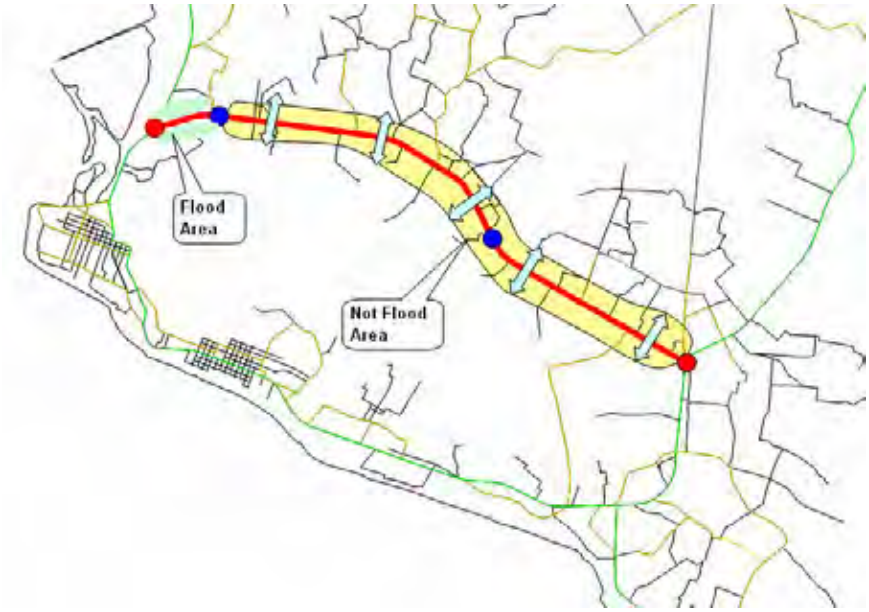


Figure 3-5 Outline of flood hazard along Project Road

Urban development in the communities along the existing Somalia Drive reduces the total ground absorption area by creating impermeable surfaces. Storm runoff, increased by the presence of impermeable surface from construction, contributes to flooding within the right-of-way. The amount and frequency of rain is variable, but the lack of drainage system in the Project area contributes to the flow problem. Rainfall is the Project area is sometime in the form of thunderstorms and other fast moving relatively intense storms, which may cause flash floods. There is a tendency for flash flood in the area. During periods of intense rainfalls, there are occasional occurrences of floodwater washing over the existing 2-lane in the Freeport area.

Due to the permeability and porosity of the soil in the Project area, flood water is likely to seep into the ground or discharge into the two major water bodies, or smaller water bodies. All of the water bodies subsequently drain into the Mesurado River.

3.5 BIOLOGICAL RESOURCES

Data and information on biological resources in the Project area is very limited. Therefore, to identify and evaluate the biological resources, environmental field crews interviewed local residents and conducted several surveys of the Project area and adjacent land.

3.5.1 Vegetation

The Project area is the right-of-way of the existing motor road. There is very little vegetation, mainly near the two (2) main water bodies. Most of the vegetation is dominated by native grasses, ferns and common scrub-shrub species. Occasional few trees grow in the communities

along the flank of the road. These provide shades from the sun for residents. There are also some cultivated vegetables planted as food supplements by residents. Among these are the cassava, 'potato greens', etc.

Along the banks of the two (2) water bodies in the Project area, there are secondary growth riparian vegetation, which includes the herbaceous wetland species of arrowhead, pickle weed, bulrush, and water lilies.

3.5.2 Wildlife

A detailed biological survey was conducted along the entire length of the Project area maximize the number of species observable. The environmental field crews identified the species present in the Project area through observations, interviews with local residents and professional organizations knowledgeable in the areas. Specific results of the species surveys are described in the following sections.

3.5.2.1 Mammals

The main mammals known to the area are domestic animals, mainly dogs and cats. Very little or no other wild mammals can be found in the Project area. What may be found are likely domesticated.

3.5.2.2 Birds

Few avian species were identified from surveys throughout the Project area, most utilizing the open grasslands, scrub shrub, and wetland habitats. The red eye dove was the most abundant species within the Project limits; however, the cattle egret were seen as cattle graze an area along the flank of the existing Somalia Drive

The birds are most abundant in the riparian and wetlands of the Project areas.

3.5.3 Herpetofauna

Herpetofauna include the species from the ectothermic (cold-blooded) animal families, amphibians and reptiles. Species from these families can be found only in the water bodies and wetlands. Interviews with local residents indicate that the overall herpetofauna population is poor, and only a few small lizards and frog species were directly observed.

Reptiles observed in the Project area included lizards; and amphibians observed included the toad frog and tadpoles. Though snakes were said to be seen in the riparian zones, none were observed during the surveys.

3.5.4 Fish

Fish surveys were conducted by interviewing residents along the banks of the two (2) main water bodies, fishermen in the area and professional organizations with knowledge on the subject. Some of the residents along the banks of the Stockton and Warner Creeks rely on the fish from these water bodies as food source. Typically hook lines, and baskets and nets made from piassava (stiff natural plant fibers) and/or palm tree products are used to catch fish. Though not practiced now, in the period between 1990 and 1997, 'dynamite' had been blasted in the water to kill fish. This practice, while killing the fish populations en masse, also killed fish eggs and was viewed as unsustainable practice. With environmental awareness, this practice is now abolished. However, it can be considered the main cause of the low fish population in the water bodies.

Fish species listed by the fishermen and residents were identified by the local names and included catfish, crayfish, tilapia, bonny, sunfish, and mudfish. Locals also indicated that there were crabs in the two (2) main water bodies.

3.5.5 Rare or Endangered Species

Information obtained through consultations with the Environmental Protection Agency (EPA), Forestry Development Authority, as well as interviews with local residents indicate that the only protected or endangered species of animal that could habitat the wetlands around the bridges in the Project area is the crocodile, while the endangered plant is the mangrove. **Figure** 3-6 shows the endangered or protected wildlife species of Liberia.

Figure 3-6 Protected wildlife species of Liberia

(1) Crocodile

There are three (3) species of crocodiles found in Liberia. They are the Nile crocodile (Crocodylus niloticus), slender-snouted crocodile (Crocodylus calaphractus) and dwarf crocodile (Osteolaemus tetraspis). The Nile crocodiles are found mainly in mangrove swamps and river mouth (brackish water); the slender-snouted crocodiles in river (freshwater); and dwarf crocodiles in small streams (fresh water).

From a survey conducted in 1988 by Gatter, only the Nile crocodiles were found to habitat the Mesurado wetland. This includes the nearby wetlands of the Stockton and Warner Creeks. This habitat is completely surrounded by the City of Monrovia and its suburbs. The Somalia Drive runs across the entire northern flank of the Mesurado wetland.

Several crocodiles were observed during the survey, ranging in length of 0.3 – 2.5 m of nearly 100 observed, they were all judged to be non-adults with the possible exception of 2 individuals greater than 2 m.

The density of the Nile crocodiles was 1.4 per kilometer of waterway and the crocodiles are more abundant further away from the city center and urbanized areas. They were frequently seen in the root systems of the mangrove.

(2) Mangrove

On the southern flank of the Somalia Drive is the Mesurado wetland. This ecosystem is also found along the Stockton and Warner Creeks, in small strips in the Project area. The wetlands of the Mesurado River, Stockton and Warner Creeks are mangroves, trees and shrubs that grow in saline coastal habitats in the tropics and subtropics. **Figure** 3-7 and **Figure** 3-8 show the location of the Mesurado wetland and the mangroves that grow in it.

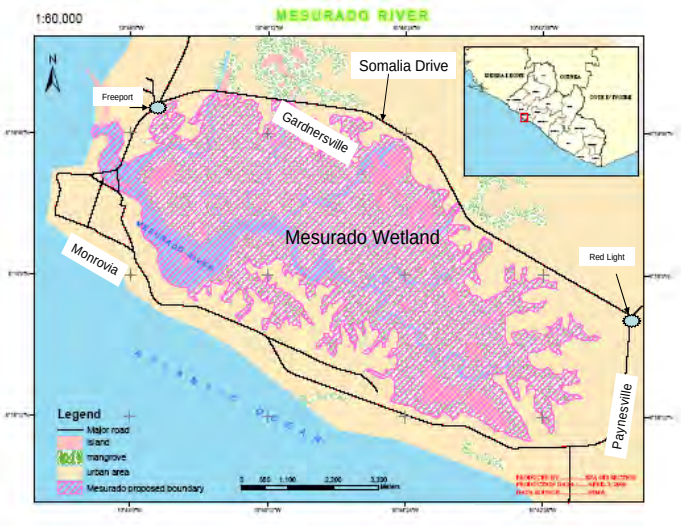


Figure 3-7 Mesurado Wetland near the Somalia Drive

Figure 3-8 Mangrove in the Mesurado Wetland.

The mangrove of the Mesurado, Stockton and Warner Creeks are being destroyed. People have cut the mangrove to be used a cooking wood. It has been cut and land reclaimed for construction. It has also been used for waste disposal. These activities are however not carried out in the Project area because only a small portion is found here.

In 2006, the Environmental Protection Agency of Liberia have registered the Mesurado wetland under the RAMSAR Convention and implemented measures to preserve the mangrove.

3.5.6 Pests

The two major pest species found in the Project area and throughout Liberia are the mosquito and variegated grasshopper (Zonocerus variegates). There are numerous species of mosquitoes known in Liberia, and while not all the species feed on humans, many do, creating welts on their victims. Mosquitoes need standing or stagnant water to reproduce, and as this is common in the Project area, mosquitoes are in abundance. The variegated grasshopper is known to feed on vegetable leaves planted by residents or wild grasses.

3.5.7 Vectors

Vectors are an agent that carries or transmits disease. Mosquitoes are not only pests but are the primary vectors of diseases in humans such as malaria. In Liberia, malaria is the leading cause of morbidity and mortality, accounting for over 40% of all outpatient consultations, huge inpatient and children deaths. The mosquitoes need stagnant water to lay eggs and for larval development, the quality and location of water can vary from water collected in tree holes, marshes, sewage effluent ponds, temporary rain water ponds, etc. Human development and increase in changing land use are the leading cause in creating more available reproductive locations for mosquitoes. The wetlands in the Project area retain water year round and provide constant supply of stagnant water for mosquitoes.

3.6 AIR QUALITY CHARACTERISTICS

The Project site is located in an urban setting with many domestic and industrial activities in the immediate area. There are many sources of air pollution which contribute to degrading the ambient air quality of the area. Some of these sources include emissions from vehicular traffic (particulates and combustion emissions), combustion of diesel fuels to power small and large scale electrical generators in the absence of electrical supply, combustion of wood materials for cooking, and burning of miscellaneous wastes.

Fuels used for combustion in automobiles and diesel electrical generators are rarely high-quality fuels, such as low sulfur diesel, and leaded gasoline is under control, however leaded gasoline and diesel brought into the country by the many different suppliers These emissions can be compounded by the burning of waste such as old tires, plastics, and other combustible waste.

At the time of this survey, there is no national air quality standard. However, the EPA has a tentative standard that is acceptable. **Table** 3-3 below shows the tentative air quality standard.

Table 3-3 Air quality standard acceptable to the EPA.

Pollutants	Time-weighted average	Concentration in ambient air			
		Industrial Areas	Residential, Rural & other Areas	Sensitive Areas	
SulphurDioxide (SO_2)	Annual Average*	80 µg/m^3	60 µg/m^3	15 µg/m^3	- Improved West and Geake Method - Ultraviolet Fluorescence
	24 hours**	120 µg/m^3	80 µg/m^3	30 µg/m^3	
Oxides of Nitrogen as (NO_2) of	Annual Average*	80 µg/m^3	60 µg/m^3	15 µg/m^3	- Jacob & Hochheiser Modified (Na-Arsenite) Method
	24 hours**	120 µg/m^3	80 µg/m^3	30 µg/m^3	-Gas Phase Chem-iluminescence
Suspended Particulate Matter (SPM)	Annual Average*	360 µg/m^3	140 µg/m^3	70 µg/m^3	- High Volume Sampling, (Average flow rate not less than 1.1 m3/minute).
	24 hours**	500 µg/m^3	200 µg/m^3	100 µg/m^3	
RespirableParticulate Matter (RPM) (size less than 10 microns)	Annual Average*	120 µg/m^3	60 µg/m^3	50 µg/m^3	- Respirable particulate matter sampler
	24 hours**	150 µg/m^3	100 µg/m^3	75 µg/m^3	
Lead (Pb)	Annual Average*	1.0 µg/m^3	0.75 µg/m^3	0.50 µg/m^3	- ASS Method after sampling using EPM 2000 or equivalent Filter paper
	24 hours**	1.5 µg/m^3	1.00 µg/m^3	0.75 µg/m^3	
Ammonia1	Annual Average*	0.1 mg/ m^3	0.1 mg/ m^3	0.1 mg/m^3	
	24 hours**	0.4 mg/ m^3	0.4 mg/m^3	0.4 mg/m^3	
CarbonMonoxide (CO)	8 hours**	5.0 mg/m^3	2.0 mg/m^3	1.0 mg/ m^3	- Non Dispersive Infra Red (NDIR)
	1 hour	10.0 mg/m^3	4.0 mg/m^3	2.0 mg/m^3	Spectroscopy
*	Annual Arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.				
**	24 hourly/8 hourly values should be met 98% of the time in a year. However, 2% of the time, it may exceed but not on two consecutive days.				

3.7 LAND USE SETTING

The length of the Somalia Drive, which expansion or upgrade is considered under this project, is located within three (3) communities. The western extent from the Freeport of Monrovia to the Stockton Creek Bridge falls within the City of Monrovia, the extent between the Stockton Creek Bridge and the Warner Creek Bridge, commonly called the Double Bridge, falls within the Township of Gardnersville and the eastern extent between the Warner Creek Bridge and the Red Light falls within the City of Paynesville. **Figure** 3-9 shows the different municipals along the Somalia Drive.

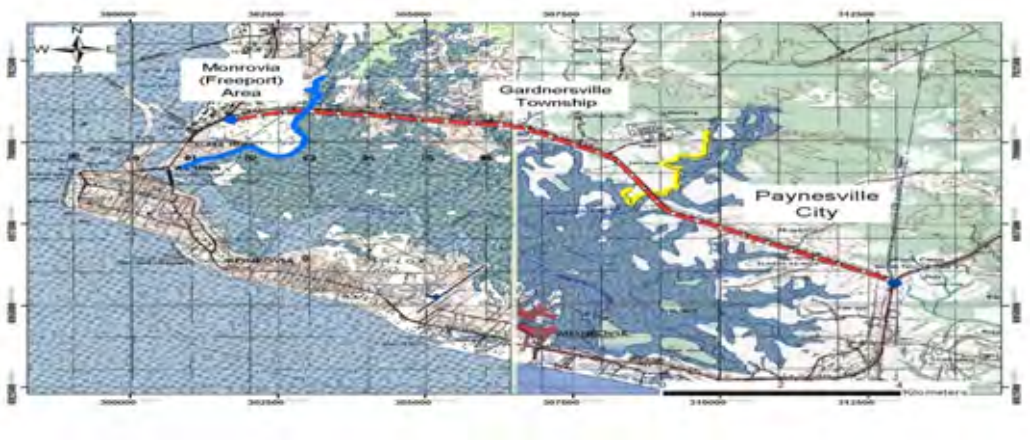


Figure 3-9 Different municipals along the Somalia Drive

The land use along the Project area varies. There are urban residential, commercial, industrial areas and open space land use along the route. The land use is in no particular order. The cities and township councils have granted some land occupants squatter rights to occupy land near and within the right-of-way of the road with no specific usage condition. Hence, residential units are located between open air garages, shops and market stalls, filling stations and industrial facilities.

3.7.1 Housing

A demographic survey was conducted during the Environmental and Social Impact Assessment. It considered a distance of 150 feet from the mid-section of the existing road. The result shows that there are 172 residential units within the Project area. There were other units marked as unoccupied, which are under construction or abandoned. Some of these units will definitely be used as residential units. Only very few of these units existed at the time of the construction of the existing 2-lane road. The increase up to the present time is a result of the influx of people from many parts of the country due to the civil crisis during the 1990's.

During the conduct of the scoping exercise, the environmental consultant requested the Ministry of Public Works to notify the cities and township authorities to desist from granting further squatter rights to people to occupy the Project area. Even though notices were advertised and placarded warning people not to move into the Project area during or after the ESIA, some people are expected to move within the area before the possible commencement of the Project as some of the residents illegally occupy the area.

Table 3-4 Housing units along the Somalia Drive

Residential Units	Monrovia	Gardnersville	Paynesville
Total Residential Units	6	89	77

3.7.2 Commercial

As mentioned supra, squatter rights have been obtained from the cities and township council, upon which people have occupied the Project area. Some people moved into the area illegally. With the lack of coordination, some of the occupiers have utilized the area for commercial activities. The distance of 150 feet from the mid-section of the existing road sometime falls within legitimate property zone, some of which are used for commercial activities. There are 929 commercial units in the Project area. Further, most of the 156 units indicated as unoccupied are likely to be commercial units.

Some of the commercial activities undertaken within the Project area include open air garages, filling stations, merchandise shops and general market stalls.

Table 3-5 Commercial units along the Somalia Drive

Commercial Units	Monrovia	Gardnersville	Paynesville
Total Commercial Units	98	537	294

3.7.3 Industrial

During the ESIA exercise, industrial units were registered as commercial. However, there is a need to specify that some of the units within the Project area were used for industrial purposes. Noticeably were two (2) factories that manufacture tiles and plastic products.

3.8 NOISE & VIBRATION ANALYSES

The Project area along the Somalia Drive must meet the noise criteria acceptable within international standards. At the moment, there is no national noise standard. Hence, the noise reading proposed for the Project is that set forth by Ghana, which is that noise level must not exceed 60 decibels (dBA), the maximum allowable exterior noise level in areas with some commercial or light industry. **Table** 3-6 shows the Ghana Standards.

Table 3-6 Noise standards acceptable by the EPA of Liberia (Ghana Standards)

Zone	Description of Areas of Noise Reception	Permissible Noise Level in DB(A)	
		DAY 0600 – 2200	NIGHT 2200 – 0600
A	Residential areas with low or infrequent transportation	55	48
B1	Educational (school) and health (hospital, clinic) facilities	55	50
B2	Areas with some commercial or light industry	60	55
C1	Areas with some light industry, places of entertainment or public assembly, and places of worship located in this zone.	65	60
C2	Predominantly commercial areas	75	65
D	Light industrial commercial areas	70	60
E	Predominantly heavy industrial areas	70	70

CHAPTER 4

ENVIRONMENTAL EVALUATION

MPW is obliged to ensure that the road is expanded in accordance with the legislations, regulations, guidelines, and standards of Liberia, along with other appropriate international environmental standards. All of these will ensure that procedures and work activities will have no or minimize adverse effects to both the health and safety of the workers and the local population, as well as the Project area and regional environment.

4.1 ANTICIPATED ENVIRONMENTAL IMPACT

The following **Table 4-1** identifies physical, biological, social and economic factors, which might be impacted by the proposed Project. In many cases, the background studies performed in connection with this Project clearly indicate that it will not affect a particular item except an involuntary resettlement. The discussion on environment assessment is shown in the section.

4.2 DISCUSSION OF ENVIRONMENTAL CONSEQUENCES

This section explains the likely impacts the Project may cause and proposed mitigation measures. Any mitigation measures that are proposed are clearly identified.

4.2.1 Involuntary resettlement

The implementation of the Project will necessitate the involuntary resettlement of about 1900 persons from their places of residence or businesses. Many PAPs will be potentially affected due to the resettlement. Their lives are going to be adversely impacted.

The Project impact on the PAPs is significant. PAPs are going to be involuntarily resettled. A detailed resettled program shall be prepared and implemented.

4.2.2 Local economy such as employment and live-hood

The Project area is presently used by people for residential and commercial purposes, with majority of the structures being used for commercial activities. As a result of the implementation of the Project, PAPs are expected to lose their employment and livelihood.

The Project impact on the employment and livelihood of PAPs is significant. PAPs using structures thereon for commercial purposes are going to lose their employment and livelihood. Mitigation measures to less the reconstruction area is needed, if relocation is not avoidable, a detailed resettled program to include compensation to enable PAPs re-start their lives in another area will be prepared..

4.2.3 Land use and utilizations of local resources

The Project area is not a site designated for local use, nor does the area have local resources. The area has already been designated for the road construction of 4-lane road, but only 2-lane was previously constructed.

The proposed Project is not likely to have any impact on land use and local resources

4.2.4 Social institutions such as social infrastructures and local decision-making

There is no decision-making or social institution located in the Project area.

The proposed Project is not likely to have any impact on land use and local resources

Table 4-1 Anticipated adverse impact by proposed Project

	No	Items of adverse impact	Scoping Stage	Assessment in EIA			Description	Mitigation Measures
				Design Stage	Construction Stage	Operation Stage		
Social environment	1	Involuntary resettlement	A	A	B	B	* Relocation of PAPs	* Minimize the land required for the Project; * Transportation assistance; * Exchange of land; and * Compensation * Monitoring
	2	Local economy such as employment and live-hood	B	B	B	B	* Loss of jobs of PAPs; * Loss of livelihood	* Compensation of PAPs; * Resettlement allowance to start livelihood in new locations
	3	Land use and utilizations of local resources	B	D	D	D	* No local resources will be used for the Project	N/A
	4	Social institutions such as social infrastructures and local decision-making	B	D	D	D	* No decision-making infrastructure is located in the Project area.	N/A
	5	Existing social infrastructures and services	B	B	B	D	*Destruction & demolition of infrastructure	*Construction of new infrastructure after road expansion
	6	The poor, indigenous of ethnic people	B	B	B	B	*There are many poor * No minority population was observed in the Project area	*Compensation must be considered when relocation is required
	7	Misdistribution of benefit and damage	B	D	D	D	* No misdistribution of benefit and damage is considered	N/A
	8	Heritage, Graveyard, Sanctuary	B	D	D	D	* No heritage site, graveyard or sanctuary was observed in the Project area.	N/A

	No	Items of adverse impact	Scoping Stage	Assessment in EIA			Description	Mitigation Measures
				Design Stage	Construction Stage	Operation Stage		
	9	Local conflict of interest	B	D	D	D	* There exist no local conflict of interest	N/A
	10	Water usage	B	D	D	D	* The will be no use of water from Project area	N/A
	11	Public Hygiene	B	B	B	B	* Occupation hazard associated with construction activities	* Occupation Health & Safety Measures; * Monitoring & Reporting
	12	Infectious diseases such as HIV/AIDS etc.	B	C	B	B	*The surveys did not fully consider these	* Best practices shall be used to prevent acquisition or spread of these diseases.
	13	Geographic features	B	D	D	D	* Very minor change to topography	* Design consideration to enhance slope stability
	14	Soil Erosion	B	D	B	D	* Seepage or spill of fuel/chemicals; * erosion due to runoff	* Secondary containment; * Best Management Practice
	15	Groundwater	B	D	B	D	* Seepage or spill of fuel/chemicals	* Secondary containment; * Best Management Practice
	16	Hydrology	B	B	B	D	* Seepage or spill of fuel/chemicals; * Pulling of concrete into waterway	* Secondary containment; * Management of storm water; * Sediment & erosion control
	17	Seastrand	B	D	D	D	* The Project is not located along the seashore.	N/A
	18	Fauna, Flora, Ecosystem	B	D	D	D	* Minimal clearing of vegetation	* Re-vegetation; * Monitoring Program
	19	Climate	B	D	D	D	* Little or no impact to the climate	N/A
	20	Landscape	B	D	D	D	* The landscape is relatively flat and no change expected.	* Design Consideration

	No	Items of adverse impact	Scoping Stage	Assessment in EIA			Description	Mitigation Measures
				Design Stage	Construction Stage	Operation Stage		
	21	Global warming	B	D	D	D	* Little or no impact is expected	N/A
Pollution	22	Air pollution	B	B	B	B	* Emission of gases and particulates from vehicle movement and site clearing	* Emission control * Storage and handling measures * Spraying water on road.
	23	Water pollution	B	B	B	B	* Seepage or spill of fuel/chemicals	* Secondary containment; * Management of storm and any discharge water; * Sediment & erosion control
	24	Waste	B	B	B	B	* Solid or hazardous waste from construction	* Implement best waste collection and management program
	25	Noise and vibration	B	D	D	D	* Increased noise emissions from road traffic and heavy equipment	* Emission controls; * Protective Equipment
	26	Accidents	B	B	B	B	* Accident associated with construction activities	* Safety Program; * Employee Training; * Monitoring and Reporting; * Protective Equipment

Assessment： A：significant adverse impact is assumed B: adverse impact is less than A C: adverse impact is not clear because the design is not finishes and further survey is needed to confirm D：adverse impact is little and further survey is not needed

4.2.5 Existing social infrastructures and services

There are several bus stops and community water wells located in the Project area. These are going to be demolished to ensure the construction of the Project and right-of-way.

The impact on the bus stops and water wells in the Project area is not so significant. The Project impacts to infrastructure and services will temporary during the period of construction. Thereafter, new bus stops will be constructed on the shoulder of the road. There will be no need for water wells as residents would have left.

4.2.6 The poor, indigenous people of ethnic people

There will be many poor PAPs within the Project area; further detailed measurement survey shall be conducted following with physical survey and design of reconstruction road to designate actual PAPs. The poor will be identified while detail measurement survey is conducted and compensation will be considered in accordance with RAP.
There is no minority or special group of people in the Project area such that the construction of the road will have adverse effects on their lives.

The proposed Project is not likely to have potential impact on the poor people.

4.2.7 Misdistribution of benefit and damage

Somalia Drive was originally planned as 4-lanes road and required land was secured as right-of-way. Right flank of road has already improved by World Bank in 2008, and residents in left flank are expecting the road improvement.

No Misdistribution of benefit and damage will be arisen due to the Project.

4.2.8 Heritage, Graveyard, Sanctuary

The Project area contains no heritage, graveyard or sanctuary locations.

The proposed Project is not likely to have any impact on seastrand.

4.2.9 Local conflict of interest

Somalia Drive was originally planned as 4-lanes road and required land was secured as right-of-way. Right flank of road has already improved, and reconstruction of left flank is welcomed by the residents because it would enhance their economic activity and living standards.

No local conflict of interest will be seen due to the Project.

4.2.10 Water usage

The Master Plan Study has prepared a water supply plan for short-term (2014) and long-term (2019).

When water supply system is provided in accordance with the Master Plan, water usage by residents will be satisfied.

During construction stage, the Project is not going to utilize water in the Project area for construction activities.

The proposed Project is not likely to have any impact on water usage.

4.2.11 Public Hygiene

The Project will positively impact the area by providing road drainage through which storm and flood waters will run through to discharge areas. This will remove stagnant water that could serve as breeding ground for vectors. It is envisioned that the road expansion will enhance public transport and make accessibility to health institutions quicker. The impacts from construction and operations will have minor, but positive direct and indirect long term impacts on local/regional public hygiene.

Construction and operation of the Project will have positive minor direct and indirect long term impacts on public health and hygiene issues.

4.2.12 Infectious diseases such as HIV/AIDS etc.

The surveys conducted did not take into consideration infectious diseases such as HIV/AIDS, etc. However, it must be stated that these exist infectious diseases in Liberia. Before commencement of the Project, people residing in the Project area will be relocated and resettled. Only workers on the Project will be allowed access to the area during construction. These workers will be checked for infectious and occupational diseases before construction commences. And best practices will be ensured during the implementation of the Project so that diseases are not spread.

The impact of infectious diseases on the Project was not adequately studied. However, best practices will be ensured so that there is potential impact of infectious diseases by the Project.

4.2.13 Geographic features

The geology of the Project area is not likely to be affected. Project construction at the proposed site will result in the disturbance and removal of soil and rock present at the site. Preliminary site grading operations will involve the clearing and removal of topsoil and the alteration of embankment soils. If the new embankment soils are less permeable than those currently present at ground surface, the quantity, physical distribution, and time-related recharge of precipitation

to groundwater on the shoulder of the road may change. Soil quality in the Project area is not expected to change as a result of Project activities. Waste will be stored at the facility in a manner which will minimize the potential for spills leading to soil contamination.

The construction of the new expansion of the motor and associated bridge may result in soil erosion. The potential for high winds along the corridor may also contribute to erosion.

The Project impact on the geology is insignificant. The Project impacts to the soils will be permanent, however insignificant. Dust control plan and erosion control procedures will be utilized. .

4.2.14 Soil Erosion

The Project area is a relatively flat terrain, adjacent to wetlands. The likelihood of flooding is high, especially during the rainy season. In order to alleviate this problem, it is proposed to raise and level the road to the top of the existing highpoints, and place culverts to allow water to pass under 4-lane road at locations that are prone to flooding. Drainage will also be constructed along the extent of the road.

The Project is likely to adversely affect flooding during the construction phase.

4.2.15 Groundwater

Groundwater in the Project area is encountered within relatively shallow depths below the ground surface. Surface and groundwater withdrawal will not be conducted as part of the Project construction, therefore impacts to surface and groundwater flow are not anticipated. The Project will implement spill prevention measures to avoid contamination of the surface and groundwater by fuel or chemicals. Depending on the embankment soils exposed on the new right-of-way/shoulder upon construction completion, the quantity, physical, distribution, and time-related recharge of precipitation to groundwater or run-off into surface water may change.

Construction of the bridge over the Stockton Creek may result into the spillage of materials into the stream that may affect the quality of the water.

It is not expected that reconstruction of the road will have any impact to groundwater quality. Spillage of concrete or other materials into the Stockton Creek during construction may affect the quality of the surface water.

