MINISTRY OF LOCAL GOVERNMENT AND HOUSING (MLGH)

LUSAKA CITY COUNCIL (LCC)

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE STUDY ON COMPREHENSIVE URBAN DEVELOPMENT PLAN FOR THE CITY OF LUSAKA IN THE REPUBLIC OF ZAMBIA

FINAL REPORT

ANNEX II

ENVIRONMENTAL AND SOCIAL CONSIDERATIONS STUDY FOR THE INNER RING ROAD PROJECT

MARCH 2009

JAPAN INTERNATIONAL COOPERATION AGENCY

KRI INTERNATIONAL CORP.

NIPPON KOEI CO., LTD.

JAPAN ENGINEERING CONSULTANTS CO., LTD.

EXCHANGE RATE

USD 1 = ZMK 3,582 = JPY 106.53

ZMK: Average rate of Bank of Zambia, from January 2008 to October 2008
JPY: Average rate of JICA rate, from January 2008 to October 2008

The Study
on
Comprehensive Urban Development Plan
for
the City of Lusaka
in
the Republic of Zambia

Final Report

ANNEX 2 Pre-EIA Level Study for Inner Ring Road

Table of Contents

APPENDICES

LIST OF TABLES

LIST OF FIGURES

ANNEX-2

PRE-EIA LEVEL STUDY FOR INNER RING ROAD

CHAPTER 1. INTRODUCTION

1.1 Introduction

The Inner-ring Road Project has been studied and planned by the Lusaka City Council (LCC) and the Ministry of Local Government and Housing (MLGH) with the assistance of the JICA Study Team under the proposed Lusaka City Master Plan which has been studied from September 2007 until March 2009.

1.2 Need for the Project

The Inner-ring Road Project is proposed (1) to provide a bypass route for cars to avoid traffic congestion in Town, (2) to provide a new road access and public transportation to Kamwala South area, (3) to improve living environment in Chibolya and Kanyama, and (4) to promote economic development of the planned Lusaka South Multi-facility Economic Zone (LS-MFEZ).

The Inner Ring Road (Kasama- Kafue- Mumbwa Road) and MFEZ Access Road were selected as priority projects in continuous discussions with the C/P and relevant stakeholders in the Study on Comprehensive Urban Development Plan for the City of Lusaka. It is a well-known issue that the road network in Lusaka needs circular roads to divert traffic concentration from the city center. Some circular roads, bypasses, or ring roads have been proposed to connect radial direction roads for years. However, most areas between the radial roads are already highly populated and it is difficult to construct a circular road without large-scale resettlement. The route of the proposed Inner Ring Road can minimize the number of resettlement. The Inner Ring Road runs along the power line where the right of way for a new road is available. The ring road is expected to play as a circular bypass for the center of the city.

On the other hand, the MFEZ Access Road will support the development of LS-MFEZ. Construction of the road is also selected as a priority project because economic development is given high priority in the master plan.

Additionally, housing developments to the south of the Inner Ring Road route and along the MFEZ Access Road route have been very active recently. It is very important to formulate the basic road network in this area.

CHAPTER 2. TECHNICAL DESCRIPTION OF THE PROPOSED PROJECT AND PROJECT ACTIVITIES

2.1 Location

The Inner-ring Road is a 22.7 km long tarred road running from Harry Mwaanga Nkumbula Ward, Lusaka District to Chisankane Ward, Kafue District. The purposes of the road construction is (1) to provide a bypass route for cars to avoid traffic congestion in Town, namely congestions around the City Market by providing the road between Mumbwa Road – Los Angeles Road – Kafue Road, avoiding congestions at the Kafue Roundabout by the road between Kafue Road – Chilimbulu Road, (2) to provide a new road access and public transportation to Kamwala South area, (3) to improve living environment in Chibolya and Kanyama, and (4) to promote economic development of the planned LS-MFEZ.

The Inner-ring Road is planned to pass through 7 wards in Lusaka District and 1 ward in Kafue District as listed below.