4.2.16 Hydrology

Two (2) bridges over the two (2) water ways in the Project area – Stockton and Warner Creeks – are considered here. The bridge over the Warner Creek was constructed during the construction of the existing road. Construction of a bridge over the Stockton Creek may lead to

a short-term disruption in the water flow. If construction of the bridge is done in the dry season, there is not much likelihood of a flood. If it is done in the rainy season, flood may likely result.

The proposed Project is not likely to have any impact to the Warner Creek as a bridge is already constructed over it. The Project is expected to have a short-term impact to the Stockton Creek during the bridge construction. If this is done during the rainy season, it may likely cause flood.

4.2.17 Seastrand

The Project area is not located along the coast or seashore.

The proposed Project is not likely to have any impact on seastrand.

4.2.18 Fauna, Flora, Ecosystem

(1) Vegetation

Existing vegetation on the proposed Project site will be removed to allow construction of the road, sidewalks and drainage. The proposed site is comprised of previously disturbed land. At present, there exist only grasses, shrubs and flowers and fruits trees planted in the yards of residences. The grasses and shrubs species currently onsite are invasive or weedy in nature; therefore, the removal of these for construction of the road will result in a relatively small impact to the overall area. Residences within the Project area will be removed before construction starts. Removals of flowers and fruit trees will have only minor impacts to vegetation.

Construction of the road will have minor direct long-term impacts on the vegetation communities in the Project area.

(2) Wildlife

The proposed expansion of the Somalia Drive would impact local wildlife. Wildlife observed included mammals (domesticated dogs and cats as pets), various birds, various insects, reptiles and amphibians, mainly in the riparian zones. The Forestry Development Authority (FDA) and Environmental Protection Agency (EPA) have no record of endangered species of wildlife in the Project area.

Impacts to the biological resources in the Project area would likely occur along the entire length of the road, particularly within the riparian zones along the Stockton and Warner Creeks. Impacts include loss or degradation of plant communities and habitats, noise and air pollution, increased runoff and erosion.

With the implementation of mitigation measures listed in Section 4.4, impacts to the above mentioned resources would be mitigated.

(3) Mammals

The only mammals observed in the Project area are domesticated animals, dogs and cats which are pets of residents.

The Project activities are not likely to impact these.

(4) Birds

The Project will not result in a major alteration to the surrounding ecosystems or impact the viability of most avian communities, despite the minimum removal of potential foraging and nesting habitat along the riparian zone at the Stockton Creek, to provide for the construction of a bridge over the waterway. Direct impacts to individual birds may be incurred from clearing/removal of habitat for construction and subsequently by the facility footprint itself. Individual birds may also be affected indirectly during construction, as activity on the site may disturb some individuals and cause them to move away from the Project area. Similarly, noise during the construction and operation phase, and other activities, such as movement of vehicles and people, and any lighting at night, may alter some bird species behavior (i.e., cause to move away from the Project site). Given the relatively small footprint of the road within the general area, and the general mobility of birds, disruption to avian species is expected to be minor.

Construction of the Project will have minor direct and indirect long term impacts on avian species in the area.

(5) Herpetofauna

The Project is likely to encounter amphibian and reptile species within the riparian zone of the Stockton Creek, as a bridge is already constructed over the Warner Creek. Although potential foraging and reproductive areas will be permanently removed during the construction of the bridge over the Stockton Creek, the overall footprint of the bridge is relatively small. Suitable habitat surrounding the Project area will allow the current amphibian and reptile populations to continue to exist.

Construction of the Project will have minor direct and indirect long term impacts on amphibians and reptile species in the area.

(6) Fish

The Project will not utilize raw water from the waterways for construction activities. And no water from the Project is expected to be released to the water bodies.

Although not expected, indirect impacts on fish species could occur through the introduction of

sediment or changes in nutrient loads from surface water runoff. While sediments occur naturally and are an integral component of aquatic systems, fluctuating naturally due to natural events, there is an increased risk to the survival and well-being of aquatic organisms when levels exceed background values for prolonged periods of time. Potential impacts can vary depending on the concentrations of sediments, and can include killing fish directly, increasing turbidity, and reducing visibility, thus decreasing the ability to find food and/or avoid predation and filling reproductive areas in and along the stream bed. Through the use of sediment and erosion controls during construction, no impacts to fish species are anticipated.

Construction of the Project is not anticipated to have direct or indirect impacts on the fish species in the Project area.

(7) Crocodile

While there are crocodiles in the Mesurado and surrounding wetlands, none was spotted in the Project area during the survey. Even if some crocodiles may in the surrounding near the Project area, they are likely to move to the other vast portion of the Mesurado wetland during the implementation of the Project.

The proposed Project is not likely to have any direct or indirect long term impact on crocodiles in the Project area.

(8) Mangrove

A bridge is expected to be constructed across the Stockton Creek in the Project area. So as to plant concrete bedding for the bridge, there will be destruction of the mangrove in the riparian zone. However, the area involved is very small.

Construction of the Project will have minor direct and indirect long term impacts on the mangrove near the Stockton Creek Bridge..

(9) Rare and Endangered Species

No rare or endangered species of animal was observed or noted to be within the Project area.

The proposed Project is not likely to have any impact on rare or endangered species..

(10) Nuisance Species, Pests and Vectors

Most of the existing vegetation on the proposed 150 feet right-of-way to be used will be removed to allow for construction. Subsequent to land clearing and prior to construction completion, appropriate erosion measures will be taken. Once construction is complete, plant vegetation will be planted along the road. Species planted will be of native species that are not/nor will they encourage the presence of nuisance species, pests, or vectors. The Project proponent will investigate and implement environmentally friendly practices to prevent the

promulgation of mosquitoes in the drainage

Construction and maintenance of the road will not change the species composition of the nuisance species, pest, and vector communities already contained within this corridor.

Construction of the Project will not increase, encourage, or aid in the propagation of species considered nuisance species, pests, or vectors.

4.2.19 Climate

The proposed Project is not likely to have any impact to the local climate..

4.2.20 Landscape

The Project area is located in a relatively flat terrain. Site grading associated with construction will not significantly alter the topographic height and exposure of the Project area. Ground surface slopes created during construction will be constructed to be safe for the passage of equipment and personnel during operation of the facilities. The new slopes will be as stable, if not more so, than the natural slopes at the site, and surface water management will preclude saturation of slopes within the area.

The Project's impact on topography is considered minor.

4.2.21 Global warming

Among the various environmental impacts, air pollution related to green house gas (GHG) is taken into account by With and Without analysis. By implementing the Somalia Drive Project, the situation of air pollution is improved. Especially the reduce of low speed road under 10km/h gives a big impact on emission from driving vehicles. The air pollution components of CO2, NOx and Suspended Particulate Matter (SPM) produced by With and Without cases of Somalia Drive Project are estimated.

(1) Emission Rate by Travel Speed

The emission unit by travel speed is set up as **Table** 4-2, obtained from the 'Act Collection of Road Policy Evaluation", Japan Road Announcing Center. We tried to apply the emission unit in Liberia or West Africa, but it is impossible to set a Liberian standards by the lacking the essential data and information. When enough information for emission unit is collected, these emission units should be up dated.

Table 4-2 Emission unit of CO2, NOx, SPM

Travel Speed km/h	CO_2 g/PCU*km	NO_x g/PCU*km	SPM g/PCU*km
S<5	0.547	1.162	0.105
5<S<10	0.342	0.671	0.052
10<S<15	0.269	0.498	0.046
15<S<20	0.229	0.407	0.037
20<S<25	0.204	0.374	0.034
25<S<30	0.186	0.336	0.031
30<S<35	0.172	0.299	0.028
35<S<40	0.161	0.266	0.025
40<S<45	0.152	0.238	0.023
45<S<50	0.146	0.217	0.021
50<S	0.141	0.203	0.019

Source: Act collection of Road policy evaluation, Japan Road Announcing Center, 2007

(2) Impact on Air Pollution by Somalia Drive Project

Table 4-3 indicates the forecasting results of air pollution in With and Without of Somalia Drive Project. All the emissions have strong ties with PCU*km with low speed road, so that a big impact on emission have come. The saving CO2 is about 29 kg per day in 2014 and 38 kg per day in 2019.

Table 4-3 Forecasting results of air pollution in With and Without

Year	Case	PCU*km	CO_2 (g/day)	NO_x (g/day)	SPM (g/day)
2008	Without Project	2,744,368	476,503	814,599	75,896
2014	With Project	3,772,762	665,583	1,144,861	106,420
	Without Project	3,783,360	694,708	1,213,610	112,129
	With - Without	-10,598	-29,125	-68,749	-5,709
2019	With Project	5,156,946	986,719	1,754,287	161,557
	Without Project	5,150,698	1,024,954	1,827,755	167,774
	With - Without	6,248	-38,236	-73,468	-6,218

PCU; Passenger Car Unit

And, **Table** 4-4 indicates the expected mitigation amount in a year.

Table 4-4 Expected mitigation amount by the Project

Year	Case	CO_2 (t/year)	NO_x (t/year)	SPM (t/year)
2008	Without Project	173.9	297.3	27.7
2014	With Project	242,9	417.9	38.8
	Without Project	253.6	443.0	40.9
	With - Without	-10.7	-25.1	-2.1
2019	With Project	360.2	640.3	59.0
	Without Project	374.1	667.1	61.2
	With - Without	-13.9	-26.8	-2.2

Any adverse impact due to the Project is not anticipated.

4.2.22 Air pollution

The local ambient air quality around the Project area will be temporarily impacted during construction phase as a result of air emissions generated by construction activities. Construction emissions will consist primarily of combustion emissions from diesel engine-driven .mobile construction equipment, fugitive emissions of particulates from the operation of mobile construction equipment and land clearing. The engines emit primarily NOx, PM, CO, CO2, and SO2 as the result of fossil-fuel combustion in addition to minor amounts of hazardous air pollutants. The construction emissions will be intermittent and temporary with construction scheduled for several hours daily and are therefore expected to have insignificant impacts on the long-term air quality of the region.

Construction of the Project will have minor, short-term impacts to air quality. For information regarding the mitigation measures designed to reduce the impacts of construction on air quality.

4.2.23 Water pollution

The groundwater or surface water in the two (2) main water bodies could be impacted during the construction phase as a result of seepage or fuel or chemicals from the work activities. Concrete materials could also falls into and pollute the Stockton Creek during the construction of the bridge. Sheet lining, secondary containment and best practice management methods will be used to ensure that there is no pollution to ground or surface water. Where fuel and/or chemicals may likely fall unto the ground surface, the soil at the spot will be collected as waste and disposed in accordance with the waste management system discussed herein.

Construction of the Project will have potential direct or indirect impacts to water quality.

4.2.24 Waste

Waste is likely to be generated during the construction of the Project. These will comprise of solid and fluid wastes generated by workers, materials used and equipment. If not controlled properly, the wastes are likely to cause adverse environmental impacts in the Project and surrounding areas.

Solid waste will be collected by a waste management company and disposed of in secure areas designed in accordance with the method described below and guidelines to be provided by the EPA.

Used oil generated by shop operations, vehicle maintenance, and from the oil/water separator will be collected and disposed of by a waste management company certified by the EPA.

Waste will have minor direct impact during the construction of the Project. A waste collection and management company will be hired to collect waste generated during the implementation of the Project.

4.2.25 Noise and vibration

During construction activities of the Project site, the most significant noise contributors will be heavy-duty machinery operation and vehicular traffic. The internationally accepted noise exposure level above which hearing damage can be induced is 60 decibels.

Continuous noise may disrupt acoustic communication between fauna and could lead to changes in behavior as it relates to mating, food gathering, warning signals and brood care in areas near the emission sources, particularly near the riparian zones. The contractor shall employ appropriate control methods consisting of mufflers and source specific noise insulation to mitigate the impacts of noise to the workers as well as surrounding environment during construction. The source specific sound dampening controls will also protect sensitive environmental receptors, such as fauna, in the vicinity near the riparian zones from adverse impacts due to noise emissions. No adverse impacts on human populations as a result of construction of the roan are anticipated due to the distance from the road to the nearest settlements.

Construction of the Project will have minor long-term impacts to existing noise levels in the Project area, however, no adverse impact on human population is anticipated

4.2.26 Accidents

Table 4-5 lists the potential accidents or hazards associated with the construction phase of the Project, as well as the protective and preventative activities planned for their elimination and control. In addressing these hazards, the first priority will be eliminating, controlling, or minimizing the accident or hazard via modification in the design of equipment or process.

If the hazard cannot be eliminated, employees will be provided with the necessary personal protective equipment (PPE) and training to prevent injuries during the work process. Physical hazards include moving equipment, dust, noise, and heat. Potential chemical hazards consist of fumes and fire, and biological hazards include insects and other animals that may pose a threat to workers by causing illness or injury.

Additional details on specific measures for mitigating these occupational accidents or hazards will be addressed in the Health and Safety Plan to be prepared for the Project.

Table 4-5 Accident and occupational hazards associated with the Project.

Project Activity	Potential Hazards	Protective & Preventive Safety Measure
Clearing and Construction		
-Felling trees -Removal of loose topsoil and overlying vegetation -Construction of road -Mobilization of heavy equipment on site	Slips, trips and falls	* Implementation of good house-keeping measures on the Project site.
	Minor trauma to extremities	* Use of safety shoes, hard hats, safety vests and gloves.
	Lifting accident	* Use of proper lifting techniques
	Lacerations from use of sharp tools	* Use of proper gloves and other PPE.
	Inhalation of fugitive dusts	* use of dust/mist masks or respirators
	Fugitive dust blown into eyes	* Use of safety goggles. * Provision of eye wash stations.
	High Noise Level from heavy duty vehicles	* Control of noise levels at source via installation of Silencers * Use of proper hearing protection (ear plugs, ear muffs) * Warning signs in areas of high noise levels * Hearing conservation program for employees exposed to noise
	Heat Stress	* Provide shady area and drinks
	Insect Bites	* Use of insect repellants. * Use of protective clothing.
	Vehicle traffic	* Use of safety vests.
	Skin irritation from exposure to grease	* Use of barrier creams and detergents on hands.
	Burns	* Use of protective clothing and gloves.

4.3 DISCUSSION ON SOCIO-ECONOMIC IMPACTS

(1) Growth Inducing

This characteristic of the Project looks at activities that will induce changes in the pattern of land use, population density, the human use of surrounding land, including commercial and residential land, health and safety problem caused by the physical changes, and other aspects of the resource base such as water, scenic quality, and public services.

The Somalia Drive is strategically located. It connects the Freeport of Monrovia, Liberia's biggest seaport, to the biggest commercial center of Red Light, and subsequently the interior of Liberia and neighboring countries.

The expansion of the Somalia Drive into 4-lane road will likely increase commercial transport on the route and reduced traffic may lead to an increase of residential housing in the communities along the route. The proposed Project is designed to facilitate growth. It should be noted here that growth and land use decisions are the responsibility of local jurisdiction and are

under their control.

In summary, the proposed Project is designed to accommodate traffic volume capacities anticipated in 2014. The No Action alternative is expected to operate at unacceptable levels of service. The proposed Project is consistent with the growth and planning goals of the national government as the Somalia Drive was initially intended to be 4 lanes. Based on this information, it is concluded that the proposed Project facilitates planned growth and would not induce growth.

(2) Lifestyle and Neighborhood Stability

Potential disruptive effect to existing residential areas near of adjacent to the Somalia Drive would be related to the clearing of structures within 150 feet of the existing road, modification of neighborhood accessibility and circulation, visual effects and noise effects.

Residential and commercial areas presently exist adjacent to or near the Project right of way in all of the communities along the road. These areas would experience short-term construction related impacts such as increased truck traffic, noise, dust, visual impacts, detours, etc.

(3) Elderly or Specific Interest Groups

The only change would be the distance that a disabled or elderly person would have to travel across the Somalia Drive. Instead of disabled or elderly person crossing 2-lane road, they would have to cross 4-lane road. To assist the elderly and disabled across the road, crosswalks should be placed an set intervals on the Somalia Drive median refuge areas to assist those crossing should be considered at various intervals. Locations and sizes will be determined during the design phase of the Project.

(4) Housing and Employment

Along the proposed Project area, there will be relocation and acquisition of commercial and residential properties. The majority of land to be used will be publicly-owned land that has been issued to people under squatter licenses. People have constructed both residential and commercial structures on the land. The majority of the businesses are shops that employ semi-skilled and non-skilled workers. These PAPs within the Project area will have to be relocated. Other residences and businesses close to the road will require temporary construction easement for the use of the property through construction completion. This impact would be minimal and temporary until construction is complete.

All displaced PAPs will be subject to a Resettlement Action Plan (RAP) developed along with this ESIA. The plan is developed to help displaced individuals move with as little inconvenience and expense as possible, and all benefits and services will be administered to the general public without regard to color, sex, religion or ethnic groups.

The number of commercial units to be affected by the Project will lead to employee displacement. This employment displacement is expected to lead displaced employees to find employment in the relocated business itself or at a similar business in another location. Given the semi-skilled and non-skilled nature of most employees, absorbing them in other areas will be difficult. And given the present level of unemployment, actual job loss is imminent; however, when economic activity is enhanced by the reconstruction of road, job opportunity will increase naturally.

4.4 SCOCIAL AND ENVIRONMENTAL MITIGATION MEASURES

MPW acknowledge the need for mitigation measures during both construction and operation of expanded road to limit the effect the Project will have on the surrounding environment and personnel and public health and safety.

4.4.1 Involuntary Resettlement

Mitigation measures on the adverse impact caused by the involuntary resettlement are stated in Section 5.8, Chapter 5.
And the road design for the reconstruction is recommended to apply COI (Corridor of Impact) or PRW (Provisional Road Width) method to mitigate PAPs.

4.4.2 Biological Resources

There is a relative no vegetation and wildlife in the area that will be immensely affect by the Project. The major area of concern for vegetation and wildlife will be in the riparian zone along the Stockton Creek, as a bridge is already constructed over the Warner Creek.

To help mitigate impacts to the vegetation and wildlife in the riparian zone along the Stockton Creek, the Project proponent will allow very little removal during the construction phase and replanting during the operation phase.

Animal species identified in this zone during construction will be recorded in a wildlife-sighting logbook and periodically reviewed to determine success of species abundance and/or distribution.
The proponent will enforce a "no killing" policy during construction.

Storm water runoff and any wastewater discharges will be managed and treated to minimize impacts to aquatic plants and animals in the two (2) major water bodies – the Stockton and Warner Creeks. These practices will include good housekeeping practices, sediment and erosion control structures, wastewater and process area storm water treatment, and oil/water separators. All hazardous materials will be located in secure storage facilities that are protected from and impervious to stormwater runoff and, where necessary, stored with adequate secondary

containment.

Additionally, wastes will be disposed of properly in accordance with all established guidelines. A Spill Contingency Plan will be developed based on EPA guidelines for the unlikely event that there is a spill of oil or hazardous materials.

4.4.3 Erosion and Sediment Control

Prior to commencement of construction and operation activities, the Project proponents will implement an Erosion and Sediment Control Plan. Its purpose will be to assist workers in the implementation of control measures for storm water runoff from the Project site to prevent degradation of water quality in the Stockton and Warner Creeks watershed. The Plan will achieve this purpose by specifying best management practices for preventing and controlling erosion and sedimentation associated with construction and operation activities, especially during the rainy season.

(1) Construction Phase

When construction activities occur during the rainy season, the Project proponent will ensure that workers will be required to minimize the area of erodible land exposed to storm water runoff and the time of exposure to the least amount practicable. Equipment will be operated only in designated areas. Clearing of vegetation along the Stockton Creek will be limited to provide a vegetative buffer (riparian management zone (RMZ) to filter sediments in storm water runoff. No topsoil will be removed from the area outside the actual road extend for any reason whatsoever unless prior approval is granted.

(2) Operation Phase

Permanent vegetation and structures for erosion and sediment control will be installed as soon as possible after construction. Adequate provisions will be made for long-term maintenance of permanent erosion and sediment control structures and vegetation. Areas along the right-of-way will be used for drainage and other public facilities.

Storm water runoff from the road will be collected through drainages and controlled to the different waterways so as to avoid erosion.

4.4.4 Air Quality & Noise

During construction of the facility, air emissions of particulates will be limited by spraying water on dirt roads and piles of cleared debris/loose soil during the dry season. Noise reduction measures on individual pieces of equipment (i.e. mufflers) will limit noise levels to below significance levels. Personnel working in areas of high noise will be required to wear ear plugs or muffs to protect against hearing loss, and those in areas of high particulate emissions will be

required to wear a dust filter mask to protect against inhalation of particulates.

During operation, particulate (dust) emissions from use of the road will be controlled by use of water sprays, particularly during the dry season.

4.4.5 Waste Management

Waste generated during the construction of the Project will be managed in a manner which minimizes potential impacts to the environment. **Table** 4-6 provides a summary of the waste streams to be generated by the Project along with the storage and disposal methods for each.

Used oil generated by shop operations, vehicle maintenance, and from the oil/water separator will be collected by the waste collection company. Garbage will be collected from the site at least 3 times per week and disposed of at a sanitary landfill site that is designated by the Environmental Protection Agency and methods in accordance with EPA and internationally acceptable standards.

Table 4-6 Waste streams associated with the Project

Waste Stream	Source	Storage	Disposal
Used oil	Oil/water separator Shop Operations Vehicle Maintenance	Fuel oil storage tank	Collected by waste management company
Iron scraps	Shop operations	Metal drum	Collected by waste management company
Food and organic matter	Operations	Garbage bins	Collected by waste management company
Trash	Operations	Garbage bins	Collected by waste management company
Construction debris	Construction	Storage pile	Donated to local community or collected by waste management company

CHAPTER 5

SOCIO-ENVIRONMENTAL SURVEY WITHIN ROW

This section presents a summary of the existing socio-environmental situation including a profile of residents of the expected project area. The survey was conducted from November 3rd to 25th, 2009 to furnish policy makers with sets of indicators for determining the status of residents.

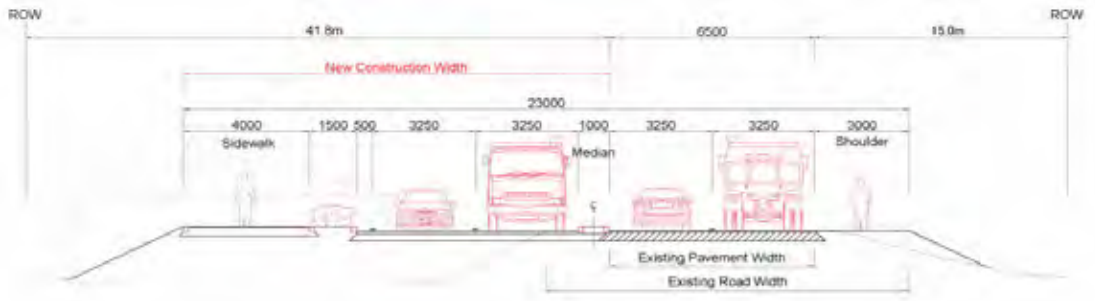


Figure 5-1 Typical cross section of Project Road

5.1 SURVEY METHODOLOGY AND APPROACH

The survey focused on collection of primary data on demographic characteristics, income and livelihoods, and housing conditions. The primary data sources used to describe the existing socio-environmental situation are as follows:-

- Census of all project affected people;
- Structure survey based on units that are to be directly affected by the Project;
- Public/community consultations that provide qualitative data; and
- Inventory and valuation of structures and affected assets in the area.

Structured questionnaires were used to obtain census and socio-environmental information of the potential affected peoples. The objective of the survey was to establish the magnitude of the Project impacts on the affected occupants and structures as well as establish the value of structures likely to be impacted. To ensure concise response, pre-coded simple and multiple-choice questions were used during the interviews. Materials used for interview are presented in **Appendix 1**.

The Environmental Consultant's research team with vast experience in survey methodology and fieldwork conducted the interviews of the respondents. Supervisors with adequate experience were appointed for field management and quality control. The supervisors edited and checked the completed questionnaires and were responsible for keeping all records prior to data entry.

The research team members held training and practical sessions focusing on interview techniques, recording responses, and standardization of assessments. The collected data were checked by supervisors, rechecked by a data analyst and edited for consistency, error and coding, both in the field and before data entry.

5.2 OVERVIEW OF THE PROJECT AREA

The population of the townships and cities that the Somalia Drive passes through increased greatly when the road was first constructed in 1978. The road was initially intended to be a 4-lane road; hence clearing was done of the entire project area. However, only a 2-lane road was constructed then.

As a means of bringing goods and services to residents of the communities, people moved into the right-of-way that had been cleared and not utilized. They constructed market stalls. Later, the township and city councils assumed authority over the land and issued squatter rights to people. Some of the occupants later constructed residential structures so as to be in close proximity to their businesses. In time to come, more people moved into the right-of-way and opened bigger businesses, to include garages and larger shops.

Figure 5-2 Typical market along Somalia Drive

5.3 POPULATION AND DEMOGRAPHICS

Some 1,902 PAPs along the left flank of the right-of-way of the Somalia Drive will be potentially displaced by the road rehabilitation/expansion work. The total PAPs include individuals in the age range of 18-59 years (1,891); and elderly persons whose ages are 60 years and above (11). This is presented in **Table** 5-1 and **Figure** 5-3. It goes to show that most of the PAPs are youths and middle-aged persons.

Table 5-1 Age groups of PAPs.

Population by Age	Survey Report	
18 to 59	1,891	99.42%
60 >	11	0.58%
	1,902	100.00%

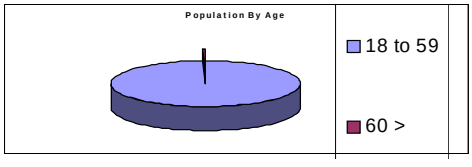


Figure 5-3 Graph of age distribution of PAPs.

Of the gender of the PAPs, males are in the majority, as compared to females. There are 1,339 males and 563 females. This is shown in **Table** 5-2 and **Figure** 5-4. Most of the adult males and females in commercial structures engage in petty trading, while most adult males and females in residential structures go into other areas for work, including in Central Monrovia. Male and female youths are mainly students.

Table 5-2 PAPs distribution by gender

Population by Gender	Survey Report	
Male	1,339	70.40%
Female	563	29.60%
	1,902	100.00%

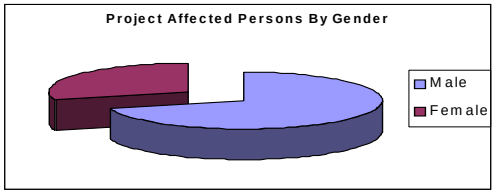


Figure 5-4 Population gender of PAPs.

5.4 ECONOMIC AND LIVELIHOOD STRUCTURE OF PAPS

Petty trading is the single most important and organized source of livelihood amongst the PAPs. 13.67% of the principal occupants interviewed indicated that they are engaged in petty trading. Two other organized groups of PAPS are those working as civil servants – 0.16% and mechanics in garages along the road – 4.10%. The larger numbers of PAPs have no special skills nor are engaged in any particular activities to earn their livelihood. 1,561 or 82.07% of the PAPs fall in this category. The livelihoods of the PAPs are shown in **Table** 5-3 and **Figure** 5-5.

Table 5-3 Livelihood/occupation of PAPs.

What Do You Do For A Living?/Occupation	Survey Report	
Petty Trading	260	13.67%
Civil Servant	3	0.16%
Mechanic	78	4.10%
No Special Occupation/Skill	1,561	82.07%
	1,902	100.00%

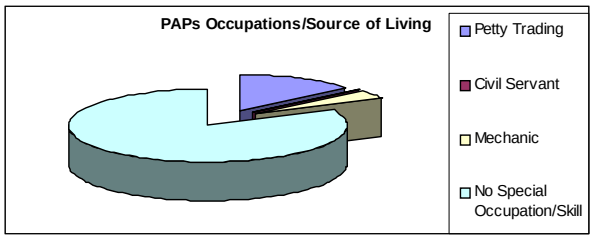


Figure 5-5 Livelihood/occupations of PAPs.

5.5 HOUSING IN THE PROJECT AREA

There are a total of 1,257 structures in the area to be affected or demolished potentially due to the implementation of the Project. Some of the structures are used for residential purpose, while the most are used for commercial purposes. The residential structures are 172 units, while the commercial structures are 929 units. Some of the structures were still under construction or were unoccupied or abandoned and could not be classified as residential or commercial. These numbered 156. And it must be emphasized here that some of the structures were used for both residential and commercial purposes because some occupants wish to be in close proximity to their businesses. These were marked as commercial units. **Table** 5-4 and **Figure** 5-6 below show the structure distribution in the Project area.

Table 5-4 Structures in the Project area

Nature of Structures	Survey Report	
Residential	172	13.68%
Commercial	929	73.91%
Unoccupied or Abandoned	156	12.41%
	1,257	100.00%

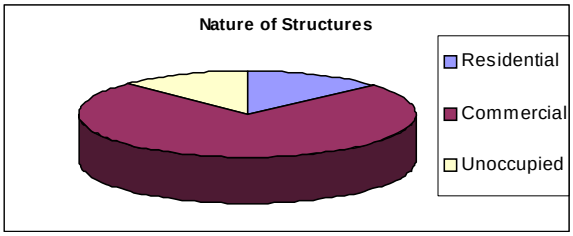


Figure 5-6 Graphs of structure units in Project area.

The structures in the Project area are of different types. Some were constructed of concrete and others mud bricks. Some were simply makeshifts, while metal containers were brought in and placed on the property. These are mainly used for commercial activities. Some structures could not just be adequately described. **Table** 5-5 and **Figure** 5-7 show the structures types in the Project area.