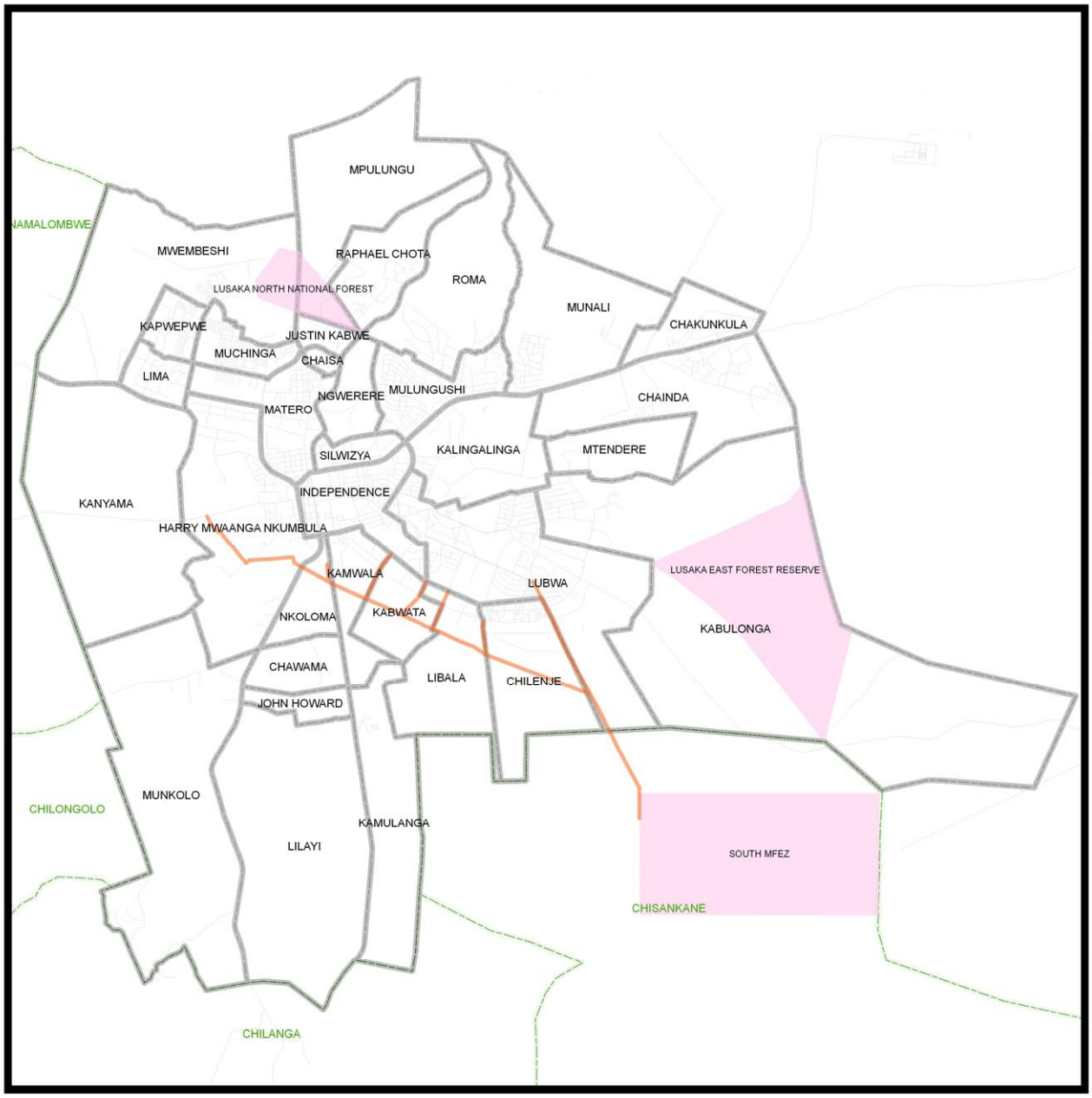
Table 2.1.1 Affected Wards

Lusaka District	Kafue District
Harry Mwaanga Nkumbula Nkoloma Kamwala Kabwata Libala Chilenje Lubwa	Chisankane

The Inner-ring Road Project consists of new road sections and improvement sections of the existing road (9.1km) in order to minimize adverse socio-economic impacts by maximizing use of existing roads along the ZESCO power line as well as existing roads in Chibolya and Kanyama. As for improvement, it is planned for Chibwa Road Ext, Nationalist Road Ext, Yotam Mueya Ext, and Kasama Road