Table 5-5 Structure types in the Project area.

Structure Types	Survey Report	
Concrete	481	38.27%
Mud Bricks	164	13.05%
Makeshift	272	21.64%
Container	288	22.91%
Others	52	4.14%
	1,257	100.00%

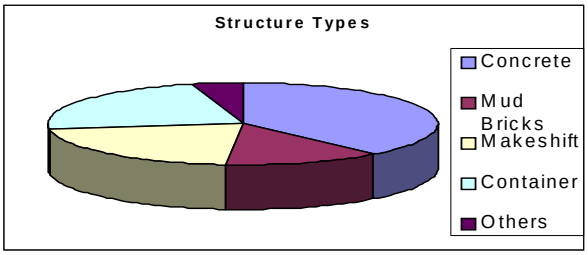


Figure 5-7 Graphs of structure types in Project area.

5.6 LAND TENURE

The communities along the Somalia Drive are mainly squatter communities. 67.22% of the people that have structures in the Project area admitted that they have squatter rights from the municipal authorities. 6.84% of the PAPs claimed to have fee simple title for the land their structures occupy. These will have to be verified during any resettlement planning. Yet, 25.93% of the structure owners have no documentation for the land they are occupying or were not available during the conduct of the survey. These are shown in **Table** 5-6 and **Figure** 5-8.

Table 5-6 Title rights of PAPs.

What Title Do You Have?	Survey Report	
Deed	86	6.84%
Squatter Right	845	67.22%
No Document	326	25.93%
	1,257	100.00%

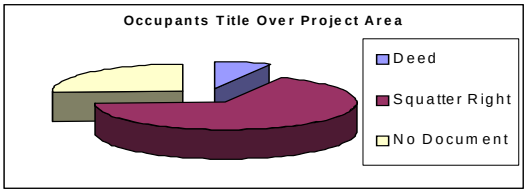


Figure 5-8 Graph showing title rights of PAPs

It was also gathered from the survey data that the PAPs have occupied the Project area for many years. It was found that 62.62% have occupied the Project area for between 1-5 years; 22.77% have occupied the land for between 6-10 years; 5.99% have occupied the land for between 11-15 years and 8.62% of the PAPs have occupied the land for more than 16 years. It can therefore be concluded that majority of the PAPs moved into the Project area recently. This can be explained by the cessation of the civil conflict and inauguration of the new Government in 2006 and presence of the United Nations Mission, after nearly 13 years of civil crisis. The peace and security brought in by the government and UN forces can be responsible for the increase of people within the Project area. These results are shown in **Table** 5-7 and **Figure** 5-9 below.

Table 5-7 Length of stay of PAPs in area.

Length of Stay in Project Area	Survey Report	
1 - 5 yrs	1,191	62.62%
6 - 10 yrs	433	22.77%
11 – 15 yrs	114	5.99%
16 yrs >	164	8.62%
	1,902	100.00%

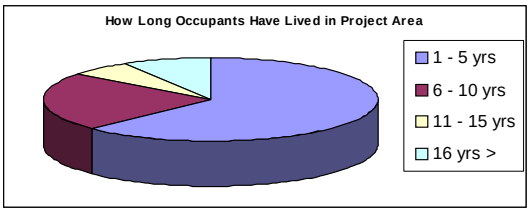


Figure 5-9 Length of stay of PAPs in Project area

5.7 PATTERN OF SOCIAL INTERACTION AND COMMUNITY ORGANIZATION

The community enjoys social harmony and cordiality in spite of comprising diverse ethnic and social, religious, and cultural background. As it is found across Liberia, primary and extended family members provide supports for each other in meeting basic needs such as food, shelter and other social services. This is also common in the Project area. Many of the communities have organized leadership structure, with the Community Leader being the senior spokesperson.

(1) Social Network and Support System

The community thrives by various social networks and support systems. Generally, the social network includes associations along semi-professional lines, for example tailors, marketers and mechanics. Other associations are on the basis of age, such as youth groups; on the other hand, some associations are on gender basis such as the community women groups. Such interactions are used to promote and protect personal relationship and welfare. Another social network called “Susu” is particularly a social network/support group of small scale businessmen and other interest investors coming together for saving and loan purposes. “Susu” not only provides financial security to its members but fosters solidarity and greater cohesion within the community.

5.8 RESETTLEMENT ON PAPS

If the Project is to be implemented, occupants of the structures in the Project area will have to be resettled to other locations. The section of this ESIA takes into account applicable existing policies concerning resettlement within the context of Liberian Law. This is also in compliance with requirements of the World Bank Policy (OP 14.12) on Involuntary Resettlement and relevant social safeguard policies.

5.8.1 Present Resettlement Policy Framework

(1) National Environmental Policy (2003)

This Policy aims at improving the physical environment, quality of life and coordination between economic development, growth, and sustainable management of natural resources. Key objectives of the policy include:

- The systematic and logical framework with which to address environmental issues;
- Benchmarks for addressing environmental problems in the medium- to long-term;
- Context for financial/donor support to particular sectors and non-sector;
- The means for generating information and awareness on environmental problems; and
- To demonstrate Liberia's commitment to sustainable management of the environment.

(2) World Bank Policies

The World Bank's social and environmental safeguard policies seek to prevent and mitigate potential adverse impacts associated with the Bank's lending operations that may adversely affect people and their environment. The road rehabilitation project warrants the World Bank's safeguard policies on Environmental Assessment OP/BP 4.01 and Involuntary Resettlement OP 4.12.

(3) OP/BP 4.01-Enviornmental Assessment

The World Bank requires environmental screening of each proposed Project to determine the appropriate extent and type of EA process. OP/BP 4.01-Enviornmental Assessment outlines the policy and procedure for environmental assessment of the Bank's lending operations. The road rehabilitation project is classified as Category A, which could have potential adverse environmental impacts on human population as well as the environment.

(4) OP 4.12-Involuntary Resettlement

The policy deals with direct economic and social impacts that may result from Bank-assisted investment projects, and are caused by (1) the involuntary taking of land resulting in relocation or loss of shelter; loss of assets or access to assets or loss of income sources or means of livelihood, whether or not the affected persons must move to another location; and (2) the

involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons. This policy applies to the road rehabilitation works.

5.8.2 Regulatory Framework

The Liberian Constitution and other laws provide for resettlement and compensation. This section provides a detailed description of the legal framework for the implementation of involuntary resettlement projects in Liberia, taking into account the following applicable Liberian Laws.

(1) Liberian Constitution of 1986

Article 22 (a) and (b) of the Constitution gives right to all individuals to own property, either on individual basis or in conjunction with other individuals, as long as they are Liberian citizens. The right to ownership of property however does not extend to mineral resources on, or beneath the land

Article 24 (a) states that while the State guarantees the inviolate rights of individuals to private properties, said properties can be expropriated provided the properties are used for public purpose and there is just compensation.

5.8.3 Adverse Impacts on PAPs by the Project

The Project is likely is impact the lives of occupants within the Project area. The major adverse impacts include permanent losses of residential lands, homelessness, and loss of access to property and resources and joblessness. From the survey, it is shown that many PAPs desire to live in the Project area. These are shown in **Table** 5-8 and **Figure** 5-10.

Table 5-8 PAPs' desire to live in the Project area

PAPs desire to live at same place	Survey Report	
Yes	1,530	80.44%
No	28	1.47%
No Answer	344	18.09%
	1,902	100.00%

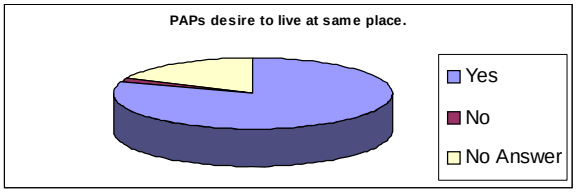


Figure 5-10 PAPs' desire to live in Project area

Despite the fact that PAPs are likely to relocate due to the implementation of the Project, the PAPs acknowledge that the road expansion is very useful to the country and are willing to make the sacrifice. **Table** 5-9 and **Figure** 5-11 show the willingness of the PAPs to the road expansion.

Table 5-9 PAPs' willingness to the road expansion.

Is the Road Expansion Useful?	Survey Report	
Yes	1,791	94.16%
No	13	0.68%
No Answer	98	5.15%
	1,902	100.00%

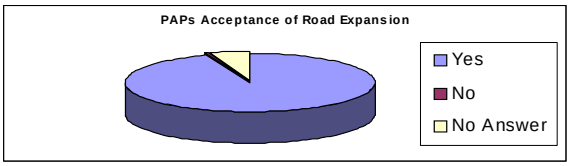


Figure 5-11 PAPs' willingness to the Project.

Loss of Residential houses and other Domestic Structures: 172 units or 13.68% of the structures in the Project area, which are solely residential, will be potentially affected and demolished. The residential units are mainly constructed with concrete – 38.27%. Some of the structures listed as unoccupied are likely residential structures too. Few owners of residential structures have title deed for the land, while majority have squatter rights.

Loss of shops and business places: Of the total 1,257 structures to be affected by the Project, 929 units or 73.91% are used for commercial purposes. However, it must be noted that some commercial structures are also used for residential purpose. Further, most of the structures listed as unoccupied are likely to be commercial units. In fact, some were operated as commercial units and presently closed or abandoned. Hence, the total number of commercial units is likely to increase.

Displacement of People (homelessness): Some 1,902 PAPs in the Project area will be displaced by the road expansion work. The total PAPs includes persons aged range of 18- 59 years (1,891); and older persons whose ages are 60 years and above (11). Males are in majority of the affected people. The PAPs comprise 1,339 males and 563 females, who will be potentially displaced.

Joblessness: As petty trading is a significant means of livelihood for people in the Project area, there will be temporary losses of job for the traders when they are displaced and loose business opportunities associated with the area. Majority of the occupants are unskilled and engage in whatever activities they find available to sustain themselves. Their relocation from the Project area will affect their livelihood.

Mitigation: Resettlement options to mitigate the impact of displacement may include replacement or cash compensation for lost assets and structure, as well as relocation allowance. Asset replacement measures will either be in kind which could involve provision of alternative land, residential and business structures, or in cash settlement that may involve monetary awards commensurate with the value of the lost assets.
And measure to reduce the number of PAPs in design stage is so much recommended.

Majority of the PAPs – 95.06% expressed willingness to move so as to facilitate commencement of the Project. Most of the PAPs – 89.85% requested to be given adequate

notice and want to move within 1-2 months, if requested, In view of the urgency to commence the road expansion work, it is important to negotiate with the majority who are not disposed to leave much sooner to facilitate earlier start date of the Project. **Table** 5-10 and **Table** 5-11 and **Figure** 5-12 and **Figure** 5-13 show the survey results of the willingness of PAPs to relocate from the Project area and the time to do so respectively.

Table 5-10 PAPs' willingness to move.

Would You Want To Move?	Survey Report	
Yes	1,808	95.06%
No	24	1.26%
No Answer	70	3.68%
	1,902	100.00%

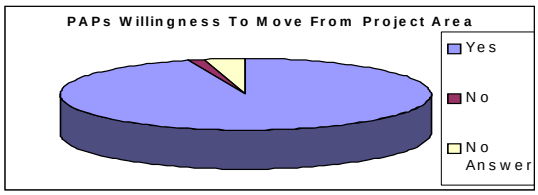


Figure 5-12 Graph of PAPs' willingness to move.

Table 5-11 PAPs' timeframe to vacate Project area.

If Yes, How Soon?	Survey Report	
1 - 2 Weeks	73	3.84%
3 - 4 Weeks	44	2.31%
1 month or more	1,709	89.85%
No Answer	76	4.00%
	1,902	100.00%

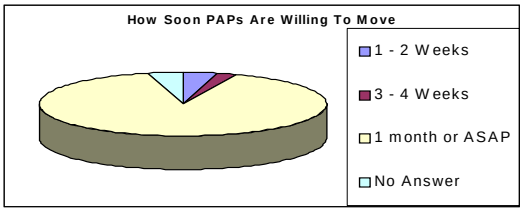


Figure 5-13 Graph of timeframe of PAPs to vacate Project area.

Many of the PAPs expressed their major issues of concern relative to the Project area. For some of the PAPs, the environmental nature of the Project area was paramount, still for others, security traffic and safety were the major issues of concerns. Further, some had more then one issue of concern and for others, all of the issues were considered. Others did not have any issue. Units those are occupied did not participate in this exercise. The issues of concerns of the PAPs can be seen in **Table** 5-12 and **Figure** 5-14 below.

Table 5-12 Issues of concerns of PAPs.

Which Problem Affect You Most?	Survey Report	
Environmental	448	32.07%
Security	219	15.68%
Traffic	141	10.09%
Safety	43	3.08%
All	5	0.36%
No Answer	541	38.73%
	1,397	100.00%

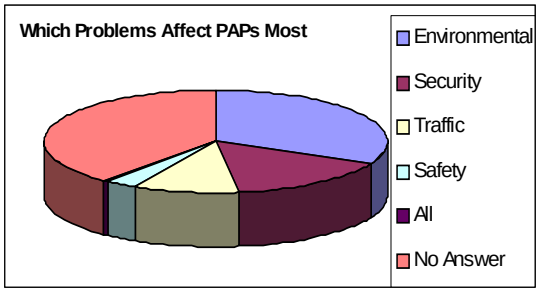


Figure 5-14 Graph of PAPs major concerns.

As most of the occupants are squatters, cash assistance or compensation is preferred, since according to the PAPs, it will enable them to readily settle themselves. However, they underscored the need for prompt payment to assist them in the resettlement process. **Table** 5-13

and **Figure** 5-15 show the PAPs' preferable method of resettlement.

Table 5-13 PAPs' method of resettlement.

How Do PAPs want to be Resettled?	Survey Report	
Assistance	41	2.16%
Compensation	1,337	70.29%
Land/Another Place	359	18.87%
No Answer	165	8.68%
	1,902	100.00%

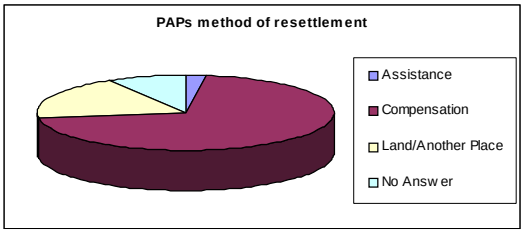


Figure 5-15 Graph of PAPs' method of resettlement.

A property valuation survey was conducted along with the socio-environmental survey. The purpose of this survey was to determine the assessed value of the properties occupied by the PAPs in the Project area. Further, majority of the PAPs have stated that they wish to be compensated for the values of their properties to enable them relocate. **Table** 5-14 shows the total assessed value of the properties of the PAPs in the Project area. This included not only properties of PAPs interviewed, but also for structures that were unoccupied or abandoned as they will also be affected by the survey. However, as only portions of some of the properties are to be demolished and use and container structures will not be damaged, but relocated and still useful to PAPs, there is a need to review the assessed values.

Table 5-14 Assessed value of the properties of PAPs.

Properties	Assessed Values (US$)
All Structures	3,183,194.72
Average Value per Structure (1257)	2,532.37

5.9 LAND ACQUISITION AND PAPS RELOCATION SYSTEM IN LIBERIA

(1) Customary Tenure

Customary tenure involves the use of land which the government has granted to people in the hinterland through customary rights. The process begins with the Town Chief, then the Clan or Paramount Chief and finally the District Commissioner who prepares Customary Land Grant Certificates which are subsequently legalized by the President of Liberia.

(2) Freehold Tenure

This involves holding land in perpetuity or for a term fixed by a condition and enables the holder to exercise, subject to the law, full powers of ownership.

(3) Leasehold Tenure

This tenure is created either by contract or by operation of law. Under the tenure, the landlord or

lessor grants the tenant or lessee exclusive possession of the land, usually for a specific period in return for a rent, granting the tenant security of tenure and a proprietary interest in the land.

(4) Squatter Tenure

This tenure is also created by contract or agreement. Under the tenure, a provisional or municipal authority grants a tenant rights to temporarily utilize a public land. The tenant is barred from erecting permanent structure on the property. Given reasonable notice, the tenant is to vacate the property at such time that the provisional or municipal authority intends to utilize the property for purpose purposes.

(5) Land Valuation System

The Republic of Liberia is the original grantor of land and the public are all grantees. Anyone who obtains land from the State has a bona fide title and right to full possession and use of said land. However the State has the right to revoke any previously granted title it has issued.

In the exercise of such power of condemnation, the State, through its institutions, is statutorily obligated to first evaluate the current market value of the property to be acquired with the aim of providing just compensation to the affected owner. Where the land to be condemned is for public use, the State has the burden of replacing it with one of commensurate value.

In the case of public land, Title 31 of the Liberian Code provides the procedure for determining the cost as follows:

- One dollar per acre for land lying on the margin of a river;
- Fifty cents per acre for land lying in the interior;
- Thirty dollars per lot for towns lots

(6) Compensation

The basis for one to receive compensation for acquired land is provided for by Article 24 of the 1986 Liberian Constitution. The provision states that expropriation may be authorized for national security issues or where the public health and safety are endangered, or for any other public purposes, provided:

- That reasons for such expropriation are given;
- That there is prompt payment of just compensation;
- That such expropriation or the compensation offered may be challenged freely by the owner of the property in a court of law with no penalty for having brought such action; and
- That when property taken for public use ceases to be so used, the Republic shall accord the former owner, the right of first refusal to re-acquire the property.

(7) Grievance Remedial

The right of an aggrieved party to seek redress is provided for under Liberian laws. In the instance where the grievance lies against an entity of government, the first step in seeking redress is to lodge a complaint with the agency, which shall then conduct a hearing and make a determination on the matter. Such decisions are subject to appeal to a regular court. Appeal may also be taken to higher court from a lower court if the aggrieved is not satisfied with the judgment. An aggrieved may seek appellate review up to the Supreme Court of Liberia. The Supreme Court is the highest judicial body to which an appeal may be lodged and its decisions can not be appealed.

Besides the court system, a dispute may be resolved through mechanisms such as mediation at administrative agencies, where the aggrieved party refers the dispute to a third party for a decision binding on both parties; or arbitration, where both parties appoint a broad or arbitrators who may make a binding decision on resolution of the dispute.

Table 5-15 below shows the comparison between the Liberian regulations and the World Bank Policy on Involuntary Resettlement of PAPs.

Table 5-15 Comparison of Liberian Regulations & World Bank Policy on involuntary resettlement.

Theme	Liberian Legislation	World Bank Policy OP.4.12	Mitigation Measures
Categories of affected individuals	There is no distinction between affected individuals. Land owners, land tenants, land users, owners of buildings, and owners of perennial crops are all lumped together and treated likewise. There are no separate provisions for especially vulnerable classes of people.	Involuntary Resettlement should be avoided where feasible, or minimized. • Particular attention should be given to vulnerable groups • Displaced persons should be assisted to improve their livelihoods and standards of living or at least to restore them to pre-project levels.	Project should be designed to distinguish between classes of affected individuals and this should be taken into consideration in awarding compensation.
Impacts	Addresses only direct physical impact of acquiring land. Socio-environmental considerations are not given priority.	Compensation should involve direct economic and social impact cause by acquisition. It is not required to cover indirect social or economic impacts, but it is good practice for the borrower to undertake social assessment and implementation measures to minimize adverse impacts, particularly to poor and vulnerable groups	Design project to take socio-environmental issues into consideration in determining compensation.
Compensation & Participation	Affected persons are to be informed before repossession of land. However, there is no provision on the notice period, neither is there a distinction between farmed land, and developed land.	Affected persons should be: • Informed in a timely manner on their options and right pertaining to resettlement • Offered choices among, and provided with technically and economically feasible resettlement alternatives Provided with timely and relevant information to host communities receiving re-settlers.	Adequate communication between government agencies and affected individuals well ahead of scheduled period of repossession.
Eligibility for compensation & benefits	Compensation is restricted to individuals having a legal title to affected land or property	The absence of legal title to land or other assets is not, in itself, a bar to compensation for lost assets or other resettlement assistance	Design project to extend compensation (social and economic) to individuals who do not have legal title to property
Monitoring & Evaluation	External evaluation is not required	Internal monitoring and external evaluation are required	Design project to involve third party input in assessment of compensation to be paid.

5.10 TERMS OF REFERENCE FOR THE PREPARATION OF EIA PERMIT/LICENSE

Under Annex 1 (Section 6) of Environmental Protection & Management Law of Liberia, construction and expansion/upgrading of road, is considered to require environmental impact assessment (EIA). However, full scale EIA will not be required for rehabilitation/improvement of existing facility. The process requires the preparation of both an Environmental Impact Statement (EIS) and Environmental Management Plan (EMP), as shown in yellow color in **Figure** 5-16 hereunder.

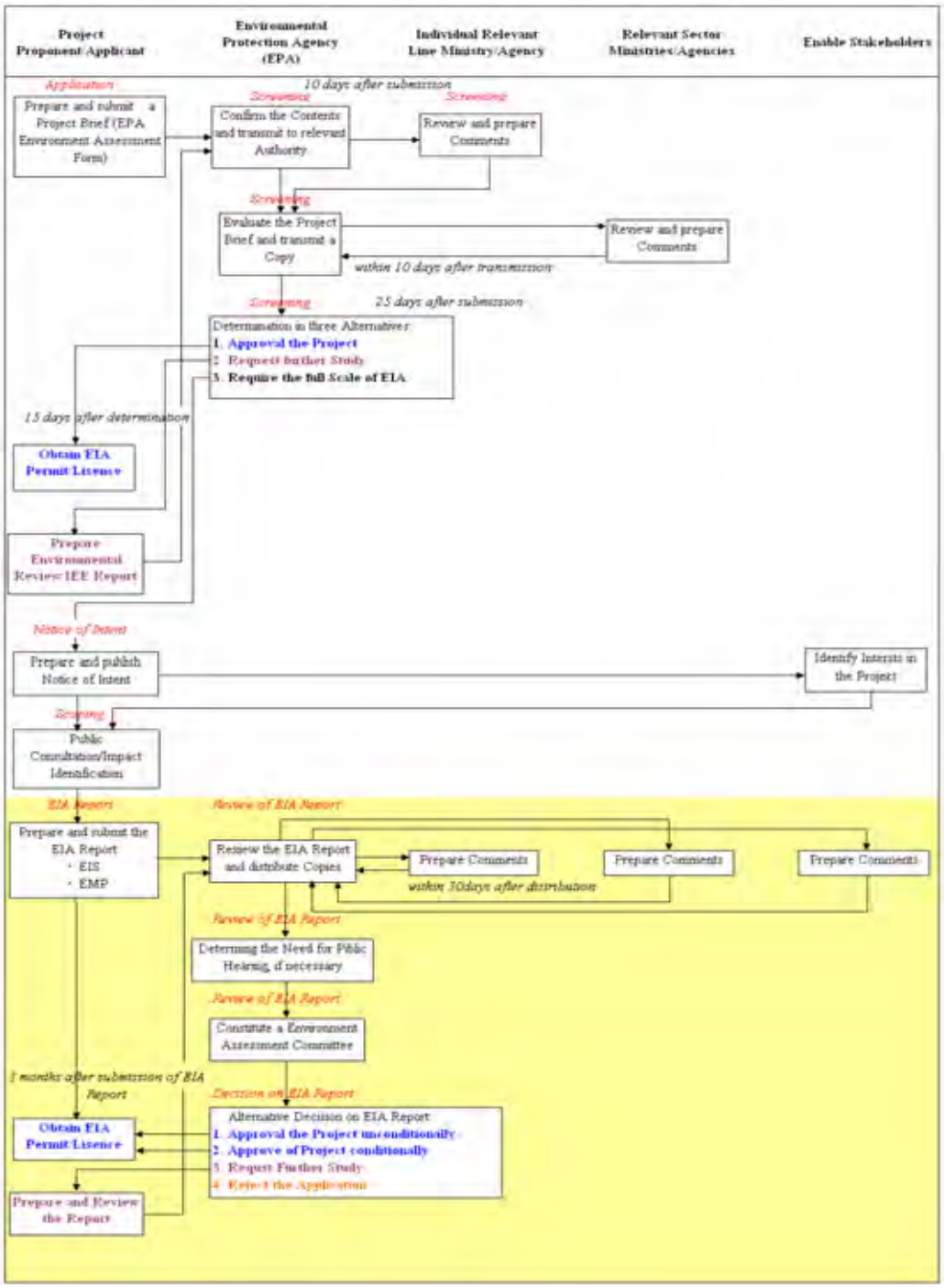


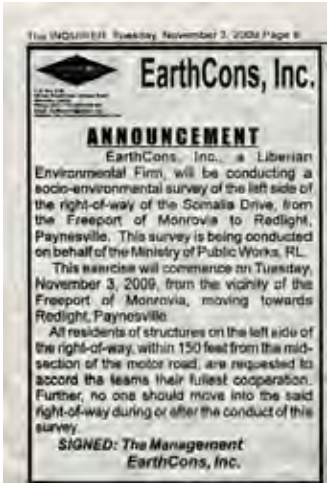
Figure 5-16 Environmental assessment procedure in Liberia

CHAPTER 6

GENERAL PUBLIC CONSULTATION AND COORDINATION

6.1 SCOPING PROCESS

The EPA of Liberia requires a formal scoping process when an Environmental & Social Impact Assessment is conducted. Hence at the start of the process, a full public awareness campaign was launched. The notice of intent of the Project was announced from 2nd November to 19th December on three (3) local radio stations, namely the Truth FM, Sky FM and Star Radio. The public notice (**Figure 6-1**) was also published in Volumes 18 number 195 and 204, November 3rd and 18th editions of the Inquirer Newspaper. Flyers were also produced and placarded on structures in the Project area. The notice in the different media was meant to inform the residents of the Project area and stakeholders of the initiation of the Project and soliciting their fullest support and cooperation for its success. The public was also notified to desist from further occupying the Project area during of after the commencement of the work.



EarthCons, Inc.

ANNOUNCEMENT

EarthCons, Inc., a Liberian Environmental Firm, will be conducting a socio-environmental survey of the left side of the right-of-way of the Somalia Drive, from the Freeport of Monrovia to Redlight, Paynesville. This survey is being conducted on behalf of the Ministry of Public Works, RL.

This exercise will commence on Tuesday, November 3, 2009, from the vicinity of the Freeport of Monrovia, moving towards Redlight, Paynesville.

All residents of structures on the left side of the right-of-way, within 150 feet from the mid-section of the motor road, are requested to accord the teams their fullest cooperation. Further, no one should move into the said right-of-way during or after the conduct of this survey.

SIGNED: The Management
EarthCons, Inc.

Figure 6-1 Announcement in newspaper

The comments of potentially affected persons, businesses, interest groups and the public at large were required by December 31, 2009. The majority of the comments dealt with ensuring PAPs should be informed adequately before the commencement of the road construction and that they are given some assistance to relocate. A major comment from many PAPs is that the Project proponent reduces the width of the Project area from a distance of 150 feet from the mid-section of the existing road to a width of 100 feet. No one expressed opposition to the Project.

6.2 CONSULTATIONS WITH RELATED MINISTRIES

Consultations were held with several entities before the commencement of the work. Consultation was held with Varney Conneh, Environmental Coordinator of the Environmental Protection Agency of Liberia on 28 October 2009. The meeting was firstly to notify the EPA of the commencement of the Project and soliciting their concerns. The EPA expressed concern for the surrounding wetland, but indicated that as the Somalia Drive already exist; expansion would not adversely affect the wetland. Hence, the Project could proceed.

Consultation was held with Carlton Miller, Assistant Minister for Mineral Exploration & Environmental Research and Emmanuel Sherman, Chief Geologist of the Ministry of Lands, Mines & Energy, and the statutory agency responsible for the demarcation of land features on

29 October 2009. The purpose of the discussion was to get a better understanding of the declared right-of-way for roads in different communities and environmental concerns of the ministry.

Consultation was also held with Christian Herbert, Assistant Minister for Planning of the Ministry of Public Works, the statutory agency responsible for the construction of motor roads in Liberia, on 30 October 2009. The ministry indicated that it had submitted the request for the expansion of the Somalia Drive on behalf of the government and that they will work with the Environmental Consultant and PAPs to ensure the implementation of the Project.

6.3 SOCIO-ENVIRONMENTAL SURVEY

A detailed socio-environmental survey was conducted within the Project area. The purpose of the survey was to identify all structures and potential PAPs within the Project area. Every structure was marked to indicate it as either residential or commercial. The name of the principal occupants of each structure was recorded, along with a contact detail. Photos of the structures were taken, as well as a geographic coordinate. The type of structure was indicated, as well as information as to the nature of ownership of the land. Each of the structure was assessed by technicians of the Real Estate Division of the Government. Occupants were requested to express their intention for the Project, as well as concerns they may have. The total numbers of occupants of each structure were recorded. For residential structures, the age, education level, occupation/source of income, religious affiliation and tribal affiliation were recorded. For commercial structures, only the age and occupation of the employers/employees were recorded. The forms used for the socio-environmental survey are presented in Appendix 1.

6.4 SITE STAKEHOLDERS MEETINGS

To obtain the fullest participation of PAPs and interested stakeholders, several meetings were planned in order to ensure that all possible concerns were addressed. Since the 13.7 km length of the Somalia Drive cuts across different communities, the meetings were scheduled in the different communities so as to ensure participation of all PAPs. The meetings were scheduled as shown in **Table** 6-1 and **Figure** 6-2 below.