Table 2.1.2 Sections of the Inner-ring Road

Major Sections	Minor Sections
1. Mumbwa Road – Kafue Road – Kasama Road 2. Musi-Oa-Tuyna Road – MFEZ	1. Chibwa Road Ext 2. Nationalist Road Ext 3. Yotam Mueya Ext 4. Kasama Road, and 5. Mini Bypass access



Inner-ring Road:

Figure 2.1.1 Inner-Ring Road Alignment

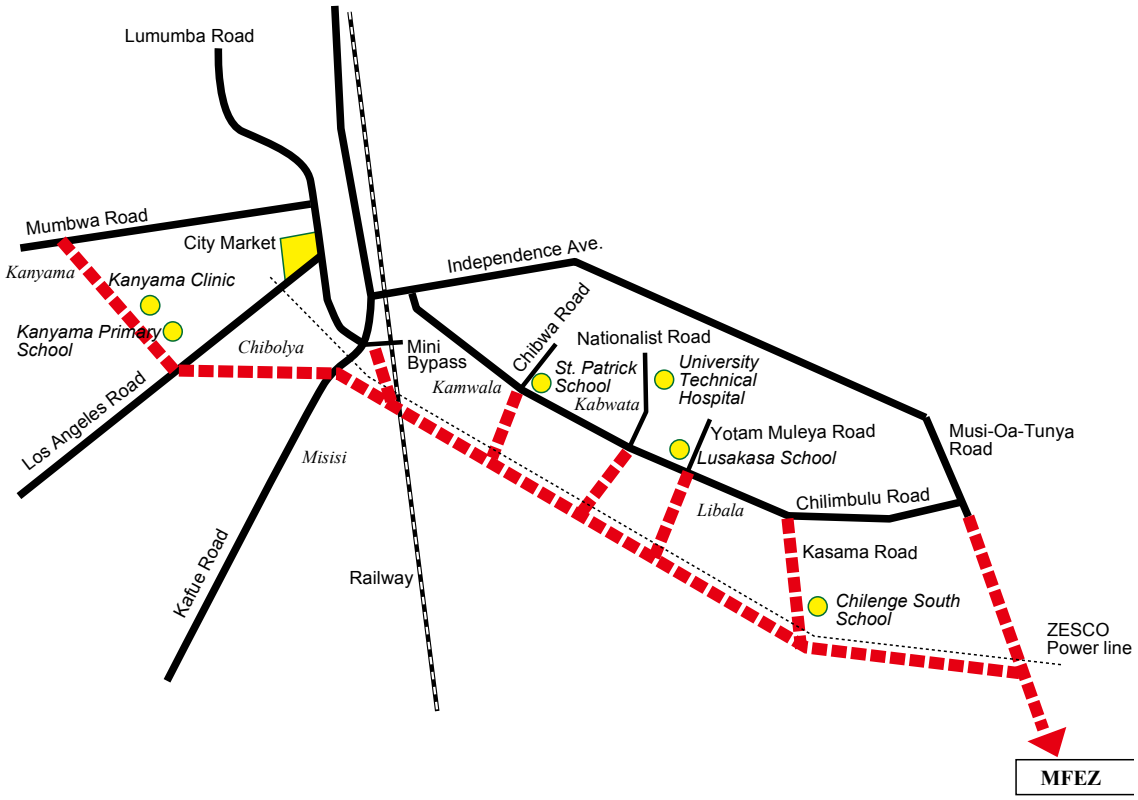


Figure 2.1.2 Location of Inner Ring Road and MFEZ Access Road

2.2 Traffic Volume Forecast

Traffic volume on the project roads was forecasted for the year 2015. The same traffic forecast model in the master plan was applied to the feasibility study. The important assumption of the demand forecast is industrial development because the project includes the access road to the LS-MFEZ. Table 2.2.1 shows the areas of industrial parks proposed in the master plan.