Table 6-1 Schedule of stakeholders (community) meetings

1	Freeport of Monrovia to Battery Factory Junction - December 5, 2009 at 12:00 p.m. at the Faith & Victory School System, near Jamaica Road Junction.
2	Battery Factory Junction to Supermarket - December 5, 2009 at 3:00 pm at the Jimmy Jolocon School, near the Police Depot, Supermarket.
3	Supermarket to Chicken Soup Factory Junction - December 12, 2009 at 3:00 p.m. at the Jerusalem A.G. School, opposite M.T.A., Gardnerville.
4	Chicken Soup Factory Junction to St. Francis Junction - December 12, 2009 at 12:00 p.m., at the Monrovia Vocational Training Center (MVTC).
5	St. Francis Junction to 72nd Junction - December 19, 2009 at 12:00 p.m. at the Calvary Temple School.
6	72nd Junction to Red Light - December 19, 2009 at 3:00 p.m. at the Paynesville Central Academic School.

Figure 6-2 Map of site stakeholders meetings along the Somalia Drive.

Adequate announcements were made on the Truth FM, Sky FM and Star Radio to notify stakeholders of the meetings. Flyers were also placarded in each community before the meetings.

(1) First Community Meeting

The first community meeting was held Saturday, December 5, 2009 at the Faith & Victory School near Jamaica Road. Occupants of structures marked SD-A-001 to SD-A-337, as well as interested stakeholders were requested to attend the said meeting.

Figure 6-3 Partial view of participants of the first Meeting

The meeting commenced at 12:00 p.m. and was moderated by the Environmental Consultant. Officials from the Ministry of Public Works represented the Project proponent. The Environmental Consultant was Michael V. Suah, Mulbah Nupolu and Seymour Dweh. Officials from the Ministry of Public Works were Elijah Karnley, Zoning Director, and Edsel E. Smith, Assistant Minister for Technical Services.

Opening statements were made by Michael V. Suah, Manager of The Environmental Consultant. He gave an overview of the meeting and urged participants to raise their concerns as representative of the Ministry of Public Works were available to address their concerns. For his part, Mr. Smith of the Ministry of Public Works told the gathering that when roads are built, they bring along socioeconomic development. He said the Somalia Driver Road was initially intended to have been a four lane road because of the Free Port of Monrovia but, because of financial difficulties and couple with the civil crisis, the Project did not materialized. He also said that the right-of-way is intended for public utilities such as power lines, water & sewage lines, telecommunication lines and security reasons, etc. He told PAPs to ask questions of interest and they will try to address their concerns. Also speaking was Elijah Karnley, Zoning Director. He asked PAPs to think of how their community and road should look like few years from now. He told the gathering that the Somalia Drive Road construction started in 1975 with the plan of it being a four lane road but Government did not have the financial means to complete it then. He concluded that the meeting was the first step in the road construction.

PAPs were then asked by Mr. Suah to identify themselves before raising their concerns as follows:

Mr. Jetro Tamba: “I am happy that the Government is trying to implement the zoning law and the approach been taken to construct the road. I am asking the Government to help us to be relocated.”

Mr. Mohammed Sesay: “I am a squatter. Every development must have some pain. What will Government do to help us so that the development can take place?”

Mr. Robert W. Browne: “I want to know how much land the Government is going to take for the road construction project.”

Mr. David N. Wall: “I will like to thank the Government for the development they are bringing. Some of us have deed for our land and some do not have. The 150ft is too much for the road construction. Is the Government going to compensate us for our land?”Alfred D. Gaddeh: “Government has been breaking our structure without compensating us. This time Government should compensate us before breaking our structure.”

Morris Zehdeh: “Thanks very much for the gathering. Will Government be able to help me relocate my container?”

Isaac Tokpah: “If Government is ready for progress, we the citizens will be ready. In the 1980’s, structures were broken down and no development took place. I will like to know if this road project will really commence this time around.”

Esther Russell: “We are squatters on the Somalia Drive and are appealing to Government to

compensate us before breaking our structure”

Esther Nyemah: “I will like to know as to whether we are going to move to give way for the road construction and when the construction is finished, those of us who areas will not be affect by the road will be allowed to come back?”

The representatives of the Ministry of Public Works and the Environmental Consultant responded to the concerns of PAPs and stakeholders to the effect that the Government intended to commence the Project soon and that PAP will be assisted to relocate before commencement of construction. A major concern of PAPs was that the width of the Project area be reduced from 150 feet to 100 feet. The meeting ended at 2:30 p.m. The full attendances at the meeting are presented in **Appendix 2**.

(2) Second Community Meeting

The second community meeting was held on Saturday, December 5, 2009 at the Jimmy Jolocon School near Supermarket, Gardnersville, along the Somalia Drive. Occupants of structures marked SD-A-338 to SD-A-605, as well as interested stakeholders were requested to attend the said meeting.

The meeting commenced at 3:30 p.m. and was moderated by the Environmental Consultant.

Figure 6-4 Partial view of participants of the second Meeting

Officials from the Ministry of Public Works represented the Project proponent.

The Environmental Consultants were Michael V. Suah, Mulbah Nupolu and Seymour Dweh. Officials from the Ministry of Public Works were Elijah Karnley, Zoning Director, Edsel E. Smith, Assistant Minister for Technical Services and David Wiles, Environmental Consultant.

Opening statements were again made by Michael V. Suah, Manager of the Environmental Consultant. He gave an overview of the meeting and urged participants to present their concerns as representative of the Ministry of Public Works were available to address their concerns. For his part, Mr. Smith of the Ministry of Public Works told the gathering that the Somalia Driver Road was initially intended to have been a four lane road because of the Free Port of Monrovia but, because of financial difficulties and couple with the civil crisis, the Project did not materialized. He also said that the right-of-way is intended for public utilities such as power lines, water & sewage lines, telecommunication lines and security reasons, etc. He told PAPs to ask questions of interest and they will try to address their concerns. Also speaking was Elijah Karnley, Zoning Director. He stated that development comes with pain and the government will do everything to assist PAPs to relocate before the commencement of the road expansion.

PAPs were then asked by Mr. Suah to identify themselves before raising their concerns as follows:

Mr. George Saiba: “Over the years, we have experienced lots of hardships. We are business people. I will like for Government to have us informed before moving us.”

Abu Mendimassah: “I will like to thank Government for the meeting. In 1987, our structures were removed without consultation. I have lived in the right-of-way for eleven years as a squatter with a Squatter Right from the Government. I have seven children. Where I am living is where I get my ‘daily bread’ to support my family. I pay tax to Government. What will Government do for me? Let the Government find place for me.

Peter Nelson: “Nobody is against development. It comes with pain. In 1987, the right-of- way was 100 ft and now it is 150 ft, which is affecting my property. Government should relocate and compensate us for our businesses and our structures. How do we reconcile the 100 ft in 1987 and the present 150 ft? Is it a new policy?”

Emmanuel D. Richards: “This is the first of it kind where government has called a meeting with regards to development. I am appealing to Government to maintain the 100 ft instead of 150 ft now been requested.”

The representatives of the Ministry of Public Works and the Environmental Consultant responded to the concerns of PAPs and stakeholders to the effect that even though in the past, the right-of-way was set at 100 ft, the Government now intended to utilize 150 ft. They further stated that the Government intended to commence the Project soon and that PAP will be assisted to relocate before commencement of construction. They finally stated that they will present to senior authority the appeal of PAPs that the Project area be set with a width of 100 ft instead of 150 ft.

The meeting ended at 4:45 p.m. The full attendances at the meeting are presented in **Appendix 2**.

(3) Third Community Meeting

The third community meeting was held Saturday, December 12, 2009, at the Monrovia Vocational Training Center (M.V.T.C.), along the Somalia Drive. Occupants of structures marked SD-A-885 to SD-A-936, as well as interested stakeholders were requested to

Figure 6-5 Partial view of participants of the third meeting

attend the said meeting.

The meeting commenced at 12:30 p.m. and was moderated by the Environmental Consultant. Officials from the Ministry of Public Works represented the Project proponent. The Environmental Consultant was Michael V. Suah and Seymour Dweh. Officials from the Ministry of Public Works were Elijah Karnley, Zoning Director, and Edsel E. Smith, Assistant Minister for Technical Services.

Opening statements were again made by Michael V. Suah, Manager of the Environmental Consultant. He gave an overview of the meeting and urged participants to present their concerns as representative of the Ministry of Public Works were available to address their concerns. For his part, Elijah Karnley of the Ministry of Public Works told the gathering that the Somalia Driver Road was initially intended to have been a four lane road because of the Free Port of Monrovia but, because of financial difficulties and couple with the civil crisis, the Project did not materialized. He gave comparison of the existing road and those of neighboring countries and indicated that there is a need for improvement in our road network. He indicted what the road will be like upon completion, to put Liberia on par with other countries.

PAPs were then asked to identify themselves before raising their concerns as follows:

Mr. Zulo Tengbeh: “When is the road construction going to start?”

Lydia Buah: “I am happy with the development. However, I have used over $2000 to build the present structure. I have my children. What will become of my money?”

Austin Benda: “What will be the outcome of those who are squatting on the Project area without legitimate document?”

John Dennis: “I am a renter on the property of another person. What will become of me?”

Mohammed Bility: “I have a property at the Warner (Double) Bridge. What will become of my property?”

John Derrick: “I will wish that subsequent meetings are held on Sunday.”

The representatives of the Ministry of Public Works and the Environmental Consultant responded to the concerns of PAPs and stakeholders. They were informed that the road construction will only start after the conduct of the ESIA and implementation of a possible relocation program. PAPs were informed that the Government will consider some form of assistance. As it relates to renter and house-owners, they will be considered under different categories. And as for the holding of meetings on Sunday, participants were informed that some structures are businesses and the owners may not be available on Sundays since they may live elsewhere. However, the day will be reviewed.

Again, the issue of the 150 ft was raised and many appealed that the distance be reduced to 100 ft.

The meeting ended at 2:30 p.m. The full attendances at the meeting are presented in **Appendix 2**.

(4) Fourth Community Meeting

The fourth community meeting was held Saturday, December 12, 2009, at the Jerusalem Assembly of God School, opposite the Monrovia Transit Authority (MTA). Occupants of structures marked SD-A-606 to SD-A-884, as well as interested stakeholders were requested to attend the said meeting.

Figure 6-6 Partial view of participants of the fourth Meeting

The meeting commenced at 3:15 p.m. and was moderated by the Environmental Consultant. Officials from the Ministry of Public Works represented the Project proponent. The Environmental Consultant was Michael V. Suah and Seymour Dweh. Officials from the Ministry of Public Works were Elijah Karnley, Zoning Director, and Edsel E. Smith, Assistant Minister for Technical Services.

Opening statements were made by Michael V. Suah, Manager of the Environmental Consultant. He gave a brief overview of the meeting and urged participants to present their concerns as representative of the Ministry of Public Works were available to address their concerns. Speaking on behalf of the Ministry of Public Works, Mr. Edsel Smith presented the Government's view and asked for the cooperation of PAPs as the Project was in the interest of all. Elijah Karnley indicated that people want a good environmental and as such have to make sacrifice for it. He stated that the Project would bring a little hardship to few in the beginning, but the long-term benefit would be good.

PAPs were then asked to identify themselves before raising their concerns as follows:

Thomas Yancy: "I thank you all for the meeting. Previously, the MPW and Mary Broh have informed us that the right-of-way was 75 feet. Now you are indicating that it is 150 feet. What is the exact measurement? Ill there is assistance given us to relocate?"

Sam Lavelee: "I thank you for the meeting. In recent time, the Gardnersville Town Council and Mary Broh demanded that we renovate our structures. Having done so, it has now become apparent that we will have to relocate. We have also paid to the Gardnersville Town Council for

Squatter Right. Who will compensate us?"

Justin Efe: "I am appealing that the Government will utilize a lesser area than the 150 feet."

Fallah Brown: "in the 1980's, we were informed that the right-of-way was 100 feet. We therefore constructed beyond that distance now, you have said 150 feet and our properties fall within that distance. Who will compensate us?"

Sunny Idoghor: "Will everybody be considered the same during the relocation? I am also appealing that we be given time to relocate."

Kebeh M. Foko: "I am appealing that the Government utilize 100 feet."

James Cooper: "I have had my structure demolished many times. Who will compensate me?"

Armah Conneh: "With the exercise affect churches and mosques? I am also appealing for 100 feet."

Fallah Barcibo: "We are happy for the Project. However, we request that we be given adequate time to relocate."

Alonzo Bayoh: "Is the road expansion going to be on both sides of the road."

Mary Pelham: "I am appealing for 100 feet to be used, instead of the 150 feet used during the survey."

James Dennis, Sr.: "My cornerstone is located at 112 feet from the road. I am appealing that only 100 feet be used."

Mustapha Kamara: "During the resettlement process, will the Government give us constructed property or empty land?"

Rev. Jarco Joedoe: "I am appealing that the Government adequately compensate us so that we be able to construct permanent structures elsewhere."

S. Abubakar Sheriff: "I want the Project to commence because in the past, we have been informed that the work would commence, but it did not."

Elizabeth Kollie: "If the government is going to utilize only 100 feet, we will request that only those structures within that distance should be demolished."

Joseph Oroh: "Will compensation be given to both house-owners and renters?"

Bobby Koneta: "My mother acquired squatter right for a piece of property within the Project area only 3 months ago. What will happen to us?"

Fina Ketter: “As the Christmas Seasons is near and we intend to paint our structures, should be cover the survey marks?

Sekou: “We request that we will be compensated and moved before the commencement of the Project. And we should be given adequate time.”

The representatives of the Ministry of Public Works and the Environmental Consultant responded to the concerns of PAPs and stakeholders. They were informed that the road construction will only start after the conduct of the ESIA and implementation of a possible relocation program. PAPs were informed that the Government will consider some form of assistance, but that different category of people will be considered. Those occupying residential structures will be considered different from commercial structures; and squatters will be considered differently than legitimate landowners. They were also informed that their appeal for the utilization of 100 feet will be delivered to the relevant authority.

The meeting ended at 5:15 p.m. The full attendances at the meeting are presented in **Appendix 2**.

(5) Fifth Community Meeting

The fifth community meeting was held Saturday, December 19, 2009, at the Calvary Temple School, along the Somalia Drive. Occupants of structures marked SD-A-937 to SD-A-1099, as well as interested stakeholders were requested to attend the said meeting.

Figure 6-7 Partial view of participants of the fifth meeting with a PAP raising a concern

The meeting commenced at 12:20 p.m. and was moderated by the Environmental Consultant. Officials from the Ministry of Public Works represented the Project proponent. The Environmental Consultant was Michael V. Suah and Seymour Dweh. Officials from the Ministry of Public Works were Elijah Karnley, Zoning Director, and Edsel E. Smith, Assistant Minister for Technical Services.

Opening statements were made by Michael V. Suah, Manager of the Environmental Consultant. He gave a brief overview of the meeting and urged participants to present their concerns as representative of the Ministry of Public Works were available to address their concerns. Speaking on behalf of the Ministry of Public Works, Mr. Edsel Smith stated that the expansion of the road will be for the benefit of all and that the expansion of the Somalia Drive will be good for industrial activities. He also stated that the different categories of PAPs will be

considered specially.

PAPs were then asked to identify themselves before raising their concerns as follows:

Kingsley Twumoanti: “I am a student presently in the Lutheran High School. My relocation now will affect my schooling. What assistance will I get?”

Adama Kieta: “What if the person interviewed was not the principal occupant of the structure. Will this affect any assistance that the principal occupant will receive?”

Joseph B. Juah: “My son was at home during the demographic survey. Will this affect my situation?”

Oretha K. Borvah: “I have squatter right and half on my structure falls in the 150 feet range. What will happen to the rest of the structure?

Lasanna Milton: “I am a student. What assistance will I receive for relocating?”

Christiana Togbe: “I am a civil servant earning low salary with a squatter right. What assistance will I get?”

George Bowen: “What assistance will the Government give us to relocate?”

Felecia Roberts: “Will everyone who have structures marked be compensated?”

James Bennegar: “Will the Government actually need 150 feet for the next 2 lanes?”

Lydia Harris: “How much time will the Government give for us to relocate?”

Terrence Dokie: “Our offices are in the Project area. What assistance will we get to relocate?”

Kemah Boley: “I do not have money to relocate. What help can I get?”

Othello Tamba: “I thank the Government for the Project. I request tht we be given adequate time to relocate before the road work starts.”

Sekou Donzo: “we commend the Government and want to see Liberia develop like other countries. However, we will need some assistance to relocate.”

Gbonzo Siakor: “I am squatting on a structure that fall within the 150 feet. What will become of me?”

Sedeke Kamara: “Will the Project consider both sides of the motor road?”

Sheik Kamara: “I thank Government for the communication. It is very important. When people

get information, they are happy. People should be helped to relocate."

The representatives of the Ministry of Public Works and the Environmental Consultant responded to the concerns of PAPs and stakeholders. They were informed that people will be given adequate time to relocate and that some assistance will be given. They were also told that if the person interviewed was not the principal occupant, as long as they gave the right information, it will be considered. However, verification will be done later. They were informed that every structure will be considered, but determined on different categories. They were also informed that the Project proponent will keep the line of communication with PAPs.

The meeting ended at 1: 33 p.m. The full attendances at the meeting are presented in **Appendix 2**.

(6) Sixth Community Meeting

The sixth community meeting was held Saturday, December 19, 2009, at the Paynesville Central Academy, along the Somalia Drive. Occupants of structures marked SD-A-1100 to SD-A-1295, as well as interested stakeholders were requested to attend the said meeting.

The meeting commenced at 3:30 p.m. and was moderated by the Environmental Consultant. Officials from the Ministry of Public Works represented the Project proponent. The Environmental Consultant was Michael V. Suah and Seymour Dweh. Officials from the Ministry of Public Works were Elijah Karnley, Zoning Director, and Edsel E. Smith, Assistant Minister for Technical Services.

Figure 6-8 Partial view of participants of the sixth Meeting

Opening statements were made by Michael V. Suah, Manager of the Environmental Consultant. He gave a brief overview of the meeting and urged participants to present their concerns as representative of the Ministry of Public Works were available to address their concerns. Speaking on behalf of the Ministry of Public Works, Mr. Edsel Smith stated that the Government was presently undertaking developmental programs across the country and that an expanded highway between the Freeport of Monrovia and the rest of the country was important

because goods will be brought to the port easily.

PAPs were asked to identify themselves before raising their concerns as follows:

Tito Juah: “We want to move. What assistance will we get to move our family?”

Stanley Tumoe: “I thank you for the explanation. Will the Government utilize the entire 150 feet?”

Andrew Flomo: “I am curious about the space that will be used for the expansion. If the 150 feet is not used, who will maintain the remaining land?”

Jordan Gongar: “I am appealing that the Government utilize a lesser area. And how was the structure valuated?”

Jerry Dukuly: “My property was previously destroyed and I did not get anything. I hope that the Government is sincere about this exercise.”

Emmanuel Momo: “I want to know the time the Project will start.”

Eherhare Tahmer: “I have been told that the Government has land at Mt. Barclay. Will we be given this land?”

Yvonne King: “I have squatter right from the Paynesville City Council. What compensation will I get?”

Garmai Dorbor: “At the moment, representatives are coming from the Paynesville City Council to collect squatter fees. Should we continue to pay the annual fee for the property?”

The representatives of the Ministry of Public Works and the Environmental Consultant responded to the concerns of PAPs and stakeholders. They were informed that people will be given adequate time to relocate and that some assistance will be given. They were informed that the space now requested is 150 feet and all will be used. They were also told that the team was not aware of any land in the Mt. Barclay area to be given for relocation. However, PAPs will be informed in subsequent meetings. They were also informed that the MPW will communicate with the City and Township Councils to abolish the squatter fees because the structures are set to be removed for the road expansion to move on.

The meeting ended at 4:40 p.m. The full attendance at the meeting is presented in **Appendix 2**.

CHAPTER 7

THE MESURADO WETLAND

7.1 INTRODUCTION

The Mesurado Wetland is a Coastal Wetland, with a size of approximately 68,000 acres. The Wetland lies between latitudes 6o 19’ and 6o 16’ N and longitudes 10o 48’ and 10o 42’ W. It has an average elevation of 7 to 10 meters above sea level.

This Wetland forms a portion of the Somalia Drive from the Freeport of Monrovia to Seventy – Second Junction. The Wetland is important for many reasons. It provides habitat for migratory birds; it also prevent or minimize flooding and siltation and also acts as filter, removing contaminants that might other wise find their way into the water body that most people along Somalia Drive Road used for domestic purposes.

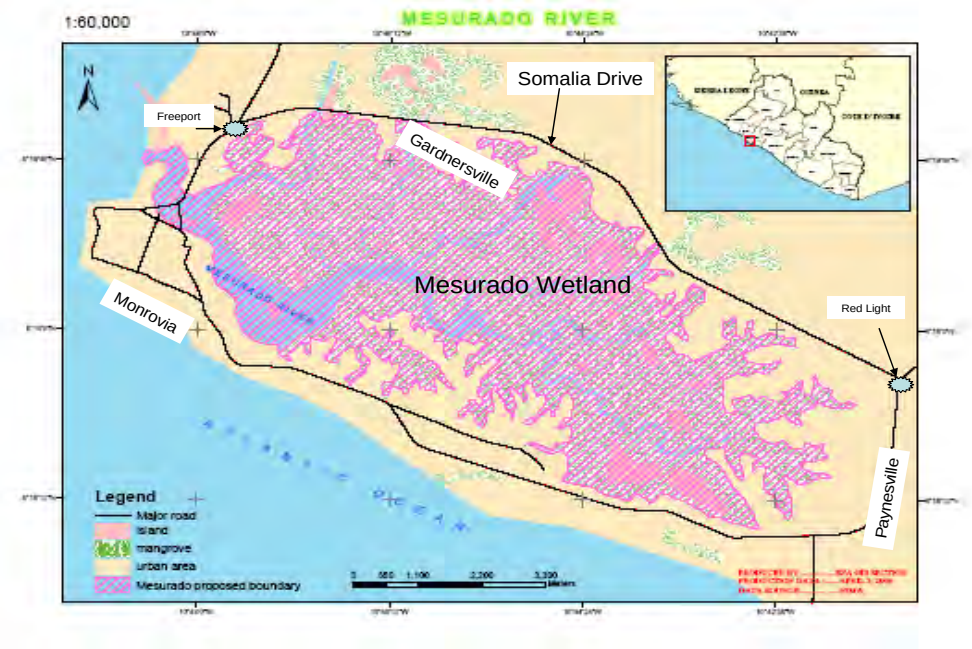


Figure 7-1 Mesurado Wetland near the Somalia Drive

The Wetland also provides the residents of Monrovia, particularly people living along the Somalia Drive with recreational opportunities such as fishing, boating and swimming. This Wetland provides economic opportunities as well as food security to the people of Somalia Drive.

Liberia has about eight sizeable Wetlands. They are: Like Piso Wetland, the largest, with acreage of about 76,000. This Lake Piso Wetland is a Costal Lacustrine; the Marshall Wetland is an inland riverine near the City of Marshall in Margibi County; the Mesurado Wetland,

which has a acreage of 68,000 also found near the Coast in Monrovia; Lake Sherpard Wetland is found in Maryland County in the city of Harper is also a Coastal Wetland; Bafu Bay Wetland is found in Sinoe, also a Coastal Wetland; the Cestos – Senkwhere Wetland is an inland riverine found between Cestos City in River Cess and the Sehkwhein River in the West of Sinoe County; the last two Wetlands are Gbedin and Kpatawee found in Nimba and Bong County respectively.

7.2 HISTORICAL HIGHLIGHTS

The pre-war conditions of Wetland did not experience an enormous amount of pressure as seen during the crisis period. The Wetland in both the coastal and rural areas provided the basic livelihood for inhabitants. The civil conflict had impact inland or rural wetlands and the coastal or urban wetlands that experience mass influx of people due the conflict

Both the rural and urban coastal inhabitants depended on the wetland for energy supplies, food, shelter, water, medicine and other ecological services. They preserve their fish by smoke drying them with mangrove trees that are only found in wetlands.

Monrovia comprises a large portion of the Wetland. This area became the prime source of livelihood. It provided construction materials for shelter, food, fuel wood and water for irrigation of crops. These basic social services were over exploited due to the high population density. Consequently the Wetland sustained great impacts in the area of ecological, social, health and economic.

7.3 THE IMPACTS ON THE MESURADO WETLAND

Liberia contains coastal and inland wetlands which are under intensive threats due to community livelihoods activities, land reclamations/refill for human habitation, agricultural activities, infrastructure development and economic activities. Degradation of the Wetland may affect the availability of ground and surface water in the long run. Generally, knowledge of the ecological values and services of wetlands in the Country is inadequate, owing to weak technical and human capacity, inadequate institutional framework, and inadequate assessment. The Wetland and other wetlands in the Country are located at sites of eco-tourism interest, a situation which could be explored and developed to contribute to the national poverty reduction efforts now being implemented by the Liberia Government and her international partners. According to the Environmental Protection Agency of Liberia (EPA, 2009), there exist five (5) RAMSAR sites in Liberia; which includes the Marshall, Lake Piso, Kpatawee, Gbedin and the Mesurado Wetlands.

The Government has plans to manage these sites which have received less awareness except for Lake Piso which received significant level of awareness in the last eight years. Despite this, major threats still exist. There is a need for national instruments and mechanisms to deal with

threats to wetlands in Liberia.

Liberia as a Contracting Party to the Ramsar Convention on Wetland of International Importance is under obligation to manage sustainably all wetlands of international significance. The over all objective of the Convention is to prevent the net loss of wetlands. The Ramsar Convention was created on February 2, 1971 in the City of Ramsar, Iran and it came into force on December 21, 1975. It major outcome is the adoption of strategic plans to preserve wetlands.

7.4 ENVIRONMENTAL SETTING

Liberia is a State of aquatic splendor, drained by six (6) major rivers and several tributaries with temperature between 29 and 32 degrees Celsius and humidity about 80 percent. The topography within the wetland areas varies from relatively flat with transition between coastal sandy soil and sandy loam of lateritic soil to rough terrain with gentle rolling hills. There can be found lakes, ponds, lagoons, rivers and creeks. Generally, the altitude of these sites varies between 0 to 322 meters above sea level.

The key characteristics of the ecosystem within these sites are mangrove forests, savannah wood-land, and secondary forests vegetations and well developed hydrological systems.

The Wetland contains major flora and fauna species such as mangroves, parinaric, herons, plover, flamingo, etc. Three (3) avifauna species of international significance are among the main flora in the Liberian wetlands. They are Circus Macrourus, Falco Naumanni and Gallinago (EPA, 2004).

7.4.1 Physical Features of the Mesurado Wetland

The Wetland is a flat plain with a polymorphous shape stretching eastwards of the City of Monrovia. It has a natural hydrology. It has a variation in soil types ranging from sandy in the west and clay further up east. Between these zones is a blend of sandy-clay. The depth of the water varies from 1.5 meters at low tide to 4.5 meters at high tide. During low tides, parts of the mangrove swamps become dry and are used as play grounds. The Wetland never gets dry completely during the dry season. The water becomes shallow (1-1.5m) at some places during the dry season and increases up to 3-3.5 meters during the rainy season.

The Wetland is a vast stretch of land comprising mangrove trees extending up to ten miles those branches out in several directions in the City of Monrovia.

However, the Mesurado River which consists of the Wetland is grossly polluted; although there is few data to show the pollution and one scientific evaluation was held in 2009 by EPA including parameter such as pH, Nitrate, Nitrite and Total Dissolved Solids those revealed that water quality of the populated area along the Mesurado River. The result shows that the River is

moving toward acidity.

Table 7-1 Mesurado River water analysis

Global Positioning System(GPS) Reading		Acidity/ Alkalinity	Conductivity	Temperature	TDS	Nitrate	Nitrite
Easting	Northing	PH	mS/cm	℃	mg/L	mg/L	Mg/L
300221	699497	5.13	5.34	28	3471	0.143	0.162
300643	698678	4.30	7.32	28	4758	0.167	0.098
301226	698075	6.90	2.45	26.5	1592	0.094	0.034
301480	697414	6.89	3.64	26.5	2366	0.156	0.024
301188	698278	7.12	2.98	26.8	1937	0.143	0.030

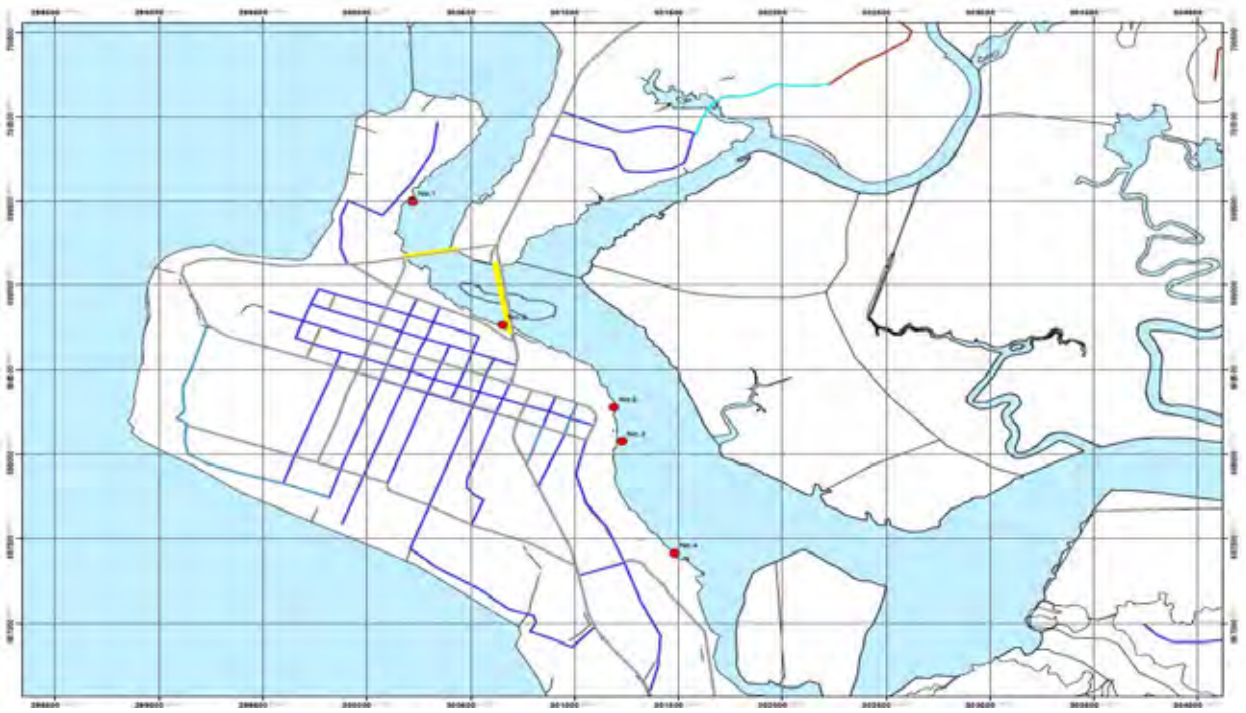


Figure 7-2 Map shows the points where water tasted

7.5 WETLAND RESOURCES

The aquatic flora and fauna of the Mesurado wetland are well represented by numerous plants and animal communities. The flora consists of phytoplankton and macrophysics, while the fauna consists of zooplanktons, macrobenthos and invertebrates/vertebrates. The Ministry of Agriculture (Bureau of Fisheries 2008) recorded 87 fresh water phytoplankton and cyanophyceae. Predominant families include: Bacillarophyceae, Chlorophyceae and Cyanophyceae. The phytoplankton assemblage in the Mesurado Wetland brackish waters varies with season. Densities and diversities are higher in the dry Season; dominant groups include diatoms, green and blue algae. The most common species of diatoms are conscinodisus spp and

plearosigma spp. The major Zoo plankton groups recorded in the Mesurado wetland include copepods, calanoids, amphipods, bivalve larve and ostracods.

Dense macrophysics communities' occurred in many of the water bodies in the Wetlands especially non – flowing waters. In flowing waters, submerged and free floating forms are restricted to back waters. The submerged portion of aquatic macrophytes supports a large variety of insects and worm species. Principal macrophtes in the fresh water zones of the Mesurado Wetlands include water lettuce (pistia sp.), the homwort ceratophyllum Spp., bladder wort-ultriculana Spp. Water hyacinth – Eichnomia Crassipes and Azolla Africana. Typical rooted aquatics include Nymphaea lotus and Vassia Cuspidote.

The benthic macro fauna in the Wetland consists of important groups such as oysters, peri-weckles, brachiostoma, bloody cockie (Senila Spp), Molluses, Crustaceans and polychaetes.

7.6 MANGROVE FORESTS RESOURCES

Liberia has a small mangrove forest in Africa. It covers an area of about 1,279 Sq. km forming a vegetation band of 500 km running parallel to the coastline (D. Wiles, etc. all. 2006).

The Wetland comprised predominately of mangrove forests. The Liberian mangrove resource is dominated by the red mangroves (Rhizophoraceae), associated with the white mangroves (Avicennbaceae).

The red mangrove trees (Rhizophora racemosa is the most common species¸ covering over 80% of the Mesurado wetlands and can grow to a height of 50 meters under favorable conditions. It is the pioneer species, and is followed by R. harrisonii and R. mangle as the wetland gets dry and salinity decreases. The mangrove forest is a source of woods and due to its high thermal capacity; it is widely used as fuel woods for fish drying, charcoal production and construction purposes.

The red mangrove Rhizophora recemosa is the most exploited species and is used for fire wood, poles and timbers. The numerous roots as well as trumsal are used locally for medicine purposes. The bark of the tree provides a cheap source of tannin for dyeing cloth and leather. The mangroves provide breeding and nursery grounds for many commercially important species of fish and shell fish. The tilt roots of the mangroves and mud surface in the wetlands usually support a variety of fauna of oysters; crabs and other invertebrates.

7.7 WILDLIFE

Very little information is available on the wildlife distribution in the Wetland or any wetland in Liberia. The State of the Environment Report (EPA, 2005) provided some useful data on the

wildlife in the Wetland. Field observation made by the GCLME Project in Liberia (GCLME, EPA, 2007) suggests that, with the exception of birds, mostly migrating birds, there is little conspicuous wildlife in the Wetland. A considerable percentage of the animal population is hunted for food by inhabitants of the Wetlands.

Some of the ecological zone of the Wetland that is inaccessible by human, supports a distinct wildlife assemblage. The Mangrove forest wildlife assemblage include manitees, pigmy hippopotamus, Crocodiles, Monkeys, black pigs, dwaft antelope, pythons (large snakes) and other reptiles.

7.8 FISHERIES RESOURCES

No comprehensive study has been carried out to assess the fisheries resources of the Wetland.

7.9 SOCIO-ECONOMIC CHARACTERISTICS

7.9.1 Ecological

The inhabitants along the Wetland harvest the mangrove forest as means of acquiring energy for cooking. They also carried out landfill to reclaim land for habitation and business purposes. The Wetland became the major dumpsites for City garbage disposal. Inhabitants of the wetland and individual homes closed to the wetland empty their sewage in it.

7.9.2 Social

The Wetland is the ultimate disposal site for various wastes materials which contain a large proportion of metals. This makes the Wetland unsafe for swimming. Fisher folks along the Wetland are experiencing a decline in catch due to over-exploitation and pollution.

Figure 7-3 Dumped metals in the Mesurado Wetland.

7.9.3 Health

The movement of people in the Wetland after the civil war poses serious health risks. The Wetland is a site for human waste disposal. Agriculture activities being carried out by inhabitants of the wetland and individuals residing around the wetland are creating health risks as a result of the heavy fertilizer applied to their crops. People used dynamite and poisons to kill fish. Latrines are built on the Wetland which also pose serious health risks.

7.9.4 Economic

The destruction to wetland habitat by the various adverse actions has great economic implications. The over –harvesting of the mangrove forest and land –filling are all factors to affect the biodiversity population in the Wetland. These actions are capable of reducing biodiversity species thereby making livelihood much difficult for the Wetland inhabitants. There are no research facilities at the Bureau of Fisheries, Ministry of Agriculture to study the dynamics of the ecological factors affecting the fisheries environment, the productivity of the ecosystem, pollution levels and nutrients load, species diversity of the various fish communities and there is wide spread use of illegal fishing methods and gears.

7.10 CONSTRAINTS

(1) Institutional Constraints

The Bureau of Fisheries receives no budgetary allotment from Government for the development of wetland fishing sector. The EPA is ill-equipped in terms of logistics, qualified man-power and infrastructure to do monitoring and implement laws and regulations.

(2) Environmental Constraints

The levels of various pollutants and heavy metals dumped in the Wetland and other wetlands around the Country are not monitor as there are many residential and industrial activities along and within the wetlands

The discharge of sewage and other domestic wastes into the Wetland causes serious pollution without check.

However, due to human encroachment on the Wetland, it has been extensively exploited by the growing human populations that live in and around the Wetland in Monrovia. The fisheries resources of the Wetland are being over-exploited.

The fish resources that can be found in abundant in the Wetland are Tallipia, Sardinelly aurita, pseudolotus senegalensis, pomadasy jubelini, Lutjanus Sp. Carank ippo and Catfish. Most common fisheries resources are shrimps, peri weckley mollusks, oysters and Crabs.

The Fisheries Sector of Liberia is faced with lots of constraints that have retarded its development. These hurdles range from biological to manpower development.

(3) Biological Constraints

There has been no stock assessment survey conducted in the Wetland or any wetlands in Liberia to determine the species of flora and fauna.

(4) Boundary constraints

The defining boundary of the Wetland is not cleared. The EPA has not carried out a mapping survey to identify an extent of the Wetland. To exacerbate the situation, the Wetland that should be protected by national and international laws and agreement (Ramsar Convention) has encroached upon by illegal inhabitants on Peace Island since 2003 with impunity

7.11 NATIONAL EFFORTS TO ADDRESS WETLAND PROBLEMS

The major step taken by Government to begin addressing problems of wetland degradation was the accession and ratification process on the Ramsar Convention on wetlands. As the result of this accession and ratification process on November 2, 2003, the EPA received two separate grants from the Ramsar Bureau in January 2005. The two grants were of the Rasmar Small Grant Fund (SGF) and the Swiss Grant for Africa (SGA). Each of these grants, that were made available in the amount of CHF 16,500, helped the EPA to conduct a post –conflict Wetland Assessment. The outcome of this assessment include, the establishment of a National Wetland Committee (NWC), drafting of a National Wetland Policy Outline, designation of four wetland areas as Rasmar site and the maps of the four sites. Is following the setting up of the National Wetland committee, a subcommittee was set up to develop the policy outline that included national strategies for addressing the problems.

Furthermore, the EPA received another Ramsar Small Grant Fund in the amount of 44,692 CHF in October 2009 to develop the training, management plans and a legislative framework for Liberian wetlands

The preservation management measure on each Ramsar Wetland is under preparation at this moment.

7.12 RECOMMENDATION FOR STRATEGIC PRIORITIES FOR CLEAN UP AND REMEDIATION

The first priority action by the NWC is to seek relevant legislations for the legislative enactment of the proposed policy. The policy after enactment becomes the tool for addressing the issues of wetland problems in Liberia. The committee can be then lobby for other laws that may be needed for critical situations.

The second priority action will be establishing full management authority over all Rasmar sites. In order to do this, several projects will be designed for each site that will involve the local authorities and expertise. This will require high level assistance from donors.

The third priority action will seek to integrate wetland issues in the national planning process that will ensure the protection of wetland by all sectors. This means mainstreaming wetland issues.

The fourth action of priority will seek a national mobilization process through a national awareness program that aims at behavioral change towards wetlands. This will target wetland communities and policy makers.

The fifth priority action will seek international cooperation with neighbors of shared water resources. The cooperation will focus on joint projects around management authority and communication strategies.

The sixth priority action is the issues concerning the boundary definitions of Rasmar sites and compensation of wetland habitats.

Since it has been observed that boundary of the Mesurado Wetland has to be well defined, therefore EPA is recommended to define the actual preservation area in accordance with the Resolution VII.23: Issues concerning the boundary definition of Ramsar sites and compensation of wetland sites;

Article 1 of Resolution: AWARE that Article 2.1 of the Convention obliges Contracting Parties to describe precisely and delimit on a map the boundaries of the wetlands designated for inclusion in the List of Wetlands of International Importance and RECALLING Resolution 5.3 which recognized that some wetlands were designated for the List before any criteria or information recording system had been developed under the Convention.

Article 4 of Resolution: NOTHING that at present there is no guidance provided by the Convention to assist Contracting Parties considering the deletion or restriction of the boundaries of a Rasmar site to establish a true and internationally acceptable case of urgent national interest, and therefore how to meet their obligations under Article 4.2 in terms of listing suitable compensatory habitat.

Article 8 of Resolution: RECOGNIZES that there are situations, other than the urgent national interest provision of Article 2.5 of the Convention text, where Ramsar site boundary may warrant further definition, for example, where boundaries were erroneously or inaccurately defined at the time of listing.

7.13 REFERENCE

(1) Report on: The Impacts of the Liberian Civil Crisis on Wetland (EPA, 2009)

(2) Resolution VII. 23: Issues concerning the boundary definition of Ramsar Sites and Compensation of Wetland of Wetlands inhabitant

CHAPTER 8

FRAME OF ENVIRONMENTAL MANAGEMENT PLAN

8.1 BACKGROUND OF THE ANTICIPATED EMP

The impact of conflict on Liberia's human and urban environments cannot be overstated. During 14 years of war, one in three Liberians has been displaced. More than half a million remain in temporary housing or camps, major economic activities are limited to shipping, rubber plantations, timber production, and mining. The Liberian economy has collapsed and unemployment is now estimated to be 80% percent.

During the years of conflict, Liberia's infrastructure was almost completely destroyed by the war and looting, leading to collapse in many areas. Key services such as road transport, energy production and distribution, provision of safe drinking water and waste management ceased being rendered.

The construction of the Somalia Drive road will enhance basic economic activities and social services in Monrovia and its environs. This requires the Government of Liberia to prepare and implement an Environmental Management Plan (EMP), to prevent, minimize or mitigate site specific environmental impacts

The Environmental Management Plan framework is one of the several required field surveys to be undertaken prior to commencement of works on construction or rehabilitation of new roads that linked the Central Business District, Bushrod Island, and other sub-urban areas of Monrovia. The Project is being undertaken by the Government of Liberia through the Ministry of Public Works. The Environmental Management Plan (EMP) is prepared in fulfillment of requirements of the Environmental Protection Agency (EPA) of Liberia. Potential impacts on air, water, soil, aquatic life, landscape, as well as vegetation and corresponding mitigation measures are considered, in addition to socio-economic impacts of the Project and the appropriate plan for people that will be affected by the Project.

This document provides an Environmental Management Plan (EMP) for the proposed works on the reconstruction of the Somalia Drive Road Project to be undertaken by the Government of Liberia through the Ministry of Public Works.

The Environmental Management Plan (EMP) for the reconstruction of the Somalia Drive will define roles, responsibilities and procedures in the preparation of an Environmental Management Plan Framework (EMPF) for the reconstruction of the Somalia Drive Road.

8.1.1 Background of the Project Area

The Somalia Drive Road is located in the northern part of the Mesurado Wetland had 4 (four) lane carriage ways originally. However, only 2 (two) lanes were rehabilitated by the Government of Liberia through the World Bank Grant in 2008. The land use along the Somalia Drive Road is mainly for commercial purposes including street markets, petty trading, vegetable and food stalls and garages. The Somalia Drive Road is exclusively urban in nature, but is dominated to a greater degree by small commercial practices and market stalls. The vicinity consists of many narrow community alleys which connect directly to the Somalia Drive, and suffered from traffic congestion by vehicles from the alleys. Daily traffic volume is about 24, 500 P C U per day at the eastern section of Somalia Drive according to a survey conducted in 2009 (JICA 2009). It is estimated that the volume of traffic in 2014 will become over 150% of the road capacity at all stretches and traffic condition will become more serious. The traffic congestion also causes service economic losses; therefore the upgrade of the Somalia Drive Road capacity to secure the smooth traffic flow is urgent and necessary.

The Government of Liberia made request for Japan's Grant Aid in August 2009 for the development of the road sector in Liberia. This project is classified as "Category A" because of the likely significant adverse impacts due to the large scale involuntary resettlement that will be expected.

8.1.2 Project Description

This Environmental Management Plan (EMP) has been prepared in compliance with the environmental policies and laws of the Government of Liberia. The EMP identifies mitigation, monitoring and institutional measures to be taken for avoiding or minimizing adverse environmental impacts during project design, implementation and operation, and specifies activities needed to implement such measures more specifically; this EMP is organized to cover the following issues:

- Executive Summary: Brief discussion of significant financing and recommended actions
- Project Description: Brief description of the scope of the Project, geographical areas of coverage and proposed implementation arrangements.
- Policy, Legal and Administrative Framework: Summary description of applicable national and international agreements, policies, Laws, regulations, standards and guidelines relevant to the proposed Project activities, and information on the responsible institutions and their roles.
- Existing Condition: provides a description of the physical, biological and socioeconomic environment within the proposed Project area. The description is based on the reviews of available documentation, field surveys and investigations.
- Potential Environmental Impacts: Summary description of potential direct and indirect

environmental impacts and proposed mitigation measures.

- Environmental Management Plan: The EMP outlines the appropriate preventive actions and mitigation measures for addressing the potential adverse environmental and social impacts identified for the Project activities. A monitoring plan, with monitoring indicators and assigned responsibilities to key stakeholders is given.

Widening the Somalia Drive would also encourage the use of the international road transport corridors from the Freeport of Monrovia to neighboring Guinea and C' Ote d' Ivoire through Ganta and Loguato respectively. The activities would in turn generally bring hefty financial returns, increased economic growth and improve access for our citizenry.

8.1.3 Objective of the EMP

The primary objective of the EMP is to identify possible adverse environmental and social impact associated with the Project and proposes mitigating measures to prevent, minimize, or remedy such problems in order to ensure environmental sustainability. The specific objectives include:

- To describe and assess the existing environment likely to be impacted;
- To identify and assess the types and magnitude of the potential impacts;
- To prepare plans for managing impacts so that they are kept within acceptable levels; and
- To identify adverse, social impacts.

The EMP will also serve the purposes specified below:

A) To provide a standalone document for project implementation that engenders appraisal of the Project and to provide a single source of environmental information for contractors, inspectors and other associated with the Project during design, construction and operations;

B) To identify Institutional Roles and Responsibilities of relevant institutions involved in environmental management during project implementation; and

C) To Summarized Environmental Monitoring Plan during design, construction and operation phases:

- The EMP will identify requirement related to the environmental monitoring program.
- Environmental monitoring will be carried out during both the construction and operation phases to ensure the effectiveness of mitigation measures, to respond to unanticipated environmental concerns at an early stage, and to determine the accuracy of impact predictions.

8.1.4 Objectives of the Project

- To improve the road link between the Freeport of Monrovia and Red Light in Paynesville
- To reduce chronic traffic congestion and associated vehicular emissions.
- To enhance trade and commerce
- To ensure safety (through the widening of the Somalia Drive

8.1.5 Major Civil Works

Construction works involving filling, excavation, concrete casting, as well as pavement

8.1.6 Applicable Environmental Quality Standards

The Water Quality Standards for Liberia are presented in **Table** 8-1 below. However, there are not yet approved national environmental quality standards for air, noise and other media. Consequently international applicable standards or suitable standards from the West African Region will be used/adopted for environmental management in connection with this project. The following guidelines on Air Quality ((**Table** 8-2) and Noise level (**Table** 8-3) are presented for consideration.

Table 8-1 Liberia water quality standards: for coastal waters marine

S. N0.	Parameter	Standards	Rationale/Remarks
1.	Ph range	6.5-8.5	General broad range, conducive for propagation of aquatic lives, is given. Value largely dependant upon soil, water nteraction.
2	Dissolved Oxygen	50 mg/1 or 50 percent saturation value, which ever is higher	No less than 3.5 mg/1 at any time of the year for protection of aquatic lives
3	Color Odor	No noticeable color or offensive odor.	Specially caused by chemical compounds like creosols, phenols, naptha, pyridine, benzene, toluene etc. causing visible coloration of salt crystal and tainting of fish flesh.
4	Floating Matters	Nothing obnoxious or detrimental for use purpose.	Surfactants should not exceed an upper limit of 1.0 mg/1 and the concentration not to cause any visible foam.
5	Suspended Solids	None from sewage or industrial waste origin	Settle able inert matters not in such concentration that would impair any usages specially assigned to this class.
6	Oil and Grease (including Petroleum Products)	0.1 mg/1	Concentration should not exceed 0.1 mg/1 as because it has effect on fish egs and larvae.
7	Heavy Metals: Mercury (as Hg) Lead (as Pb) Cadmium (as Cd)	0.01 mg/1 0.01 mg/1 0.01 mg/1	Values depend on (i) Concentration in salt, fish and shell fish. (ii) Average per capita consumption per day. (iii) Minimum ingestion rate that induces symptoms of resulting diseases

Table 8-2 Ambient air quality standards (tentative)

Pollutants	Time-weighted average	Concentration in ambient air			
		Industrial Areas	Residential, Rural & other Areas	Sensitive Areas	
Sulphur Dioxide (SO_2)	Annual Average*	80 µg/m^3	60 µg/m^3	15 µg/m^3	- Improved West and Geake Method - Ultraviolet Fluorescence
	24 hours**	120 µg/m^3	80 µg/m^3	30 µg/m^3	
Oxides of Nitrogen as (NO_2) of	Annual Average*	80 µg/m^3	60 µg/m^3	15 µg/m^3	- Jacob & Hochheiser Modified (Na-Arsenite) Method
	24 hours**	120 µg/m^3	80 µg/m^3	30 µg/m^3	-Gas Phase Chem-iluminescence
Suspended Particulate Matter (SPM)	Annual Average*	360 µg/m^3	140 µg/m^3	70 µg/m^3	- High Volume Sampling, (Average flow rate not less than 1.1 m3/minute).
	24 hours**	500 µg/m^3	200 µg/m^3	100 µg/m^3	
Reparable Particulate Matter (RPM) (size less than 10 microns)	Annual Average*	120 µg/m^3	60 µg/m^3	50 µg/m^3	- Respirable particulate matter sampler
	24 hours**	150 µg/m^3	100 µg/m^3	75 µg/m^3	
Lead (Pb)	Annual Average*	1.0 µg/m^3	0.75 µg/m^3	0.50 µg/m^3	- ASS Method after sampling using EPM 2000 or equivalent Filter paper
	24 hours**	1.5 µg/m^3	1.00 µg/m^3	0.75 µg/m^3	
Ammonia1	Annual Average*	0.1 mg/ m^3	0.1 mg/ m^3	0.1 mg/m^3	
	24 hours**	0.4 mg/ m^3	0.4 mg/m^3	0.4 mg/m^3	
CarbonMonoxide (CO)	8 hours**	5.0 mg/m^3	2.0 mg/m^3	1.0 mg/ m^3	- Non Dispersive Infra Red (NDIR)
	1 hour	10.0 mg/m^3	4.0 mg/m^3	2.0 mg/m^3	Spectroscopy
*	Annual Arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.				
**	24 hourly/8 hourly values should be met 98% of the time in a year. However, 2% of the time, it may exceed but not on two consecutive days.				
	time, it may exceed but not on two consecutive days.				

Table 8-3 Ambient noise level standards (Ghana Standards)

Zone	Description of Areas of Noise Reception	Permissible Noise Level in DB(A)	
		DAY 0600 – 2200	NIGHT 2200 – 0600
A	Residential areas with low or infrequent transportation	55	48
B1	Educational (school) and health (hospital, clinic) facilities	55	50
B2	Areas with some commercial or light industry	60	55
C1	Areas with some light industry, places of entertainment or public assembly, and places of worship located in this zone.	65	60
C2	Predominantly commercial areas	75	65
D	Light industrial commercial areas	70	60
E	Predominantly heavy industrial areas	70	70

Note 1: Schedule 4 is for the calculation of (noise level) from its duration of The potential annoyance level where any noise present and measured is intermittent and not measured by statistical method.

Note 2: These duration adjustments are not applicable when noise being assessed includes discrete noise impulses or consists of repetitive noise with an impulsive character e.g. hammering or riveting.

Note 3: Ambient noise level standards in dB(A) refer to rating level Lr.

8.2 ENVIRONMENTAL MANAGEMENT PLAN

8.2.1 Air Quality

Air Quality of the proposed Project site is very poor due to improper waste management practices. Both the Stockton Creek and the Warner River and its banks are used for disposal of human and household wastes. There are also many disposal sites located on the Somalia Drive Road where garbage usually remains many days before its eventual collection. Also the sewage system along the Somalia Drive is in disrepair and this causes a flow of human wastes (leaking from damaged pipes) into the road; consequently the air is usually stinking. Dust particles from damaged pavement of the road are also sources of air pollution. Currently, however, Liberia has no air quality standards and there are no data on the air quality of the proposed Project area.

8.2.2 Soil

The soil is basically sandy clay. However, the Somalia Drive road shoulders are overloading with solid wastes, particularly plastic materials. On the other hand, the Red Light section of the Somalia Drive is littered with scraps vehicles. The erosion has undermined the pavement on the Somalia Drive, causing some sections of the potential road pavement to fall,

8.2.3 Water Quality

The Stockton Creek and the Warner River on the Somalia Drive are highly polluted as a result

of disposal of raw sewage and garbage into these water bodies. Results of the water samples analysis are presented in **Table** 8-4 below.

Table 8-4 Water quality of Project area

Parameter	Unit	Stockton Creek	Warner Creek
pH	pH	6.8	6.5
Conductivity	S/m	2.9	2.4
Temperature	^{0}C	29.4	29.0
Odor		musty	musty
Color		brownish	brownish
Chemical Oxygen Demand	ppm	24	24
Dissolved Oxygen	ppm	8.5	8.7
Total Suspended Solids	ppm	29	24

8.2.4 Flora:

There is few species of mangrove trees comprising the Mesurado Wetland along the Somalia Drive. Some other trees and grasses are found along the route of the Somalia Drive.

8.2.5 Aquatic Life:

Despite the high level of pollution of the Stockton Creek and Warner River, they contain many fresh water fish, which include Tilapia, Catfish, Groupers, Snappers, Crustaceans, etc. The concentration of pollutions in the fish has not been determined.

8.3 SUMMARY OF ENVIRONMENTAL IMPACT

Given the relatively limited nature of the rehabilitation works and the location of the old bridge in areas heavily disturbed by human activities, the impacts resulting from this proposed works are likely to be small-scale, localized, and limited to the reconstruction phase.

Table 8-5 indicates in the form of matrix, the potentially affected components.

Table 8-5 Anticipated adverse impact by proposed Project

	No	Items of adverse impact	Scoping Stage	Assessment in EIA			Description
				Design Stage	Construction Stage	Operation Stage	
Social environment	1	Involuntary resettlement	A	A	B	B	* Relocation of PAPs
	2	Local economy such as employment and live-hood	B	B	B	B	* Loss of jobs of PAPs; * Loss of livelihood
	3	Land use and utilizations of local resources	B	D	D	D	* No local resources will be used for the Project
	4	Social institutions such as social infrastructures and local decision-making	B	D	D	D	* No decision-making infrastructure is located in the Project area.
	5	Existing social infrastructures and services	B	B	B	D	*Destruction & demolition of infrastructure
	6	The poor, indigenous of ethnic people	B	B	B	B	*There are many poor * No minority population was observed in the Project area
	7	Misdistribution of benefit and damage	B	D	D	D	* No misdistribution of benefit and damage is considered
	8	Heritage, Graveyard, Sanctuary	B	D	D	D	* No heritage site, graveyard or sanctuary was observed in the Project area.
	9	Local conflict of interest	B	D	D	D	* There exist no local conflict of interest
	10	Water usage	B	D	D	D	* The will be no use of water from project area
	11	Public Hygiene	B	B	B	B	* Occupation hazard associated with construction activities
	12	Infectious diseases such as HIV/AIDS etc.	B	C	B	B	*The surveys did not fully consider these
	13	Geographic features	B	D	D	D	Very minor change to topography
	14	Soil Erosion	B	D	B	D	* Seepage or spill of fuel/chemicals; * erosion due to runoff
	15	Groundwater	B	B	B	B	* Seepage or spill of fuel/chemicals
	16	Hydrology	B	B	B	D	* Seepage or spill of fuel/chemicals; * Pulling of concrete into waterway
	17	Seastrand	B	D	D	D	* The Project is not located along the seashore.

	No	Items of adverse impact	Scoping Stage	Assessment in EIA			Description
				Design Stage	Construction Stage	Operation Stage	
	18	Fauna, Flora, Ecosystem	B	D	D	D	* Minimal clearing of vegetation
	19	Climate	B	D	D	D	Little or no impact to the climate
	20	Landscape	B	D	D	D	* The landscape is relatively flat and no change expected.
	21	Global warming	B	D	D	D	* Little or no impact is expected
Pollution	22	Air pollution	B	B	B	B	* Emission of gases and particulates from vehicle movement and site clearing
	23	Water pollution	B	B	B	B	* Seepage or spill of fuel/chemicals
	24	Waste	B	B	B	B	* Solid or hazardous waste from construction
	25	Noise and vibration	B	D	D	D	* Increased noise emissions from road traffic and heavy equipment
	26	Accidents	B	B	B	B	* Accident associated with construction activities

8.4 THE IMPACTS ARE BRIEFLY DISCUSSED BELOW:

8.4.1 Air

The demolition exercise during construction phase of the Somalia Drive may generate dust particles that will contribute to air pollution. Other sources of particulate matter are industries, construction activities, as well as vehicular emission. Regular air quality monitoring will be required to track sources of pollutants and reduce air pollution.

During the operation phase of the road (after construction), the new Somalia Drive Road will positively affect air quality as traffic flow will be greatly enhanced and thus vehicular emission of C02 greatly reduced.

8.4.2 Water

Although the Stockton Creek and Warner River over which the road will be constructed are highly polluted, the demolition and construction exercises could exacerbate the turbidity by accidental disposal of solid matter into the water bodies.

Flooding is an impact that needs to be considered also. Hydrological studies carried out in

connection with this project predict a flood level rise which could adversely affect the underside of the bridges over the Stockton Creek and the Warner River, given the current design. Additionally, the expected rise in flood water may inundate buildings adjacent to the road.

8.4.3 Noise

Noise will be generated from demolition and construction activities. During operation phase the main source of noise will be from the traffic. However, since sensitive receptors such as schools and hospitals are close, the acoustic impact will be in an unacceptable range.

8.4.4 Soil Erosion

Some disturbance of soils on the road may result from the use of equipment to remove scraps of old vehicles along the road. This may render the soil prone to further erosion.

8.4.5 Accident Hazard

During demolition and construction, workers, pedestrians and motorists will be at increased risk of accidents that may be caused by excavations, openings in the road pavement, movements of construction vehicles, operations of cranes including falling material, injury to eyes from dust, flying fragments, etc.

8.5 ENVIRONMENTAL IMPACT MITIGATION MEASURES

Necessary measures to mitigate potential impacts associated with the design, construction, and operation phases are summarized below.