Table 2.2.1 Area of Industrial Parks

Unit: ha

Year	2015	2020	2030
Lusaka South MFEZ	30	240	400
Lusaka North MFEZ	150	213	355
Chibombo	0	50	141
South of Lusaka	0	135	307
West of Lusaka	0	340	737
Total	180	998	1,940

Source: JICA Study Team

Table 2.2.2 shows the traffic volume forecast by section. The results show that a 2-lane road is sufficient and economically feasible by 2020. The estimated increase in traffic volume from 2015 to 2020 is not high enough because traffic flow in 2020 is affected by the Middle Ring Road. Traffic volume in 2030 was estimated to be very large. It will be necessary to widen the Kafue Road – Kasama Road and Musi-Oa-Tuya Road Extension –MFEZ sections to 4-lane. The other sections would be also busy and 4-lane roads would be desirable, although 2-lane roads would be able to deal with the traffic.

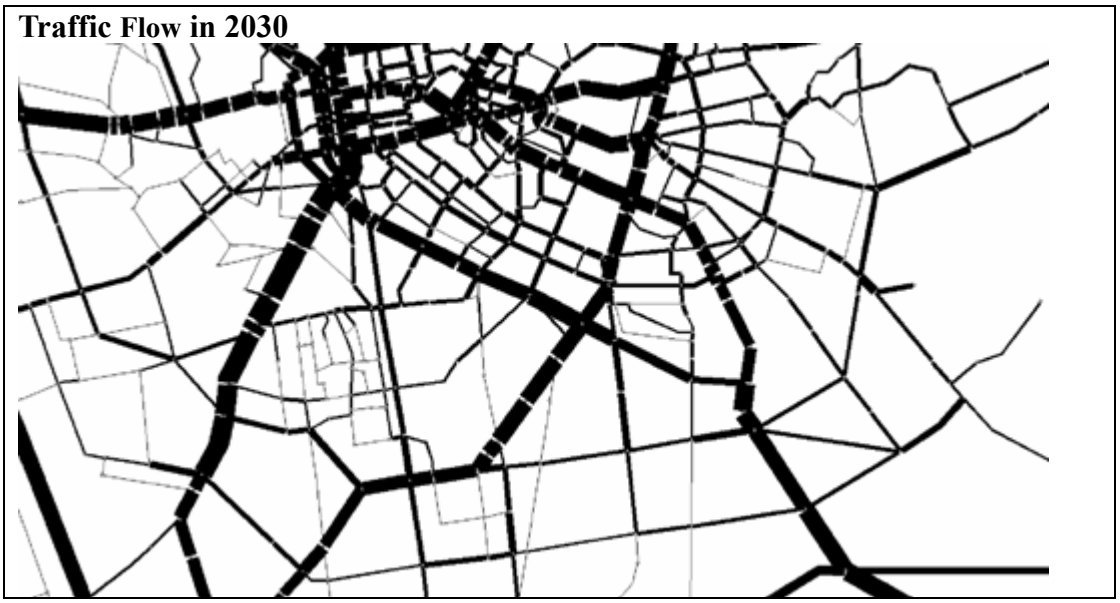
Table 2.2.2 Traffic Volume of Inner Ring Road

Unit: PCU

Year		2015		2020		2030	
No	Section	Min	Max	Min	Max	Min	Max
1	Kafue Road - Kasama Road	8,400	14,400	11,100	17,800	46,800	52,900
2	Kafue Road - Mumbuwa Road	4,800	11,400	6,900	12,400	8,700	17,400
3	Chibwa Road Extension	7,900	11,500	11,600	11,600	17,800	19,300
4	Nationalist Road Extension	7,800	8,400	9,000	11,000	16,200	18,500
5	Yotam Muleya Road Extension	4,600	4,600	11,900	11,900	17,500	17,500
6	Kasama Road	7,600	14,500	8,100	17,500	17,500	22,100
7	Musi-Oa-Tuya Road Extension to MFEZ	7,500	10,800	88,000	13,600	40,500	59,500
8	Kasama Road - Musi-Oa-Tuya Extension	4,600	8,000	3,800	6,600	24,800	46,800

PCU: Passenger car unit
Source: JICA Study Team

Figure 2.2.1 shows the traffic flow in years 2015, 2020 and 2030.