8.5.1 Design Phase

8.5.1.1 Protective Material

- Hydrological studies carried out on the Stockton Creek and Warner River revealed that its conductivity and pH levels are high and therefore the river water is aggressive to other substances.

8.5.1.2 Water Pollution

- The surface runoff from the Project construction of the Somalia Drive will be drained into storm drains. .

8.5.1.3 Soil Erosion

- Retaining wall will be built on the shoulders of the road to prevent erosion from surface runoff.

8.5.2 Construction Phase

8.5.2.1 Air Quality

- Dust will be generated in the course of road construction work. Therefore demolition sites within 30 meters from sensitive receptors will be separated with tarpaulin or similar sheet to control the dust. Water spray will also be carried out intermittently to control dust from construction.
- Vehicles transporting construction materials (e.g. cement, earth, and stone) will be covered with tarpaulin.
- Roads under construction where dust is generated will be watered twice daily.

8.5.2.2 Noise Reduction

- Machinery with low noise and/or sound absorption materials will be used as much as possible; for example, on-site generator with muffler or silencer. If necessary, working hours should be such that noise is reduced during the nighttime hours.

8.5.2.3 Water Quality

- Removal of old overlay from the road should be done with due diligence to avoid excessive debris falling into the Project site.
- At construction sites where public toilets are not available, temporary toilets and facility for sewage collection will be put in place and the waste be hauled to wastewater treatment plant by the Liberia Water and Sewer Cooperation
- Clearance and restoration of the site for temporary facility will be carried out once the construction is finished.

8.5.2.4 Disposal of Debris from Construction

- Debris from construction will to be hauled in covered trucks and disposed of on sites (away from sensitive receptors) approved by the Environmental Protection Agency. The disposal sites identification and selection will be done in consultation with the EPA.

8.5.2.5 Accident Prevention.

- The construction area will be well marked with lights and signs to warn motorists and pedestrians away from danger areas.
- Barriers will be erected and guards will be posted to prevent civilians from entering the construction area, falling through openings in road, etc.
- Construction workers will be required to wear safety helmets, safety shoes, and eye protection.
- Flagmen will be on hand during operations involving trucks and heavy equipment

moving into or out of the construction area, to prevent traffic jams and accidents.

8.5.3 Operation Phase

8.5.3.1 Air Quality

- Responsible authorities (EPA and line Ministries and Agencies) need to develop national air quality standards and enforce the necessary law.
- Air quality monitoring equipment need to be set up (by EPA) in strategic commercial, industrial and residential sites.
- The use of Tail-Gas purifier on vehicles is enforced (by the EPA and the Liberia National Police) as means to reduce emission of pollutants.
- The use of public transport will be encouraged for higher efficiency of passengers.

8.5.3.2 Noise Reduction

- Standards for noise in various acoustic environments be developed and monitored by responsible authorities of the EPA.
- The pavement will be maintained regularly.
- Vehicle with noise exceeding the standard will be requested to be repaired or use efficient silencer.

8.6 ENVIRONMENTAL MONITORING PLAN

Environmental monitoring will be undertaken during both the construction and the operation phases to ensure the effectiveness of mitigation measures, to determine the accuracy of impact prediction, and to respond to unanticipated environmental concerns at an early stage in order to adopt appropriate remedial measures. The monitoring will be carried out by the environmental Protection Agency (EPA).

The purposes of the environmental monitoring plan are to:

- Evaluate the effectiveness of mitigation measures;
- Respond in a timely manner to unanticipated environmental impact when the Project is under construction; and
- Provide supporting information for formulating regulations and improving traffic management and environmental controls, based on monitoring data.

8.6.1 Construction Phase

The monitoring plan during construction phase consists of three components (i) daily inspections of site conditions, twice daily by the contractor, once daily by the owner's engineer; (ii) Compliance monitoring and (iii) environmental inspection which will be carried out by the

EPA.

8.6.1.1 Compliance Monitoring

The monitoring will be carried out by the EPA to ensure regulatory compliance with standards with respect to air quality and noise levels. Turbidity will also be monitored in respect of water quality. Monitoring will be carried out at the Project site when construction activities are in progress.

8.6.1.2 Sampling Frequency and Duration

The construction process is divided into two stages, with stage one including excavation, grading and pile driving whilst stage two involves concrete mixing, structural erection, and paving. Each monitoring session will consist of three sampling events, which will be taken at the early, middle and late periods of each stage respectively. Hence during the construction phase EPA inspectors will conduct sampling as follow.

Table 8-6 Sampling frequencies of water & air qualities

Kind of construction work	Stages		
	Early stage	Middle stage	Late stage
Excavation	Water& air	Water& air	Water& air
Piles driving	Water	Water	Water
Concrete Mixing	Water	Water	Water
Erection of structures	Water	Water	Water

8.6.1.3 Environmental Inspection

Environmental inspection will be carried out by the EPA on the Project activities in accordance with the law. Noise monitoring will be carried out using hand- held meters at least 2 times a day in a week.

8.6.2 Operation Phase

Owing to the importance of their impact when the Somalia Drive Road is operational, only noise and air qualities will be monitored during the operation phase. Traffic noise and impact of motor vehicle emission on sensitive receptors will be monitored at the road by EPA inspectors once a weekly as a routine environmental inspection.

8.6.2.1 Summary of Mitigation Measures

This section summarizes the mitigation measures designed and described in the EMP. The measures are divided into those for the design, construction and operation phases. The summary is presented in **Tables 8-7, 8-8** and **8-9**. It includes brief description of mitigation measures and, responsible party for their implementation.

Table 8-7 Mitigation measures during designs phase

Environmental Issue	Mitigation Measures	Responsibility
Corrosion of construction materials	Hydrological studies carried out on the Stockton Creek Warner River revealed that its conductivity and pH levels are high and therefore the rivers water is aggressive to other substances. Metallic materials should therefore not be used in order to protect the structure of the new bridge. The use of resistant rock aggregates is recommended	Consultant
Flooding	The new bridges on the Stockton Creek and Warner River must be elevated at least 0.5 meter above the level of the existing bridges for flooding considerations	Consultant
Noise	Construction material for road surface structure with effective sound absorption should be used to reduce traffic noise.	Consultant
Water pollution	The surface runoff from the Project construction of the road will be drained into storm drains	Consultant
Landscape and ecology	Retaining wall will be built on the shoulder of the road to prevent erosion from surface runoff	Consultant

Table 8-8 Mitigation measures during construction phase

Environmental Issue	Mitigation Measures	Responsibility
Air quality	Dust will be generated in the course of construction work on the road. Therefore construction sites within 30 meters from sensitive receptors will be separated with tarpaulin or similar sheet to control the dust. Water spray will also be carried out intermittently to control dust from demolition.	Contractors
	Vehicles transporting construction materials (e.g. cement, earth, and stone) will be covered with tarpaulin.	
	Roads under construction where dust is generated will be watered twice daily	
Noise reduction	Machinery with low noise and/or sound absorption materials will be used as much as possible; for example, on-site generator with muffler or silencer. If necessary, working hours should be such that noise is reduced during the nighttime hours	
Disposal of debris from demolition	Debris from construction work will to be hauled in covered trucks and disposed of on sites (away from sensitive receptors) approved by the Environmental Protection Agency. The disposal sites identification and selection will be done in consultation with the EPA.	Contractors
Water quality	Removal of old overlay from the road should be done with due diligence to avoid excessive debris falling into the street.	Contractors
	At construction sites where public toilets are not available, temporary toilets and facility for sewage collection will be put in place and the waste be hauled to wastewater treatment plant by the Liberia Water and Sewer Cooperation	
	Clearance and restoration of the site for temporary facility will be carried out once the construction is finished	
Subsidence & Soil erosion	Grass will be grown on the shoulders of the road or retaining wall be built on them, to reduce the effect of erosion due to surface runoff	Contractors
Accident Prevention.	The construction area will be well marked with lights and signs to warn motorists and pedestrians away from danger areas.	Contractors
	Barriers will be erected and guards will be posted to prevent civilians from entering the construction area, falling through openings in the road, etc.	
	Construction workers will be required to wear safety helmets, safety shoes, and eye protection.	
	Flagmen will be on hand during operations involving trucks and heavy equipment moving into or out of the construction area, to prevent traffic jams and accidents.	
	The construction area will be well marked with lights and signs to warn motorists and pedestrians away from danger areas.	

Environmental Guideline for Contractors as a tool to enhance the mitigation measures during the construction stage is attached in **Appendix 4.**

Table 8-9 Mitigation measures during operation phase

Environmental Issue	Mitigation Measures	Responsibility
Air quality	The use of Tail-Gas purifier on vehicles be enforced as means to reduce emission of pollutants	EPA Liberia National Police
	The use of public transport be encouraged for higher efficiency of passengers	Ministry of Transport
Noise	The pavement be maintained regularly	Ministry of Public Work
	Vehicle with noise exceeding the standard will be requested to be repaired or use efficient silencer	EPA Liberia National Police

8.7 COST ESTIMATES FOR MITIGATION AND MONITORING

The cost estimates for mitigation measures and monitoring during construction and operation phases are provided below.

8.7.1 Mitigation Measures during Construction Phase

8.7.1.1 Air and Noise

Mitigation measures for air and noise during construction phase will be included in the Contractor's cost.

8.7.1.2 Water Quality

Ten temporary toilet facilities (mobile units) will be built for construction workers will be included in the Contractor's cost.

8.7.1.3 Soil Erosion Control.

Protection of the embankment slope from subsidence is covered in the Contractor's cost. Grass will be planted on the slope of the embankment.

8.7.1.4 Accident Prevention.

Costs of accident prevention awareness measures including the use of safety gears, guard posts with security, flags to alert pedestrians and motorists of danger, etc. will be inclusive in the Contractor's fee.

8.7.2 Mitigation Measures during Operation Phase

Mitigation measures to ensure air quality and reduce noise levels to acceptable standards will be borne by EPA in respect of purchase of appropriate materials and equipment.

8.7.3 Costs for Implementation of Monitoring

Table 8-10 Purchase of equipment

Kind of equipment	Type	Quantity	Unit cost USD	Total cost USD
Noise analyzer	Portable	2	400	800
Air quality Monitor	Mobile	1	1,000	1,000
Total				**1,800**

Table 8-11 Annual labor cost for compliance monitoring/inspection

Phase	Activity	Person/Site	Monthly allowance / person USD	Annual Cost /staff
Construction	Air quality	1	200	2,400
	Water quality	1	200	2,400
	Noise level	1	200	2,400
Operation	Air quality	1	200	2,400
	Water quality	1	200	2,400
	Noise level	1	200	2,400
Total				**14,400**

Table 8-12 Cost for compliance monitoring (samples analysis)

Phase	Medium	Samples/events	Cost for samples analysis USD	Annual Cost /staff
Construction	Air quality	6	100	600
	Water quality	6	200	1,200
	Noise level	32	50	1,600
Operation	Air quality	6	100	600
	Water quality	6	200	1,200
	Noise level	16	50	800
Total				**6,000**

CHAPTER 9

RECOMMENDATION TO THE GOVERNMENT OF LIBERIA

When the Project is implemented, it is recommended that the Government of Liberia should take following measures to prosecute Policy Framework harmonizing with Administrative Framework from an environmental and social consideration of view:

(1) Involuntary Resettlement

① To establish inter-ministerial organization which is solely responsible for involuntary resettlement. The proposed organization is presented as follows;

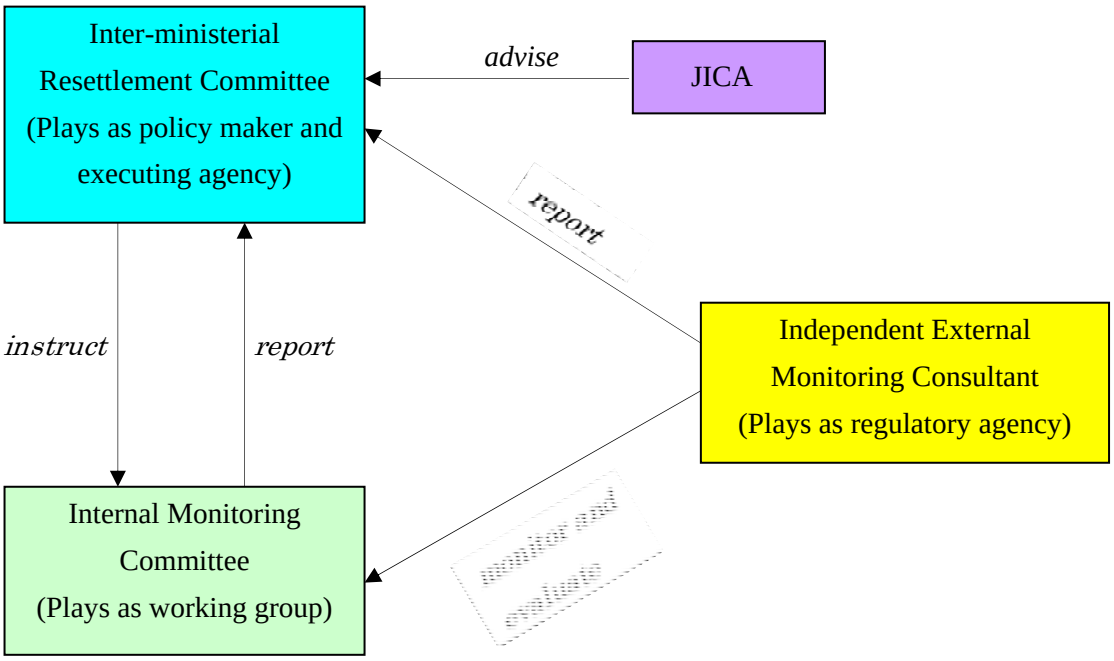


Figure 9-1 Skelton brief of IRC

Inter-ministerial Resettlement Committee : Responsible for resettlement policy making, budget preparation, and planning, coordinating, monitoring compensation, relocation activity on involuntary resettlement which arisen due to the implementation of the Project.

Member

- Ministry of Public Works/Infrastructure Implementation Unit
- Ministry of Finance
- Ministry of Lands, Mines and Energy
- Ministry of Health and Social Welfare
- Ministry of Planning and Economy Affairs
- Ministry of Justice
- Environmental Protection Agency

- Monrovia City Corporation

Internal Monitoring Committee : Composed of Infrastructure Implementation Unit of MPW to assist in the proper involuntary resettlement in accordance with the Resettlement Action Plan (RAP)

Member

- Ministry of Public Works/Infrastructure Implementation Unit
- Ministry of Finance
- Consultant

Others

Security : Constituted by security section of MPW to ensure security protection for the paid team and beneficiaries those will be compensated during RAP implementation process.

Support Staff : Support staff of Infrastructure Implementation Unit

Independent External Monitoring Committee : To carry out independent monitoring and evaluation on the entire RAP implementation

Member

- Liberian Refugee Resettlement and Reintegration Commission
- Liberian Marketing Association
- Representative of District/Township
- Liberian National Police
- Environmental Consultant
- University of Liberia

② To identify the PAPs in accordance with the physical field survey and facility design on reconstruction and formulate both EMP (Environmental Management Plan) and RAP (Resettlement Action Plan), and take necessary actions in accordance with EIA procedures required in the country.

③ To obtain the agreement from PAPs on involuntary resettlement and carry out compensation and relocation in accordance with prepared RAP before implementation of the Project.

Environmental Monitoring

① To provide sufficient materials to carry out environmental monitoring such water analysis, ambient air analysis, noise/vibration analysis those to evaluate the sustainable pollution level those stipulated in Liberia.

② To improve management capability by involving the wetland technicians, local community members and other stakeholders in; enhancing of knowledge and understanding of the

ecological processes, values and services of wetlands; training of how to manage and use their wetlands; developing an appropriate wetlands legislative framework for Liberia; developing planning and management systems for Liberia's wetlands.

Socio-Environmental Survey – Structures within the Left Right-of-Way
Somalia Drive, Monrovia

Commercial

Location to Road (Driving toward Redlight, Paynesville) Structure No.: **SD - -**

Left Side _____ Right Side _____ Date: Page _ of

Location: GPS Coodinate: _____ Photo No.: _____

Name of Primary Contact: _____ Contact Number: _____

Ownership: Own: _____ Rent: _____ Lease: _____ Other: _____

Do you have Title Deed Yes ( ) No ( ) When was the premises purchased or constructed:

Type Structure: Commercial Building Floor Area

Concrete Block w/Tin Roof, _____	Floor: _____	Sq. M.	_____
Concrete Block w/Thatch Roof, _____	Floor: _____	Sq. M.	_____
Wood Frame w/Tin Roof, _____	Floor: _____	Sq. M.	_____
Wood Frame w/Thatch Roof, _____	Floor: _____	Sq. M.	_____

Other, describe: _____

Assessed Value of Property: _____

How long have you lived at this place? _____ months / years Where did you live before: _____

Do you like living here? Yes_____ No _____ If you had an option, would you move? Yes _____ No _____

Do you think the road expansion is useful? ( ) Yes ( ) No How do you want to be resettled? _____

Would you want to move from this place? Yes_____; No _____ If yes, how soon? _____

Which of these problems affect you most?

_____ Environmental _____ Traffic
_____ Security _____ Safety
_____ All of these

Demographic Data
Employee

	Male Name	Age	Occupation
1			
2			
3			
4			
5			
6			
7			
8			
	Subtotal _____		
	Female		
1			
2			
3			
4			
5			
6			
7			
	Subtotal _____		
	Total _____		

Attach additional pages, if needed.

Socio-Environmental Survey – Structures within the Left Right-of-Way
Somalia Drive, Monrovia

Residential

Location to Road (Driving toward Redlight, Paynesville) Structure No.: **SD - -**

Left Side _____ Right Side_____ Date: Page _ of

Location: GPS Coodinate: _____ Photo No.: _____

Name of Primary Contact: _____ Contact Number:_____

Ownership: Own: _____ Rent: _____ Lease: _____ Other: _____

Do you have Title Deed Yes ( ) No ( ) When was the premises purchased or constructed:

Type Structure: Residential Building Floor Area

Concrete Block w/Tin Roof, _____	Floor: _____	Sq. M.	_____
Concrete Block w/Thatch Roof, _____	Floor: _____	Sq. M.	_____
Wood Frame w/Tin Roof, _____	Floor: _____	Sq. M.	_____
Wood Frame w/Thatch Roof, _____	Floor: _____	Sq. M.	_____
			_____

Others, describe: _____

Assessed Value of Property: _____

How long have you lived at this place? _____ months / years Where did you live before:_____

Do you like living here? Yes_____ No _____ If you had an option, would you move? Yes _____ No _____

Do you think the road expansion is useful? ( ) Yes ( ) No How do you want to be resettled? _____

Would you want to move from this place? Yes_____; No _____ If yes, how soon?_____

Which of these problems affect you most?

_____ Environmental _____ Traffic

_____ Security _____ Safety

_____ All of these

Demographic Data

Male	Name	Age	Education Level	Occupation/ Source of Income	Religion	Tribal Affiliation
1						
2						
3						
4						
5						

Female	Name	Age	Education Level	Occupation/ Source of Income	Religion	Tribal Affiliation
1						
2						
3						
4						
5						

Total _____

Attach additional pages, if needed.

C:\Documents and Settings\HENRY\Desktop\Survey Forms_Somalia Drive

Appendix 2

Attendance List of Stakeholder Meeting

The first of two meeting which started at about 12:00 pm at the Faith and Victory School system opposite the Jamaica Road intersection, brought together project affected parties (PAPs) from structures marked SD-A-001 to SD-A-337.A list of individuals who spoke at the scoping meeting as well as those in attendance is provided in the table below.

NAMES	ORGANIZATION/INSTITUATION
Mr. Michael V. Suah,	Manager Earthcons Inc
Mr. Mulbah D. Nupolu	Environmentalist Earthcons Inc,
Mr. Seymour N. Dweh	Earthcons Inc
Mr. Elijah Karnely	Ministry of Public Works, Zoning Director
Mr. Edsel E. Smith	Ministry of Public Works
Rev. Isaac W. Tarplah	PAP
David N. Wall	PAP; D. Wall Industry
MoiJarsa Sicarr	
Peter Wonpleh	
Augustine T. Konor	
Lammie N. Sheriff	
Morris B. Zehdeh	
Abdullyee Kenneh	
Isiah T. Wonpleh	
Gbantor S. Wall	
Esther Nyuma	
Francis Nyuma	
S. Caubert Watkins	
Edwin S. Dennis	
Mariam Lasu	
Rebecca Lomax	
Samuel O. Dee	
Rachel Terry	
J. Eddie Tequah	
Kansu Bilay	
Ezekiel Tanlanpole	
Samsoni Jalloh	
Haruna Bah	
Abraham Jalloh	
Yarney Sesay	
Augustine M. Homes	
John S, Saah	
Lewis W. Ponnie	
John V. Taweh	
Ansu A. Jabateh	
Bestman H. Toe	
Fofana Karamo	
Rosaline Tazy	
Jefferson M.K. Giddings	
Sanusy Diallo	
Robert W. Browne	
Isaac F. Tokpa	

NAMES	ORGANIZATION/INSTITUATION
Ben Kamara	
S. Varlee Massalay	
Gbella Chaples	
Momo Sambula	
Bruno Freeman	
Seko V.M. Kamara	
Abdulai Kamara	
Abraham Kromah	
Karbuneh Bayor	
Alphonso M. Kabah	
Boakai Baryor	
Alfred D. Gadeh	
Mulbah S. Sesay	
Rev. Samuel O. Daye-you, Sr.	
Mohammed M. Kamara	
Morris M. Konneh	
James Freman	
Mohammad Fofana	
Youba Kromah	
Samuel Dee	
Solomon Toe	
Alsey Savane	
Daniel Yeawolo	
Juah Sarwee	
Alie D. Kaba	
Mohammed A. suarane	
Alevv tha W. Nyepon	
Elijah K. Deno Sr	
Momo Pai	
George A. Corbin	
Harrison V. Gray	
Etta Russell	
Varney Ofei	
Sam Copper	
Jetro Tamba	

The second meeting took place at about 3:00pm at the Jimmy Jolocon High School along the Somalia Drive. It brought together project affected parties (PAPs) from structures marked SD-A-338 to SD-A-605.

NAMES	ORGANIZATION/INSTITUATION
Mr. Michael V. Suah,	Manager Earthcons Inc
Mr. Mulbah D. Nupolu	Environmentalist Earthcons Inc,
Mr. Sseymour N. Dweh	Earthcons Inc
Mr. Elijah Karnely	Ministry of Public Works, Zoning Director
Mr. Edsel E. Smith	Ministry of Public Works
Solomon Baoh	
Varney Kamara	
Jerry Johnson	
Adu Mendiamassa	
John Fayiah Tengbeh	
William Boway	
Lincoln Doe	
John Fayiah	
Aliman Keita	
Somukai Fofanah	
Prince A. Kun	
Songo Kamara	
Harris O.Williams Jr.	
Sylvester Seton	
Nancy Bestman	
Asata Silay	
Morris Kromah	
Peter Pao Wilson	
German Jackson	
Mr.Zina Gray	
George Seibeh	
Abraham B.Sambola	
Sam O.Troko	
Michael Flowers	
James Gbanyar	
Luseni Sambolass	
Roland L.Gotolo	
Emmanuel Moore	
Abdrim-men	
Jonah Kolla	
Boakai Dorley	
Eric G.Keller	
Rufus Ya-youn	
Antony Poul	
T.Nah Taupe	
John Tambah	
Ma-Kula Dolleh	
Emmanuel B.Richards	
Salia V.Kamara	
John T.Weah	
S.O.Daston	
Irene Toe	
Charles J.Kingsley	
Barbee Scott	
Edith D.Kamara	

NAMES	ORGANIZATION/INSTITUATION
Lawrence O.Parmore	
Fayiah Saah	
Bandu Mendiamara	
Thomas Banjura	
Abu Kanneh	
Ishmeal V.Kenneh	
David J.B.Mulbah	
Patrick S.Nyumah	
Postm.Thomas F.Follah	
Evelyn K.Blay	
Austine Osuti	
Paul K.Iooko	
Nyah Willieraye	
Cephus Kromah	
Henry Z.Richards	
Christopher Maine	
Vakaba M.Fofana	
Murphy Coleman	
Foleys Komara	
Jamse F.Travis	
Francis F.Kietan	
Amos K.Ndwuyah	
David L.Wils	
Adolphus Kai	
Kosum Terllewule	
Emmanuel David	
Daniel B.Lebbie	
Esther J.Douwana	
Luey M.Tarwo	
Moses P.Jalatee	
Patience Johnson	
Chellas Bestman	
Tamba John Kenneh	
James T.Fayiah	

The third community meeting was held Saturday, December 12, 2009, at the Monrovia Vocational Training Center (M.V.T.C.), along the Somalia Drive. Occupants of structures marked SD-A-885 to SD-A-936

NAMES	ORGANIZATION/INSTITUATION
MR MICHAEL V. SUAH	EARTHCONS,GENERAL MANAGER
MR SEYMOUR N. DWEH	EARTHCONS
MR ELIZAH KARNLEY	ZONING DIRECTOR,M.P.W
MR EDSEL SMITH	ASST MINISTER,M.P.W
MAMU KROMAH	
MANIE TURAY	
AUSTIN BENDA	
JOSEPH NEWTON	
ZORYOU D. GIBSON	
OZULU TENGBEN	
NOWADY TOURE	
AHMED M. KENNEH	
AMARA SANOE	
MAHAMUDO S. FOFANA	
ALPHA KROMAH	
MOHAMMED A. BILITY	
FANTA SHERIFF	
FASSU KROMAH	
JOHN E. DERICK	
LYDIA BUAH	
ANSU BILITY	
FATUMAH DUKULY	
LOSINE A. SHERIFF	
ABDULLAH KENNEH	
VARNEY TULAY	
BLAMA SIRYON	
MOHAMMED BILITY	
JUSTICE H.BROWNE	
KARLEE KAVRE	
SIAMA SAAH	
ELIZABETH WILLIAMS	
ESTHER KANNEH	

The fourth community meeting was held Saturday, December 12, 2009, at the Jerusalem Assembly of God School, opposite the Monrovia Transit Authority (MTA). Occupants of structures marked SD-A-606 to SD-A-884

NAMES	ORGANIZATION/INSTITUATION
MICHAEL V. SUAH	EARTHCONS ,GENERAL MANAGER
SEYMOUR N.DWEH	EARTHCONS
MR ELIJAH KARNLEY	ZONING DIRECTOR,M.P.W
MR EDSEL SMITH	ASST MINISTER,M.P.W
PST DAVID S. KALAMA	
ELDER KARTY GAYSUE	
REV. D.JARCO JOEDOE	
SEKOU KANNEH	
JUSTICE I.IGBINOBA	
EMMANUEL J. JOHNSON	
SUNDAY IGDOGHOR	
SAMAH H. LAVALIE	
MRS. ELIZABETH I KOLLIE	
ARTHUR L. TAILLEY SR.	
FACIKU D. HORACE	
FRANCIS R. CHIKSON	
MUSA KAMARA	
HENRY I. ANOKA	
TAMBA HARRIS	
MOHAMMED ABRAHAM	
ABRAHAM V. DUKULY	
HAWA KAMARA	
EMMANUEL TOE	
OMAGUSTINE F.BORBOR	
THOMAS G. YANZEE	
JAMES BONDO	
FLOMO TOKPAH	
FALLAH BROWN	
JERRY P.S.W. TWEH,SR	
WATTA ROBERTS	
SAAH ROBERTS	
SOLO LUCINY	
EBENEZAR M. KORTE	
FAYIAH S.BORBOR	
MAMUBULU PALAY	
JOSEPH G. SUBAH	
L.VICTOR GOANEH	
JAMES K.DENNIS	
ROSE KAYDEE	
THOMAS F. CHORLU	
EMMANUEL S. CHORLU	
TAMBA SIAHDU	
HAYE KAMARA	
S. ABUBAKAR F. SHERIFF	
ARTHUR MONAH	

NAMES	ORGANIZATION/INSTITUATION
MUSTPHA M. KAMARA	
MA.SIRYAN TURAY	
MRS MAGRET KING	
OLIVER JOHNSON	
EMMANUEL BUAH	
WINNIE GOTOE	
MOSES SHERIFF	
KAYPEE WILLIAMS	
RUFUS BUAH	
PHILIP JOHSON	
CATHERINE BROWN	
ISMEAL B. TURAY	
VAMUYAN TURAY	
AMARA KONNEH	
ABRAHAM KAMARA	
KEBBEH M. FOKO	
KEMAH ROBERTS	
F.SAA TAYLOR	
FATU ROLLAND	
BOYD TAYLOR	
ALOYON A BAYON	
JOSEPHINE MACERTHY	
MOMOH K.SEI	
LOUIZA N. FREEMAN	
MATTHEW K. WILSON	
WATTE SHERIFF	
FATI TAYLOR	
YVONNE LORSEH	
GEORGE YEANZAH	
MOHAMMED CISSE	
JEBBEH THOMAS	
MARY JALLAH	
L.LEROY JONES	
JONAH S. NYUMAH	
ABE B. KAMARA	
FINDA KETTOR	
RITA M. DAVID	
NYAMADAN SAWOUR	
FANTA KEITA	
MORRIS SECIMOWLOR	
EMMANUEL SAYDAH	
ABRAHAM SNARTON	
FAYIAH SAAH	
PATIENCE SAAH	
CHARTINE CLARK	
MOIYONU KONAH	
THERESA TEESORH	
ALEXANDER GIBSON	
BLOMA KEITA	
DAVID L.WILE	

The fifth community meeting was held Saturday, December 19, 2009, at the Calvary Temple School, along the Somalia Drive. Occupants of structures marked SD-A-937 to SD-A-1099

NAMES	ORGANIZATION/INSTITUATION
MR MICHAEL V. SUAH	EARTHCONS,GENERAL MANAGER
MR SEYMOUR N. DWEH	EARTHCONS
MR ELIJAH KARNLEY	ZONING DIRECTOR,M.P.W
MR EDSEL SMITH	ASST MINISTER,M.P.W
JAMES PENNGAR	
EUGENE FORPAYEA	
TIMOTHY KPAYEE	
KAMAH M. BOLEY	
FATU BNOIMAH	
ORETHA K. BORVAH	
BALLAH BONWEE	
GEBAH FOFANA	
ADAMA KEITA	
KORMASSA BORVAH	
VICTORIA BORVAH	
KINGSLEY TWUM – AUTNI	
PTER BELEKOLLIE	
OTIS ROBERTS	
JAMES GBAPPY	
LOUIS A. DAVIS	
JERRY G.VAH	
HENRY A. WALKER	
JANELL EASTBURN	
JOSEPH K. FLOMO	
TERRANCE M. DOKIE	
FELICIA ROBERTS	
WILLIAMS POWELL	
SHEIK KAMARA	
MUSA SAYSAY	
SEKOU KAMARA	
JAMESBORBOR	
NSLSON VAYE	
CHRISTIANA VAYE	
MORRIS S. SESAY	
BALLAH JASPER	
OUSIMANE M. SHERIFF	
JOSEPH B. JUAH	
GEORGE TOGBAH	
WESLEY GORGE	

The sixth community meeting was held Saturday, December 19, 2009, at the Paynesville Central Academy, along the Somalia Drive. Occupants of structures marked SD-A-1100 to SD-A-1295

NAMES	ORGANIZATION/INSTITUATION
MR MICHAEL V. SUAH	GENERAL MANAGER,EARTHCONS INC.
MR SEYMOUR N. DWEH	EARTHCONS INC.
MR ELIJAH KARNLEY	ZONING DIRECTOR, M.P.W
MR EDSEL SMITH	ASST MINISTER,M.P.W
BILL N.KENNAY	
BABY GOLD	
MOSES NYUMA	
PST SAMUEL K.TRIEKU	
D.HELENA TIKPAH	
JAMES L.MORRIS	
SIMON DOE	
MOSES F. NDORBOR	
SAMPSON B. YEABAH ,SR	
PETERSON M. WEAH	
SAYBAH KABAH	
JOSEPHINE JACKSON	
ALEX DORLEY	
JORDAN J. GONGAR	
D.STANLEY TUMOE	
KARYEE GEORGE	
SIAFA BEYAN	
PAULINE HARRIS	
HENRY WAWAH	
AUSTIN TARLESSON	
JORDAN S. MOORE	
BENDU RICHARDS	
ALHASSANE DIALLO	
BANBA JABATEH	
AMBROSS KOFFA	
JERRY T. DUPLEY	
NATHANIEL DARSAW	
MIATTA MASSAQUOI	
FRANCIS T. SAMMY	

Appendix 3

REPUBLIC OF LIBERIA
MINISTRY OF PUBLIC WORKS (MPW)

RESETTLEMENT POLICY FRAMEWORK
FOR

THE RECONSTRUCTION OF SOMALIA DRIVE
IN
MONROVIA, REPUBLIC OF LIBERIA

JANUARY 2010

Table of Content

List of Table

Page

Acronyms and Abbreviations

1	RPF =	Resettlement Policy Framework
2	TOR =	Terms of Reference
3	MPW =	Ministry of Public Works
4	MUTCD =	Manual of Uniform Traffic Control Devices
5	EPA =	Environmental Protection Agency
6	LRRRC =	Liberia Refugee Resettlement and Reintegration Commission
7	RAP =	Resettlement Action Plan
8	PAPs =	Project Affected Persons
9	M & E =	Monitoring and Evaluation
10	JICA =	Japan International Cooperation Agency

Definitions

Children: All persons under the age of 18 years according to international regulatory standard (Convention on the Rights of Child 2002).

Community: A group of individuals broader than households, who identify themselves as a common unit due to recognized social, religious, economic and traditional government ties or shared locality.

Compensation: Payment in cash or in kind for an asset or resource acquired or affected by the project.

Cut – off – Date: The date of completion of inventory of losses during the preparation of the RAP. The PAP will be informed of the cut-off-date for the sub-project component, that any one moving into the sub-project area after that date will not be entitled to compensation and assistance under the project.

Economic Displacement: A loss of productive assets or usage rights or livelihood capacities because such assets/rights/capacities are located in the project area.

Entitlement: The compensation offered by RAP, including: financial compensation; the right to participate in livelihood enhancement programs; housing sites and infrastructure; transport and temporary housing allowances; and, other short term provisions required to move from one site to another.

Female Headed Household: A household where a woman is the principal earning member of the family.

Head of the Household: The eldest member of core family in the household, for the purpose of the project.

Household: A group of persons living together who share the same cooking and eating facilities, and form a basic socio-economic and decision making unit. One or more households often occupy a homestead.

Involuntary Resettlement: Resettlement without the informed consent of the displaced persons or if they give their consent without having the power to refuse resettlement.

Lost income opportunities: Lost income opportunities will be assessed and compensated on the basis of the losses caused by the project. If a household or family has several adult members who will lose their incomes, all will be compensated.

Operational Directive 4.30: Embodies the basic principles and procedures that underlie the World Bank Group approach to involuntary resettlement associated with its investment projects.

Physical Displacement: A loss of residential structures and related non-residential structures and physical assets because such structures/assets are located in the project area.

Private property owners: Persons who have legal title to structures, land or other assets and are accordingly entitled to compensation under the Land Act. In the case of a joint title deed, the replacement land or cash compensation will given to the joint holders who will be treated as a unit.

Project – Affected Community: A community that is affected by the project.

Project –Affected Household: All members of a household, whether related or not, operating as a single economic unit, who are affected by the project.

Project-Affected Person: Any person who, as a result of the project, loses the right to own, use, or otherwise benefit from a built structure, land (residential, agricultural, or pasture), annual or perennial crops and trees, or any other fixed or moveable asset, either in full or in part, permanently or temporarily.

Rehabilitation: the restoration of the PAPs resource capacity to continue with productive activities or lifestyles at a level higher or at least equal to that before the project.

Relocation: A compensation process through which physically displaced households are provided with a one-time lump-sum compensation payment for their existing residential structures and move from the area

Replacement Cost: The amount of cash compensation sufficient to replace lost assets and cover transaction costs, without taking into account depreciation or salvage value.

Resettlement Action Plan (RAP): Documented procedures and the actions a project proponent will take to mitigate adverse effects, compensate losses, and provide development benefits to persons and communities affected by a project.

Resettlement Assistance: Support provided to people who are physically displaced by a project. This may include transportation, food, shelter, and social services that are provided to affected people during their resettlement. Assistance may also include cash allowances that compensate affected people for the inconvenience associated with resettlement and defray the expenses of a new locale, such as moving expenses and lost work days.

Resettlement Policy Framework (RPF): Provides the guidelines for the implementing agency (MPW) on how to recognize needs for resettlement planning and how to conduct it and implement the results.

Resettlement: A compensation process through which physically displaced households are provided with replacement plots and residential structures at one of two designated resettlement villages in the district. Resettlement includes initiatives to restore and improve the living standards of those being resettled.

Squatter: Squatters are landless households squatting within the public/private and for residential and business purposes.

Value: The value of property, land and the level of compensation for all the affected persons

Vulnerable: People who by virtue of gender, ethnicity, age, physical or mental disability, economic disadvantage, or social status may be more adversely affected by resettlement than others and who may be limited in their ability to claim or take advantage of resettlement assistance and related development benefits.

Executive Summary

The Liberian Government made request for Japan's Grant Aid in August 2009 for the development of the road sector. In its submission, the Government of Liberia recognized the critical importance of both the Somalia Drive Road and the Johnson Street Bridge in alleviating traffic congestion and enhancing economic development. However, the Government has prioritized the Somalia Drive rather than the Johnson Street Bridge because of the historical importance of the Providence Island. Widening the Somalia Drive would also encourage the use of the international transport corridors from the Freeport of Monrovia to neighboring Guinea and Cote d' Ivoire through Ganta and Loguato respectively.

The reconstruction and proposed 4- lane widening of Somalia Drive may require the acquisition of land and site. This project will be classified as "Category A" in accordance with the Japan Cooperation Agency (JICA) Guideline because of the expected large scale of involuntary resettlement.

This Resettlement Policy Framework (RPF) provides the guidelines for the implementing Agency (MPW) on how, to recognize needs for resettlement planning and how to conduct it and implement the result. This Resettlement Policy Framework (RPF) is specifically for the conditions of the Proposed Reconstruction of the Somalia Drive Road Project.

The Resettlement Policy Framework includes:

- Principles and Standards from the Japan International Cooperation Agency (JICA) Guideline for Environmental and Social consideration;
- Procedures for analyzing situations and preparing Resettlement Action Plan (RAP) or abbreviated RAP; and
- Sample Terms of Reference (TOR) for RAP including outline of content of the RAP Document.

CHAPTER 1 INTRODUCTION

The Government of Liberia made request for Japan's Grant Aid in August 2009 for the development of the road sector. In its submission, the Government of Liberia recognized the critical importance of both the Somalia Drive Road and the Johnson Street Bridge in alleviating traffic congestion and enhancing economic development. However, the Government has prioritized the Somalia Drive rather than the Johnson Street Bridge because of the historical importance of the Providence Island

This document provides a Resettlement Policy Framework (RPF) for the proposed works for the Reconstruction of Somalia Drive Project undertaken by the Government of Liberia through the Ministry of Public Works. The project is being undertaken with founding from the Government of Japan when it is granted.

The Resettlement Policy Framework (RPF) for the Reconstruction of the Somalia Drive project will define roles, responsibilities, procedures and compensation rates to guide the preparation of the individual Resettlement Action Plan (RAP). The preparation of a Resettlement Policy Framework (RPF) for the Reconstruction of the Somalia Drive Road is the appropriate and designated tool for involuntary Displacement.

1.1 Background of the Project

Somalia Drive which is located in the Northern part of the Mesurado wetland had 4-lanes carriageways originally, however only 2-laness were rehabilitated by the World Bank Grant in 2008. The land use along the road side is mainly for commercial purpose including markets, petit traders, nearby stalls and garages. The vicinity consists of many narrow community alleys which connect directly to Somalia Drive, and suffered from traffic congestion by vehicles from the alleys. Daily traffic volume is 24,500 PCU per day at the eastern section of Somalia Drive in 2009. It is estimated that the volume in 2014 will become over 150% of road capacity at all stretches and traffic condition will become more serious. The congestion also causes severe economic losses; therefore the upgrade of the road capacity to secure the smooth traffic flow is urgent and necessary.

This project will be classified as "Category A" in accordance with the Japanese International Cooperation Agency (JICA) Guideline because of the expected large scale of involuntary resettlement.

1.2 Project Description

The Government of Liberia's preference for the Somalia Drive Road Project is based on the potentially far- reaching socio-economic impacts its construction would have on stimulating domestic economic activities and fostering regional trade. As a vital arterial link between the Free port of Monrovia and the large Red light market, the proposed 4-lanes road would alleviate traffic congestion, facilities the transport of much more people and goods and likely lead to the expansion of the Free port. Widening the Somalia Drive would also encourage the use of the international transport corridors from the Freeport of Monrovia to neighboring Guinea and Cote d' Ivoire through Ganta and Loguato respectively. The activities would in turn general hefty financial returns, increased economic growth and improve access for our citizenry.

1.3 Objectives of the Resettlement Policy Framework (RPF)

The objective of the Resettlement Policy Framework (RPF) is as follows:

- The RPF is to provide guidelines for implementing agency (MPW) on how to recognize needs for resettlement planning and how to conduct it and implement the results; and
- The RPF will define roles, responsibilities, procedures and compensation rates to guide the preparation of the individual Resettlement Action Plan (RAP).

1.4 Project Location

The Somalia Drive Road is located in the Northeastern part of the city of Monrovia in Montserrado County.

1.5 Justification for Triggering Resettlement

The widening of the Somalia Drive Road to 4-lanes and the reconstruction of bridges may require the acquisition of land and sites. This project will be classified as "Category A" in accordance with the Japanese International Cooperation Agency (JICA) Guideline because of the expected large scale of involuntary resettlement.

The reconstruction of road, bridges and provision of related services may require land acquisition. JICA Environment and Social Guidelines provide the guidelines to be followed. JICA Guideline detail issues of involuntary resettlement, emphasizing the severe economic and environmental risks involved if unmitigated. JICA policy objectives urge that involuntary resettlement be avoided whenever possible. If unavoidable, the displaced persons need to:

(i) Share in project benefits;

(ii) Participate in planning and implementation of resettlement programs; and

(iii) Be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to level prevailing prior to the beginning project implementation, whichever is higher.

The JICA policy covers direct economic and social impacts that both result from JICA assisted investment projects. This covers taking of land which may result in relocation or loss of shelter, assets, access to assets or loss of income resources or means of livelihood whether or not the affected persons must move to other locations.

1.6 The Resettlement Policy Framework (RPF) Report

The Resettlement Policy Framework covers the following:

- Project Description;
- Policy Trigger;
- Liberia's Legal Framework and Land Laws;
- Mitigation Instruments;
- Procedures for Identification of Impacted Persons;
- Methods for the Resolution of potential conflicts or grievances;
- Responsibilities for the Implementation of mitigation measures;
- Monitoring Arrangements; and
- Conclusions and Recommendations;

CHAPTER 2 LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 Legal Framework

The Constitution and other Liberian Laws provide a basis for resettlement and compensation. This section presents a detailed description of the legal framework for the implementation of involuntary resettlement project in Liberia. The following Liberian Laws comprise the legal framework:

(i) Liberian Constitution 1986

Article 22 (a) and (b) of the Constitution vests in all individuals have the right to own property either on individual basis or in conjunction with other individuals, as long as they are Liberian Citizens. This right however does not extend to mineral resources on, or beneath the land.

(ii) Land Act 1856

Prior to independence, land acquisition and distribution was done on the basis of relationship and class system. Opposition to this system of land tenure led to the establishment of a set of rules known as the "digest of law to govern the affairs of the settlers in terms of land distribution" This later culminated into the Land Distribution Act of 1856 which removed the restriction to land distribution based on citizenship. This Act was repealed by the 1950 Land Act which restricted land ownership to citizens and naturalized citizens especially those of Negro decent.

(iii) County Act 1969

This Act officially distributed and demarcated land boundaries in Liberia. Prior to the Act, counties were created through political means. For instance the four oldest counties in Liberia – Montserrado, Sinoe, Grand Bassa and Maryland were all products of political events.

(iv) Land Acquisition Act 1929

The Act lays down the procedure for obtaining rights to any piece of land in Liberia through purchase. The Act distinguishes land in Liberia into two categories Viz: the Hinterland, and the County area.

2.2 The procedure for obtaining land located in the Hinterland

(i) Obtain Consent of Tribal Authority to have a parcel of land deeded to the individual by the Government;

(ii) Pay a sum of money as a taken of his/her intention to live peacefully with the

tribesmen;

(iii) Paramount or Clan chief signs a certificate which purchaser forwards to the office of the District Commissioner (who also acts as the Land Commissioner for the area); and

(iv) The District Commissioner after satisfying himself that the land is not encumbered in any way approves that the land be deeded to the applicant and issues a certificate to that effect.

2.3 The procedures for obtaining land located in the County Area is as follows:

(i) Apply to the Land Commissioner in the county in which the land is located; and

(ii) The Commissioner shall issue a certificate if he is satisfied that the land is unencumbered.

Upon completion of the above steps, the purchaser shall pay the Bureau of Revenues the value of the land valued at a minimum rate of fifty cents per acre. He shall obtain and submit a receipt to president for an order to have the land survey. A deed will then be drawn up by the Land Commissioner, authenticated, and given to the purchaser.

2.4 Administrative Framework

The institutions responsible for Resettlement Action Plan (RAP) implementation are highlighted below with their mandates;

(i) Ministry of Public Works

This Ministry has the responsibility for the design, construction and maintenance of roads, highways, bridges, storm sewers, public buildings and other civil works. Other functions include urban and town planning, provision of architectural and engineering of infrastructure required for Government. The Ministry has a Special Implementation Unit (now transformed in an Infrastructure Implementation Unit) charged with the implementation of both urban and rural infrastructure works on behalf of the Ministry

(ii) Ministry of Planning and Economic Affairs

This Ministry is responsible for national development planning, project preparation and coordination. It provides technical guidance to all governmental agencies in preparation of development programs and projects.

(iii) Ministry of Health and Social Welfare

The Department of Environmental and Occupational Health in this Ministry handles matters relating to water and sanitation. It conducts sanitary inspections in public eating places including drinking water surveillance; construction and/or supervision of water wells and pit latrines and the promotion of community health education. The Department of social welfare handles repatriation and resettlement of internal and external displaced people in Liberia.

(iv) Ministry of Lands, Mines and Energy

The Ministry of Lands, Mines and Energy supervises the development and management of water resources and conducts scientific and technical investigations required for environmental assessments. The implementation of water and sanitation activities is done through the Department of Mineral and Environmental Research. The Ministry's mandate dictates that it must be involved in Special projects on the evaluation of urban sanitation, particularly the provision of guidance for geotechnical investigation of solid wastes landfill disposal sites. The Bureau of Land Survey of this Ministry is the technical section of the Government that handles land demarcation and land survey.

(v) Environmental Protection Agency (EPA)

The EPA is mandated to set environmental quality standards and ensure compliance with pollution control. If is responsible for the provision of guidelines for the preparation of Environmental Assessments and Audits, and the evaluation of environmental permits. These may include certification procedures for landfill and other activities potentially dangerous to the environment.

(vi) Liberia Refugee Resettlement and Reintegration Commission (LRRRC)

The LRRRC has the mandate to resettle and reintegrate Liberian Refugees that were externally displaced during the Liberian civil war. The LRRRC is also responsible for resettlement of disaster victims in time of natural or man-made disaster. These may include acquisition of land for refugees or disaster victims.

2.5 Resettlement principles According to JICA and Liberian Land Acquisition Policies

2.5.1 JICA Requirements

JICA requirements are details in the Guidelines for Environmental and Social Considerations. The directives outline the following principles:

(i) Involuntary resettlement should be avoided where feasible or minimized by exploring alternative project designs. If not feasible to avoid resettlement, resources are to be provided to enable the displaced persons to share in the project benefits;

(ii) The population to be affected by the project are those who may lose as the consequence of the project, all or part of their physical and non-physical assets including homes, farms, productive land, properties, income earning opportunities, social and cultural relations and other losses that maybe identified in the process of resettlement;

(iii) All population impacted by the project should be consulted and given the opportunity to participate in planning and implementing resettlement programs;

(iv) All population affected by the project are entitled to be compensated for their lost assets and incomes at full replacement cost and assisted in their efforts to improve their

livelihoods and standards of living to pre-project standards;

(v) All affected population are equally eligible for compensation and rehabilitation assistance, irrespective of tenure status, social or economic standing and without and discrimination;

(vi) The JICA policies stipulate that displacement or restriction of access to resources must not occur before necessary measures for resettlement are put in place. This includes provision of compensation and other assistance required for relocation prior to displacement to new sites with adequate facilities. For compensation purposes, preference should be given to land-based strategies for displaced persons whose livelihoods are land-based with land equivalent to the advantages of the land taken. If land is not available, options built around opportunities for employment should be provided in addition to cash compensation for land and other assets lost. In case of land-based livelihoods, cash payment maybe appropriate if the land taken is a small fraction of the affected asset and the residual is economically viable particularly, and the displaced persons have the opportunity to use such markets. Cash compensation should be sufficient to replace the lost land and other assets at full replacement cost in local markets.

(vii) In all cases, the displaced persons and host communities receiving them are to be provided with timely and relevant information, consulted on resettlement options and offered opportunities to participate in planning, implementing and monitoring resettlement and appropriate mechanisms for grievance redress are established. If is also important that in resettlement sites or host communities, public services and infrastructure are provided and measures are to be taken to the extent possible to preserve the social and cultural institutions. Special measures are to be taken to protect socially and economically vulnerable groups and people living in extreme poverty.

2.5.2 Liberian Land Acquisition Policies

According to legal and policy requirements of Liberia, particularly those related to land acquisition and resettlement of persons affected by development projects, the different land regulations as outlined in section 2.1 provide guidance and steps to be taken. The Land Acquisition Act of 1929 detailed steps to be taken for land acquisition and payment of compensation for claimants whether in cash or land for land.

Two other applicable laws that relate to the resettlement of people to be affected by infrastructure development are the Zoning Law and the Real Property Law. The Zoning Law prescribes designated sites for construction of specific structure. Construction of unauthorized structures is violation under this statute. Section 102 of the Law requires that Zoning Permit be obtained prior to construction of any structure. However, section 72 of the same statute also provide that a Temporary Permit could be obtained from the Zoning Council for a period not more than one year, to construct a non-conforming structure.

The Real Property Laws of Liberia is based upon the doctrine of Eminent Domain which holds that Government owns the land within the borders of Liberia and that the Government of Liberia is the original granter of land in Liberia.

Under the Real Property Laws of Liberia the only instrument of Title is the Deed. Squatter Right does not cover Title. Squatter Right may be a city ordinance oriented and it is not a law. Squatter's Right is only intended as a temporary arrangement for accommodation and a Title. The Government of Liberia granted land to setters and aborigines based upon the doctrine of preemption, the measure in which prior occupancy accompanied by improvement gives superiority in ownership to land (8LLR 4`6). Preemption has been abolished with the growth of population and now public land must be purchased from the Government in order to have Title. (15LLR424 3YLL).

Worth noting in passing is the fact that in 1948, the William V.S. Tubman Administration demarcated public land in the then Hinterland among the tribal settlers by districts, clans, and towns, and made the tribal settlers, trustees of the public land of their respective locales. This makes the acquisition of public land in the Hinterland, now, county areas easier by tribal land certificate from the tribal authority.

From the proceeding discussion it is worth concluding that mere settlers on public land do not have legal right to claim against the Government for improvement done on Government/public land based upon squatter's rights, except they have Title to some land from the Government in which case when Government needs such land, the owner is compensated. In the instant case the silence and acquiescence to the citizens notorious, open and peaceful occupancy caused the citizen to change their position to invest their resources in the public, the land owned by their own Government that owes them protection, no matter their status.

As citizens to be displaced by act of the Government they may request the Government of re-settlement benefit and not a payment of invested resources to better life the relocated premises, and this will require intervention, mediation and not court proceedings.

CHAPTER 3 COMPENSATION ELIGIBILITY

All Project Affected Persons (PAPs) whether public or private or cooperative, who will lose land, buildings, houses, crops or sources of income¸ will be compensated according to the types and amount of their losses. People with no titles to land will be compensated according to the JICA's Guidelines requirements and hence, squatters will also be supported so that they can lead a life at least equal to the one they had before they became affected by the project.

If the project encroaches on areas used for farming alternative land must be assigned such use. The cut – off date for compensation eligibility will be set once all detailed measurements have been completed. The cut-off date usually starts from the date of announcement of intention. Cultivating land, constructing buildings or settlements in the affected areas after the cut-off date will not be eligible for compensation. The cut-off date will be decided by Compensation and Relocation Committee in the shortest time possible so that affected persons to be able to restore their normal life as quickly as possible.

3.1 Procedures for Identification of Impacts

The Government identifies a particular piece of land for construct a road. If is the duty of the Ministry of Public Works to assess the legal status of the land using the Land Acquisition Assessment Guidelines (Annex 1). This is a very important tool that assesses the status of the site (public land, tribal land, Leased land, individual land and other). Based on this assessment, the assessor provides recommendations on whether Government should look for another site, if donated by individuals, there should be a legal document showing such donation, if there is a problem on the land, the project will be held back until the problem is solved or an alternative site is provided. The Land Acquisition Assessment findings should be signed by the Assessor, the local community and the Ministry of Public Works.

3.2 Institutional Organization for Implementation

As reported earlier, the procedures for land acquisition for public purposes in Liberia involves the formation of Compensation and Relocation Committee which will be responsible for the planning, coordinating and monitoring compensation and relocation activities.

The committee will be composed of:

- The Ministry of Lands, Mines & Energy;
- The Ministry of Public Works;
- The Ministry of Health and Social Welfare;
- The Ministry of Planning and Economic Affairs;
- The Ministry of Justice;

- The Infrastructure Implementation Unit;
- The Environmental Protection Agency;
- Liberia Refugee Resettlement and Reintegration Commission; and
- Representative of Project Affected Persons (PAPs).

The above is the standard procedure in Liberia. However, experience in such localities and information gathering from the community showed that such structure is needed in many cases. As mentioned earlier, all tribal areas or counties have reserved land or tribal perimeter to be used for village expansion or for services. Such land is communally owned and under the control of tribal chiefs or county superintendent with consultation from the community. Hence, all local Government Officials, Chief, County Development Committee and the Compensation and Relocation Committee established by the project will work together to decide on land acquisition using the Land Acquisition Assessment tool. The decision will be the responsibility of the Government and the Ministry of Public Works in collaboration with the County Development Committee and the concerned locality.

3.3 Grievance Redress Mechanisms

A grievance redress committee will be set-up by the Ministry of Public Works to address complaints arising from the implementation of the resettlement action plan (RAP). The committee will ensure that all complaints received in writing (or written when received verbally) are documented and addressed document showing such donation, if there is a problem on the land, the project will be held back until the problem is solved or an alternative site is provided. The Land Acquisition Assessment findings should be signed by the Assessor, the Local Community and the Ministry of Public Works.

3.3.1 Objectives of the Grievance Procedures

The grievance redress procedure provides a mechanism to mediate conflict and cut down on lengthy litigation, which often causes delay in such infrastructure projects. It will also provide people who might have objections or concerns about their assistance, a public forum to raise their objections and through conflict resolution enable issues to be discussed adequately. The committee will undertake consultations with PAP and other interested parties. The committee will provide ample opportunity to redress complaints informally. Grievances likely arise include:

(i) Failure to register all Project Affected Persons (PAP);
(ii) Losses not identified correctly;
(iii) Inadequate assistance or not as per entitlement matrix;
(iv) Dispute about ownership;
(v) Delay in disbursement of assistance; and
(vi) Improper distribution of assistance.

3.3.2 Grievance Mechanism

Grievance related to any aspect of the project will be handled through negotiation, which will aim at achieving a consensus settlement. Affect project affected person (PAP) may follow the procedures outline below:

(i) Grievance will be filed by persons affected by the project with the Grievance Committee of MPW which will act on it within fifteen (15) working days on receipt;

(ii) If no understanding or amicable solution is reached, or the affected person does not receive a response from the within fifteen (15) working days, the affected person can appeal to a designated office in the of the Ministry of Public Works, which should act on the complaint/grievance within the fifteen (15) working days of the day of its filing; and

(iii) If an affected person is not satisfied with the decision received, he/she can as least resort appeal to a court of competent. Affected persons will be exempted from all administrative and legal fees incurred pursuant to grievance redress procedures.

It is the responsibility of the grievance redress committee to satisfactorily address all complaints brought by the project affected persons, where an affected person is not satisfied with the decisions of the committee; such person has an opportunity to seek the intervention of the RAP management team of MPW to address the grievance.

The Resettlement Negotiation Committee will play a significant role in grievance management. In addition to arranging compensation packages, they will also assist in managing frequent questions, concerns and grievances at Resettlement Negotiation Committee meetings. MPW grievance committee will also present grievances for discussion and resolution during collaboration meetings and all discussions will be documented for future reference.

Persons with grievances are entitled to seek redress under the Liberian Law for grievance resolution. The MPW will track each of the above cases closely and suspend all compensation processing and payments pending resolution. Where feasible, the committee could invite the parties involved in the case to a resolution meeting.

All cases/complaints related to the physical asset inventory or compensation entitlement are related to the entitlement cut-off date and the determination of whether particular assets are eligible for compensation or not. For cases involving the physical asset inventory or compensation entitlement, the MPW will review all documentation related to the PAP including signed and witnessed asset inventories, photographs, and compensation calculations. The MPW Compensation Committee will not resume compensation processing or payments

on specific cases unit a resolution has been achieved among all interested parties, including the signing and witnessing of settlement agreements.

Special attention will be paid to vulnerable groups such as those experiencing extreme poverty, female headed households, and the aged for whom loss of land/property could lead to further hardship. In order to ensure that resettlement does not further exacerbate the conditions of those groups, certain consideration will be given to them in consultation with community representatives.

The basic principles for compensation are based on Liberian Laws and regulations stipulated by state Authorities and as outlined in the JICA Guidelines. The compensation should be fair and it includes the land as well as physical structures on land or crops and to ensure pre-project standard of living and to consider all PAPs, legal or illegally occupying the land. The principle also state that no land acquisition will take place prior to satisfactorily compensation and resettlement of PAPs.

The schedule for implementing land acquisition and resettlement must be tied to compensation schedule so as to allow time for impacted persons to resume their normal life.

CHAPTER 4 MONITORING AND EVALUATION FRAMEWORK

It is the responsibility of the project proponent to conduct regular monitoring and evaluation of the resettlement performance operation (if any). This is to verify that the valuation of asset lost and compensation given has been carried out according to Liberian regulations and JICA directives. If is also to verify that fund for compensation are used in accordance with the Resettlement and Compensation Committee. Normally, compensation is decided by special technical sub-committee selected by the Relocation and Compensation Committee including representatives of the impacted persons. The Monitoring and Evaluation Unit within the project in consultation and participation of local community representatives and the Government as well as the Implementing Company is shouldering this responsibility. The main indicators to be monitored and evaluated include:

(i) Compliance with approved regulations;
(ii) Payment or land compensation was carried out before implementation schedule; and
(iii) Information for grievance redress was made available to impacted persons.