Source: JICA Study Team

Figure 2.2.1 Traffic Flow

2.3 Activities, Raw Materials Inputs & Products

The preliminary design and estimates of design quantities for the project roads are summarized as follows:

Table 2.3.1 Mumbwa Road – Kafue Road – Kasama Road

		Kafue Road – Kasama Road	Mumbwa Road – Kafue Road
Type of Project		New Construction: 4.883 km Upgrading: 1.057 km	New Construction: 1.528 km Upgrading: 2.047 km
Road Length		5.940 km	3.575 km
Carriageway (Lane) width		3.50 m x 2 (paved)	3.50 m x 2 (paved)
Shoulder		1.50 m x 2 (paved)	1.50 m x 2 (paved)
Side Walk		3.00 m (one side)	1.50 m (both side)
Total Road Width		16.00 m	16.00 m
Number of Intersections		1-major intersection	2-major intersection
Earthwork		Excavation: 75,842 m^3 Subgrade: 18,711 m^3	Excavation: 38,180 m^3 Subgrade: 10,725 m^3
Carriageway Portion	Surface Course: Base Course: Subbase Course: Area of Pavement Work:	10 cm 15cm 30 cm 44,550 m^2	10 cm 15 cm 30 cm 25,025 m^2
Shoulder Portion	Surface Course: Base Course: Subbase Course: Area of Pavement Work:	10 cm 15cm 30 cm 17,820 m^2	10 cm 15 cm 30 cm 10,725 m^2
Sidewalk Portion	Surface Course: Base Course: Area of Pavement Work:	Multiple bituminous surface dressing 15 cm 17,820 m^2	Multiple bituminous surface dressing 15 cm 10,725 m^2
Cross Drainage		Pipe Culverts: 12 locations, 192 m in total length	Pipe Culverts: 7 locations, 112 m in total length
Surface Drainage		Drainage Channel: 11,880 m	Drainage Channel: 7,150 m
Traffic Signals		4 locations	8 locations
Traffic Safety Devices		Markings: 23,760 m Traffic Signs: 24 locations	Markings: 14,300 m Traffic Signs: 14 locations
Traffic Light		63 Nos.	44 Nos.

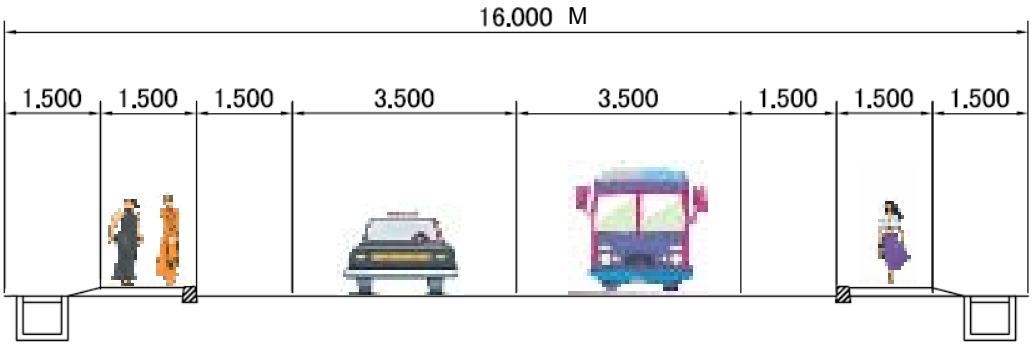
Source: JICA Study Team

Table 2.3.2 MFEZ Access Road and 5 Collector Roads

		Access to LS-MFEZ	5 Collector Roads
Type of Project		New Construction: 6.797 km Upgrading: 2.964 km	New Construction: 0.771 km Upgrading: 3.055 km
Road Length		9.761 km	3.826 km
Carriageway (Lane) width		3.50 m x 2 (paved)	3.25 m x 2 (paved)
Shoulder		1.50 m x 2 (paved)	1.00 m x 2 (paved)
Side Walk		1.50 m (both side)	2.00 m (both side)
Total Road Width		16.00 m	15.00 m
Number of Intersections		3-major intersection	4-major intersection
Earthwork		Excavation: 117,632 m^3 Subgrade: 29,283 m^3	Excavation: 28,149 m^3 Subgrade: 9,756 m^3
Carriageway Portion	Surface Course: Base Course: Subbase Course: Area of Pavement Work:	10 cm 15cm 30 cm 68,327 m^2	10 cm 15 cm 20 cm 24,869 m^2
Shoulder Portion	Surface Course: Base Course: Subbase Course: Area of Pavement Work:	10 cm 15cm 30 cm 29,283 m^2	10 cm 15 cm 30 cm 7,652 m^2
Sidewalk Portion	Surface Course: Base Course: Area of Pavement Work:	Multiple bituminous surface dressing 15 cm 29,283 m^2	Multiple bituminous surface dressing 15 cm 15,304 m^2
Cross Drainage		Pipe Culverts: 19 locations, 304 m	Pipe Culverts: 7 locations, 112 m in total length
Surface Drainage		Drainage Channel: 19,522 m	Drainage Channel: 7,652 m
Traffic Signals		12 locations	16 locations
Traffic Safety Devices		Markings: 39,044 m in total Traffic Signs: 39 locations	Markings: 15,304 m in total Traffic Signs: 15 locations
Traffic Light		110 Nos.	54 Nos.
Planting		288 Nos.	