4.2 Objectives

Monitoring and Evaluation (M & E) procedures will establish the effectiveness of all resettlement activities, in addition to the measures designed to mitigate adverse socio-economic impacts. The procedures include internal tracking efforts as well as external monitoring provisions. The purpose of resettlement monitoring will be to verify that:

- Activities and commitments described in the RAP are implemented;
- Eligible people and affected communities receive their full compensation prior to the start of project activities in the affected area;
- Ensure that the compensation measures help the people who sought cash compensation in restoring their lost incomes;
- Complaints and grievances lodged by project affected person are followed up and, where necessary appropriate corrective actions are taken; and
- Where necessary, changes in RAP procedure are made to improve delivery to entitlements to project affected person (PAP).

The monitoring and evaluation activities and programs should be adequately funded and staffed. In –house monitoring may need to be supplemented by independent monitors to ensure complete and objective information. Accordingly, primary monitoring responsibility rests with the project sponsor while overall responsibility rests on the MPW. However, the MPW is expected, to work in cooperation with other governmental bodies (MLME, MPEA, MHSW, EPA, MOJ, LRRRC, etc.) to ensure effective implementation.

4.3 RAP monitoring Framework

The purpose of monitoring is to provide project management, and directly affected persons, households and communities, with timely, concise, indicative information on whether compensation and resettlement activities are on track to achieve sustainable restoration and improvement in the welfare of the affected people, or that course adjustments are needed.

The monitoring framework consists of three components:

(i) Internal monitoring by MPW;
(ii) Impact monitoring commissioned to specialized firms; and
(iii) RAP Completion Audit

The scope of each type of monitoring is briefly described in the following sections and in Table 4.1along with the staffing, and resources needed for the monitoring program.

In order to effectively report on the effectiveness of the RAP implementation, the MPW will monitor the following key indicators, in keeping with JICA requirements:

- Timely disbursement of compensation;
- Compensation disbursement to the correct parties;
- Public consultation and grievance procedures in place and functioning; and
- Physical progress of resettlement and rehabilitation, where applicable.

Monitoring will be based on indicators of change in:

- Delivery of Compensation;
- Resolution of grievances;
- Land assess;
- Increase or decrease in household assets;
- Social stability; and
- Human and environmental health.

Indicators will be in the form of:

- Done/not done, present/not present, achieved/not achieved etc.
- Easily measured, relevant quantities suitable for trend analysis; or
- Judgment of the affected people and their traditional authorities, as revealed by participative socio-economic survey and interviews.

The MPW will provide feedback on RAP implementation and ensure that adverse impacts on affected people are mitigated in timely manner. M & E will be the main mechanism to alert

project management of any delays and problems and will help measure the extent to which the main objectives of the resettlement plan have been achieved. The Monitoring and Evaluation (M& E) activities will be supplemented and verified by monitoring efforts of experts specialized in resettlement issues or a government agency with the same function.

The establishment of appropriate indicators in the RAP is essential since what is measured is what will be considered important. Key performance indicators for monitoring are commonly divided into four categories for donor's project:

(iv) Input:
Indicators include the resources in terms of people, equipment and materials that go into the RAP. Example of input indicators in the RAP include: the sources and amounts of funding for various RAP activities etc.

(v) Outputs:
Indicators concern the activities and services, which are produced with the inputs. Examples of output indicators in the RAP include (a) a database for tracking individual compensation; and (b) the payment of compensation for loss of land or assets.

(vi) Process:
Indicators represent the change in the quality and quantity of access and coverage of the activities and services. Examples of process indicators in the RAP include: grievance mechanisms; stakeholder channels; and information dissemination activities.

(vii) Outcome:
Indicators include the delivery of compensation and other mitigation to avoid economic and physical displacement caused by the project. They measure whether compensation is paid and received, whether the affected populations who preferred cash compensation to in-kind resettlement assistance offered to them were able to use compensation payment for sustainable livelihood. The most important indicators for the RAP in the near term concern outputs, processes and outcomes since they define whether the planned level of effort is being made and whether early implementation experience is being used to modify/redesign the RAP features.

Over the medium to long term, outcome and impact indicators are critical since they ultimate measure of the RAP'S effectiveness in restoring people's livelihoods. Monitoring indicators may have to be defined or re-defined during the course of the project in response to changes to project –related conditions. Consequently, implementation and mitigation measures may have to be adopted to incorporate these Changes into the Monitoring and Evaluation Plan.

4.4 Reporting

Progress will be reported for the following tasks in accordance with JICA guidelines:

- Internal monitoring;
- Expert/External Monitoring;
- Completion audit; and
- Compensation.

Table 4.1: RAP Monitoring Framework

Component Activity	Type of Information/data Collected	Sources of data/information collections method	Responsibility for data collection analysis and reporting	Frequency/Audience of Reporting
Internal Performance Monitoring	Measurement of input, process, output and outcome indicators against proposed timeline and budget including compensation disbursement	Quarterly narrative status and compensation disbursement reports	MPW RAP Management Team	Semi annual or as required by the MPW RAP management team
Impact monitoring	Tracking effectiveness of input against baseline indicators assessment of affected people's satisfaction with input process and output	Annual quantitative and qualitative Surveys – Regular public meetings and other consultation with project affected person; review of grievance mechanism outputs	MPW including panel of experts.	Annual
Completion audit	Assessment that all components of the RAP were implemented with comparison of the RAP situation before and after RAP implementation	External assessment/sign-off report based on performance and impact monitoring reports independent surveys and consultation with affected persons.	Contracted external auditing and evaluation auditor, panel of experts.	On completion of RAP timetable

4.5 Staff and Monitoring

The MPW will oversee all aspects of the monitoring and evaluation, review of internal performance and impact monitoring. The MPW will be supported by representatives from supporting agencies with appropriate skills to carry out:

- Project resettlement requirements as defined by the RAP;

- Gathering and presentation of monitoring indicators;
- Design and implementation of basic techniques for collecting information and feed from project affected person; and
- Reporting requirements and formats

The MPW, in cooperation with other agencies will submit quarterly status reports and will be responsible for the following monitoring tasks:

- Identify breaches of RAP plan, and recommend corrective action;
- Ensure relocation of all affected cultural assets such as shrines, graves if any;
- Verify that all affected persons are compensated fully prior to the start of road construction or rehabilitation in affected areas; and
- Monitor performance of the project contractors with respect to land and assets not compensated for.

The project will also establish mechanisms for participatory Monitoring and Evaluation (M & E) consistent with JICA guidelines.

4.6 Internal performance monitoring

Performance monitoring is an internal management function that will allow the MPW measure physical progress against milestones input and process output indicators established in the RAP. To ensure independence of internal monitoring arrangements, the MPW RAP Management Team will be absolved of other responsibilities.

(i) Types of Information/Data Collected

The information used in internal performance monitoring will include assessment of the milestones outlined in Table 4.2 below.

(ii) Source of Information/Data Collection Methods

Performance monitoring of the RAP will be integrated into the overall project management to ensure that the RAP activities are synchronized with all project implementation activities. Various methods will be used to monitor progress against the milestones established the RAP. Such:

- Interview of random sample of affected people, using open-ended discussions to assess their knowledge and concerns regarding the land and asset acquisition process, their entitlement and rehabilitation measures;
- Preparation and implementation of a socio-economic survey at the time of relocation with affected owners/tenants to establish a baseline for subsequent monitoring;
- Update of baseline survey within 18 months of relocation;

- Public consultations with affected people at community level as well as in-depth interviews with representatives of community leaders; and
- Case studies of grievances.

Information will be collected and compiled in the quarterly narrative status and compensation disbursement reports

Table 4.2: Internal Performance Monitoring Milestones

Indicators Type	Milestone
Input	• Update Census of PAPs so that tenants, absentee owners, residents of completed and partially completed homes are noted. • An updated asset inventory of if more than a year elapse between the cut off date and the declaration of the final decision and/or the start of compensation payments. • Socio-economic survey of affected households and tenants to service as baseline for subsequent monitoring.
Output	• Valuation and determination of compensation for affected assets conducted in accordance with relevant legislative frameworks. • Public meetings held: Consultations with PAP in project affected area to be included in the project
Outcome and Impact	• Compensation payments disbursed: MPW will conduct a field check to verify that compensation payments have been received by landowners, leaseholders and other users, and will confirm levels and timing of payments. • Grievance redress procedures in place and functioning MPW will check the type of grievance issues and the functioning/effectiveness of grievance redress mechanisms by reviewing the processing of appeals at all levels, the outcomes of grievances and PAP satisfaction with grievance procedures. As part of this, MPW will interview aggrieved affected people. • If chosen as a resettlement option, housing and related infrastructure completed prior to the start of the construction and households are left homeless after they have opted for cash compensation. • Monitoring and Evaluation reports submitted.

(iii) Responsibility for Data Collection, Analysis and Reporting

The MPW working directly under the Project Director will have primary responsibility for the implementation of all internal monitoring activities. Designated staff will collect relevant data in a standardized format.

(iv) Frequency/Audience of Reporting

Performance monitoring reports for the MPW RAP team will be prepared at regular intervals (bi-annually), beginning with the commencement of any activities related to resettlement, including income restoration. The reports will summarize information that is collected and compiled in the quarterly narrative status and compensation disbursement reports and highlighting key issues that have arisen. As a result of the monitoring of inputs, processes,

outputs and outcomes of RAP activities, project management will be advised of necessary improvements in the implementation of the RAP.

4.7 Impact Monitoring

Impact monitoring gauges the effectiveness of the RAP and its implementation in meeting the needs of the affected population. The MPW will commission socio-economic impact monitoring studies in consultation with the external and independent panel of Experts and results will be reviewed. The results of impacts studies as well as internal monitoring efforts will be available through the regular information outlets of MPW. Impact monitoring will enable project management verify performance monitoring and identify adjustments in the implementation of the RAP, required. The MPW will include, the affected persons in all phases of impact monitoring, including the identification and measurement of baseline indicators. Baseline has been established through asset inventories, land use assessments and socio-economic assessment of PAPs and area affected by the project. Impact monitoring will also review consultation and grievance mechanism outputs.

(i) Type of Information/Data Collected

To measure project impact and to assess the effectiveness of mitigation measures, the MPW will evaluate quantitative economic, public health and social indicators at the household and/or individuals level.

Impact monitoring will be supplemented by the use of qualitative indicators to assess the satisfaction of PAPs. This will allow the MPW to determine the extent to which quality of life and livelihood has been restored and whether PAPs have experienced any hardship as a result of the project.

(ii) Source of Information/Data Collection Methods

Impact monitoring data will be collected at appropriate intervals through qualitative and quantitative surveys, and include a review of grievance mechanism outputs. MPW may intend to directly consult with the affected populations through regular public meetings.

(iii) Responsibility for Data Collection, Analysis and Reporting

The MPW management team will have responsibility for the implementation of all internal monitoring activities. Designated staff will collect and review relevant data in a standardized format.

(iv) Frequency/Audience of Report

Impact monitoring data will be required to the MPW and relevant external agencies annually, or as required. The monitoring will continue for two years beyond the completion of the compensation process.

4.8 External Monitoring

The MPW internal monitoring activities will be supported by external monitoring of the RAP independent panel of experts, which will conduct biannual evaluation of processes, outputs, outcome, and impact indicators. These experts will have social and environmental impact mitigation monitoring qualifications and can be selected from among the senior experts who have contributed to the RAP preparation so that their knowledge and experience can be fully utilized. Specially, the tasks of the panel will be to verify results of internal monitoring, by field check of delivery of acquisition, compensation and rehabilitation measures, such as:

- Payment of compensation, including its levels and timing;
- Infrastructure repair and relocation;
- Housing reconstruction, if applicable;
- Land reinstatement and restoration;
- Enterprise relocation, compensation and its adequacy;
- Assess overall compliance with the RAP;
- Identify any areas of non-compliance and agreed corrective actions; and
- Verify that project affected person's incomes and livelihoods have been restored or enhanced, if income or livelihoods are affected by the resettlement action.

It is anticipated that the external monitoring auditor will conduct a range of activities in support of evaluation, which may include the following:

- Interview a random sample of PAP in open –ended discussions to assess their knowledge and concerns regarding the resettlement process, entitlements and rehabilitation measures;
- Participate as an observer in public consultation for PAP at the community level;
- Observe the functioning of resettlement operations such as income restoration activities to asses its effectiveness and compliance with the RAP;
- Check the type of grievance issues and the functioning of the grievance redress mechanisms by reviewing processing of appeals at all levels and interviewing aggrieved PAPs;
- Survey the standards of living of the PAPs before and after implementation of resettlement to assess whether the standards of living of the PAPs have improved or been maintained; and
- Advise project manager regarding possible improvements in the implementation of the PAP.

4.9 Completion Audit

JICA Guideline states that upon completion of the project, the proponent oversees an assessment to determine whether the objectives of the resettlement instrument have been achieved. The assessment tasks into account the baseline conditions and the impacts of resettlement monitoring. If the assessment reveals that these objectives have not been realized,

the proponent proposes follow-up measures that may serve as the basis for JICA supervision, as is deemed appropriate. An external auditor or the panel of Experts will undertake the completion audit.

The audit will allow the MPW, legal authorities, lenders and external stakeholders to verify that all physical inputs committed in the RAP have been delivered and all services provided, and that compensation have been completed in compliance with JICA Guidelines. The audit will also evaluate that the mitigation actions prescribed in the RAP have the desired effect.

The monitoring results will indicate the appropriateness of mitigation measures and enhancement of affected person's living conditions to pre-project standards. It may also indicate the degree of satisfaction and changes of the affected persons' attitude towards the project.

CHAPTER 5 RESETTLEMENT ACTION PLANS (RAPS)

The Resettlement Policy Framework (RPF) is intended to guide the preparation of resettlement Action Plans (RAPs) during implementation of road Infrastructure project where needed. As land is relatively plentiful and almost all villages, towns and cities have land reserved for development activities and designated as town perimeter or reserve, no problem arises in acquiring land for such social services. Since all the proposed activities under the project are of a special interest to the communities and since the communities participate in most of the procedures in assigning land for such services through the land acquisition process it is expected that the process will proceed smoothly.

Despite the expected smooth process in acquiring land for the project, it is important to provide procedures for the preparation of Resettlement Action Plans (RAPs) in case needed in other phases of the project.

Procedures for preparation of RAPs are detailed in Annex. Three (3) which outline the minimum elements to be included. Beside the consideration of the policy and legal requirements, RAP must survey the affected persons, their property and means of access to resources and to determine types of assistance needed bearing in mind the resettlement principles outlined in section (2.2). The RAP must identify compensation for loss of land, compensation for houses, loss of employment, business and allowance for moving or any other losses that may happen as the result of the project. In determining the extent of impacts on affected persons, the compensation and Resettlement Committee as outlined in section (4.2) will be responsible for planning, coordinating and monitoring compensation and relocation activities and settle any grievances.

CHAPTER 6 CONCLUSIONS AND RECOMMENDATIONS

6.1 The Conclusions

Important legal frameworks in Liberia include the Land Acquisition Act of 1929, which transferred most of the power on land to the states. The Constitution of Liberia established Land Commissions at the tribal and county levels to resolve conflicts overland. Beside the Constitution, there are a large number of Sectoral Laws dealing with land issues. All these sectoral laws provide procedures and details regarding land acquisition and rules governing assessment and payment of compensation.

Customary land tenure is still dominant in the targeted localities and is organized by traditional leadership (Native Administration).

The Liberian legal requirements comply with the JICA Guidelines in the sense that both require fair compensation for the impacted persons and set procedures to resolve conflicts starting from the lowest level to the court of law. The Resettlement Policy Framework (RPF) suggests arrangements for monitoring and responsibility of the project to conduct such monitoring in case of resettlement operation. Such monitoring must be participatory involving local leaders and representatives of the impacted persons.

6.2 Recommendations

For smooth land acquisition, the following are recommended:

- Involvement of local leadership particularly Tribal Administration and County Officials when selecting sites for public infrastructures;
- Pay attention to customary land tenure regulations;
- Obtain Consent of Tribal Authority to have a parcel of land deeded to the individual by the Government;
- Apply to Land Commissioner in the County in which the land is located;
- Within Government lands, consider right of use given to local communities; and
- In deciding the market value of land, it is important to involve experienced persons to decide on the land value

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Annex one

Land Acquisition Assessment Form

The Tool

1. Date: _____
2. Home of the Assessor _____
3. Title of the Assessor _____
4. Affiliation _____
5. Name of the site _____
6. Location (Village, town, city, and county) _____
7. Size of the Project site: _____
8. Status of the Project site _____
   (i) Public land with no use: _____
   (ii) Public land with leased: _____
   (iii) Community Land: _____
   (iv) Individual land: _____
   (v) Public land but squatted: _____
   (vi) Other status (specify): _____

9. If public land with lease:
   (i) Who is using the land (provide the name of the beneficiary and duration of the lease: _____
   (ii) What is the land used for?: _____
   (iii) Is there any infrastructure? Yes ☐ No ☐
   (iv) If yes, specify: _____

10. If community land
    (i) What is the current use of the land? _____
    (ii) Who is currently using the land? _____
    (iii) Is there any infrastructure? Yes ☐ No ☐
    (iv) If yes, specify: _____

11. If individual private land:
    (i) Identify the owner: _____
    (ii) What is the current use of the land?:_____
    (iii) Who benefits presently from the land? (owner or leased to someone else) _____
    (iv) Is there any infrastructure? Yes ☐ No ☐
    (v) If yes, specify:_____

12. If collective private land
    (i) Who are the owner?_____
    (ii) What is the current use of the land?_____
    (iii) Who benefits presently from the land? (owner or leased to someone else?_____
    (iv) Is there any infrastructure? Yes ☐ No ☐
    (v) If yes, specify: _____

13. If public land but squatted:
    (i) Who are the squatter (s) (name, identify, and where she/he or they come from). _____
    (ii) What is the use of the land?_____
    (iii) Is there any infrastructure put in place by the squatters? Yes ☐ No ☐
    (iv) If yes, Specify:_____

14. If other
    (i) What is land used for? _____
    (ii) Who uses it? _____
    (iii) Is there any infrastructure? Yes ☐ No ☐
    (iv) If yes, Specify:_____

15. Conclusion/Recommendation:
    The Assessor provides recommendation based on the findings:
    (i) Land is free of claims; it is public with no use; state that the project can go ahead: _____
    (ii) If public land but leased, the Assessor should recommend that the beneficiaries must get another lease or different site before the project status
    (iii) If Community land or individual private land or collective private land and the owners are donating the site on a voluntary basis, the Assessor should recommend that owner (s) provide legalized and signed document showing their good will to donate the land before the project status: _____
    (iv) If community land or individual private land or collective private land and the owner (s) or some of the owners are not willing to give the land Voluntary or somehow unhappy, then the Assessor should recommend that the project be held back until the problem is solved or an alternative site with no claims is provide: _____
    (v) If public land is squatted, the Assessor should recommend the project to be held back until a suitable solution found for the squatters including helping them find another place to settle: _____

(vi) The Assessor could provide any other useful recommendation (s) including for land with other status: _____

16. Signature of the Assessor: _____
    (i) Date: _____

17. Signature of Government Official: _____
    (i) Official Seal: _____
    (ii) Data: _____

Annex Two

Resettlement Action Plan (RAP)

A Resettlement Action Plan (RAP) should include, at a minimum, the elements outland below:

1. Introduction and Resettlement Problem

(i) Describe the project and its location. Identify the executing agency and person (s) responsible for preparing the RAP, along with their qualifications.

(ii) Describe the project activities that will cause displacement and efforts made to reduce the number of people displaced. Describe the site and the services currently available (schools, houses of worship, public transportation, health posts, markets, etc.) and their distance from the site.

2. Legal Framework

(i) Provide a brief review of local laws, regulations and procedures on land acquisition and resettlement. Where gaps exist between local laws and World Bank policy, describe the ways to bridge these gaps.

3. Survey of Affected Properties, Families and/or Businesses

(i) Collect data to complete Table 1, 2 and 3 below

(ii) Include additional information on dwelling value, Willingness to be resettled, consultation meetings, etc.

4. Impact Caused by Displacement

(i) Provide the necessary level of detail to capture the extent of the impact of displacement. At a minimum complete Table 4a. and 4b.

5. Proposed Assistance to Resettled Families

(i) Provide a detailed description of the types of assistance (e.g. compensation, resettlement to new housing assistance for relocation) to be provide to hostess. Also describe the terms of agreement with hostess and the willingness of hostess to work the discussed assistance and timetable. In addition:

(ii) Describe how efforts will be made to restore or enhance incomes;

(iii) Describe how special attention will be given to people who are aged, invalids, single mothers or otherwise in need of special assistance;

(iv) Describe how access to services will be restored or enhanced;

(v) Show how families or community groups will be preserved;

(vi) Describe measures to re-established socio-economic networks, and

(vii) Describe possible impacts on host groups and measures taken to avoid rejection or other

negative reactions.

Using Table 5 below, identify the solutions agreed to with each hostess

6. Responsible Agency

Provide the name (s) of the entity that will be responsible for monitoring and implementation of activities involved in implementing the RAP

7. Source of Budget and Cost Estimate

Include the cost of land, housing¸ moving costs, administrative costs, moving allowances, and settle-in-allowances

8. Resettlement Schedule

Describe the resettlement schedule, including the activities involved, dates, and budget, along with pertinent comments. Include any follow up activities to assess whether hostess have been able to re-establish their livelihoods/living situation. This schedule should be tailored to correspond to the schedule for design and construction of the road works, and should be presented as in Table 6

9. Monitoring/Follow up Activities

Describe how the responsible agency will follow up the implementation of the RAP and address activities required to achieve the goals of the RAP.

10. Evaluation

Describe how evaluation of the RAP will be conducted. No later than 6-12 months after the relocation date, the responsible agency should make reasonable efforts to locate and follow up on the relocated families to determine if they have been able to re-establish their livelihoods and living situation. If this is not the case for any or all of the persons relocated, further assistance should be provided by the responsible agency.

11. Tables

Table #1 Property (Goods and Assets Affected)

Household number	Business number 2	Name of household head or Business Owner	Plot area	Description of houses and construction	Uses of the Property (housing, economic activity, other)	Level of effect, (Total, partial, minimum) 3	Tenure status (titled owner, owner without documents, tenant share cropper etc)	Employment status of all adults	Comments

1. Households should be defined as commensal unit. i.e. people who eat out of the same pot.
2. Business should be defined as any economic activity
3. "Partial" in cases where family/business can develop activities involving listed goods and assets; "total" where activities cannot be developed as a result of displacement.
4. If they are not owners, include the name and address of the owner.

Table #2: Socio-economic characteristics of families

Household number	Name of household head	Number of persons in household	Number of less than 13 yrs of age	Number of audits more than 60 years of age	Number of students	Sources of income	Place of work or study and distance	Means of transport to place of study/ workplace	Comments

Table #3: Socio-economic characteristics of Business

Business number	Name of Business Owner	Age of Business Owner	Type of activity	Number of employees	Monthly Income average	Destination of production	Place of selling	Duration of existence of business in affected location	Comments

Table #4a: Impacts Caused by Displacement (Households)

Household number	Loss of land	Loss of house	Loss or decrease of income	Loss or difficulty of access to education services	Loss of access to health services	Loss of access to public service	Loss of social networks	Comments

Table #4b: Impacts Caused by Displacement (Business)

Business number	Loss of land	Loss of Business place	Loss or decrease of income	Loss of economic networks	Comments

Table #5: Agreed Solutions

Household or Business number	Resettlement Solution	Comments

Table #6: Resettlement Schedule

Activities	Dates	Budget	Comments
Planning of census and survey			
Information to people affected			
Conduct census and socio-economic surveys			
Analysis of data and identification of impacts			
Definition of assistance measure			
Relocation/Assistance			
Follow –up visit by responsible agency			

Appendix 4: Environmental Guidelines for Contractors

General

1 In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) or Environmental and Social Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that EMP. If the Contractor fails to implement the approved EMP after written instruction by the Supervising Engineer (SE) to fulfill his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.

2 Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an EMP. In general these measures shall include but not be limited to:

a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, asphalt mixing sites, dispersing coal ashes, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.

b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.

c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.

d) Prevent bitumen, oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.

e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.

f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archaeological or historical importance during the execution of works, immediately report such findings to the SE so that the appropriate authorities may be expeditiously contacted for fulfillment of the measures aimed at protecting such historical or archaeological resources.

g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.

h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.
i) Ensure that garbage, sanitation and drinking water facilities are provided in construction worker camps.
j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.
k) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.
l) Ensure construction vehicles and other motorized equipment are well maintained to minimize emissions
m) Install barriers, filter strips and diversions to prevent sedimentation of drainage channels and water ways

3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.
4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan /strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.
5. Besides the regular inspection of the sites by the SE for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the SE, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

Worksite/Campsite Waste Management

6. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be banded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable government waste management regulations.
7 All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.
8 Used oil from maintenance shall be collected and disposed off appropriately at designated sites or be re-used or sold for re-use locally.

9 Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.

10 Construction waste shall not be left in stockpiles along the road, but removed and reused or disposed of on a daily basis.

11 If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the SE, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

Material Excavation and Deposit

12 The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.

13 The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.

14 New extraction sites:

a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on high or steep ground or in areas of high scenic value, and shall not be located less than 1km from such areas.

b) Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels. Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.

c) Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection

d) Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.

e) Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.

f) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.

15 Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.

16 Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.

17 The Contractor shall deposit any excess material in accordance with the principles of these general conditions, and any applicable EMP, in areas approved by local authorities and/or the SE.

18 Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the SE and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

Rehabilitation and Soil Erosion Prevention

19 To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.

20 Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.

21 Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.

22 Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.

23 Locate stockpiles where they will not be disturbed by future construction activities.

24 To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.

25 Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.

26 Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.

27 Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.

28 Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.

29 Minimize erosion by wind and water both during and after the process of reinstatement.

30 Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.

31 Re-vegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people. Water Resources Management

32 The Contractor shall at all costs avoid conflicting with water demands of local communities.

33 Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.

34 Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.

35 Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities down stream, and maintains the ecological balance of the river system.

36 No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.

37 Wash water from washing out of equipment shall not be discharged into water courses or road drains.

38 Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

Traffic Management

39 Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.

40 Upon the completion of civil works, all access roads shall be ripped and rehabilitated.

41 Access roads shall be sprinkled with water at least five times a day in settled areas, and three times in unsettled areas, to suppress dust emissions.

Disposal of Unusable Elements

42 Unusable materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures will be disposed of in a manner approved by the SE. The Contractor has to agree with the SE which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.

43 As far as possible, abandoned pipelines shall remain in place. Where for any reason no alternative alignment for the new pipeline is possible, the old pipes shall be safely removed and stored at a safe place to be agreed upon with the SE and the local authorities concerned.

44 AC-pipes as well as broken parts thereof have to be treated as hazardous material and disposed of as specified above.

45 Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for transport.

Health and Safety

46 In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.

47 Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.

48 Construction vehicles shall not exceed maximum speed limit of 40km per hour.

Repair of Private Property

49 Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.

50 In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the SE. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

Contractor's Health, Safety and Environment Management Plan (HSE-MP)

51 Within 6 weeks of signing the Contract, the Contractor shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EMP for the works. The Contractor's EHS-MP will serve two main purposes:

- For the Contractor, for internal purposes, to ensure that all measures are in place for adequate HSE management, and as an operational manual for his staff.
- For the Client, supported where necessary by a SE, to ensure that the Contractor is fully prepared for the adequate management of the HSE aspects of the project, and as a basis for monitoring of the Contractor's HSE performance.

52 The Contractor's EHS-MP shall provide at least:

- a description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an EMP;
- a description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
- a description of all planned monitoring activities (e.g. sediment discharges from borrow areas) and the reporting thereof; and
- the internal organizational, management and reporting mechanisms put in place for such.

53 The Contractor's EHS-MP will be reviewed and approved by the Client before start of the works. This review should demonstrate if the Contractor's EHS-MP covers all of the identified impacts, and has defined appropriate measures to counteract any potential impacts.

HSE Reporting

54 The Contractor shall prepare bi-weekly progress reports to the SE on compliance with these general conditions, the project EMP if any, and his own EHS-MP. An example format for a Contractor HSE report is given below. It is expected that the Contractor's reports will include information on:

- HSE management actions/measures taken, including approvals sought from local or national authorities;
- Problems encountered in relation to HSE aspects (incidents, including delays, cost consequences, etc. as a result thereof);
- Lack of compliance with contract requirements on the part of the Contractor;
- Changes of assumptions, conditions, measures, designs and actual works in relation to HSE aspects; and

- Observations, concerns raised and/or decisions taken with regard to HSE management during site meetings.

55 It is advisable that reporting of significant HSE incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keeps his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the biweekly reports. Example formats for an incident notification and detailed report are given below. Details of HSE performance will be reported to the Client through the SE's reports to the Client.

Training of Contractor's Personnel

56 The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project EMP, and his own EHS-MP, and are able to fulfill their expected roles and functions. Specific training should be provided to those employees that have particular responsibilities associated with the implementation of the EHS-MP. General topics should be:

- HSE in general (working procedures);
- emergency procedures; and
- social and cultural aspects (awareness raising on social issues).

Cost of Compliance

57 It is expected that compliance with these conditions is already part of standard good workmanship and state of art as generally required under this Contract. The item "Compliance with Environmental Management Conditions" in the Bill of Quantities covers these costs. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable HSE impact.