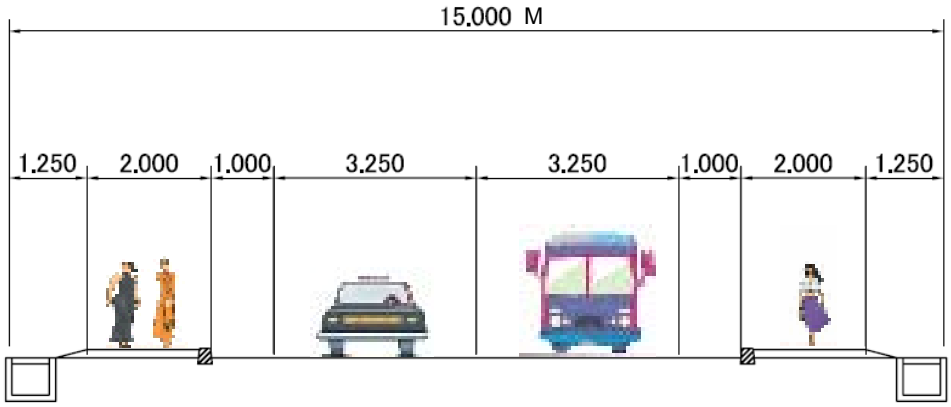
Source: JICA Study Team

Following two types of typical cross-sections are proposed, in accordance with traffic function.



Source: JICA Study Team

Figure 2.3.1 Typical Cross-section I



Source: JICA Study Team

Figure 2.3.2 Typical Cross-section II

CHAPTER 3. SCOPE OF STUDY AND METHODOLOGY

3.1 Objectives of the Study

This Environmental and Social Considerations Study for the Inner-ring Road Project was conducted to meet the requirements of Zambian EIA regulations and the JICA Guidelines for Environmental and Social Considerations because it was planned that the Government of Zambia to utilize the study results as the official EIS of the project after the JICA study.

The Environmental Protection and Pollution Control Act (EPPCA), the Zambian EIA regulation, defines the project which is subject to EIA in the second schedule and the road project which is more than 10 km is subject to the EIA in Zambia. Therefore, the EIA is required for the inner-ring road project of approximately 23 km.

3.2 Scope of the Study

The proponent has undertaken the Environmental and Social Considerations Study as a preliminary study for the EIA. The Environmental Impact Statement (EIS) describes the negative and positive impacts of the project during its entire life cycle from design through construction and operational of the road. The study also recommends mitigation measures of negative environmental effects and enhancement of the benefits including Environmental Management Plan (EMP) & Environmental Monitoring Plan (EMoP). As for the social impact of resettlement, it was studied as the Resettlement Action Plan (RAP) Framework Study which is the attached as a specialist study.

The specialist studies were conducted for the expected significant negative impacts to quantify the impacts as much as possible. The description of the specialist studies are as follows.

Table 3.2.1 List of Specialist Studies

Survey Type	Parameters	Sampling Locations	Measurement Methods	Prediction Methods	Referred Standards
Air Quality	CO, NO_2, SO_2, PM_{10}, Total Dust	5 sites of roadside along the alignment of the inner-ring road	Described Table 3.2.1 & 3.3.2.	Puff Model	Ambient Air Standards of Zambia and Japan
Noise	LA_{eq}			ASJ RTN-Model (Japan)	Ambient Noise Standards of the WB and Japan
RAP Framework	1. RAP Framework Report was prepared; and 2. The Socio-economic survey and stakeholder meetings were conducted.				In accordance with the international standards such as the World Bank and the Asian Development Bank

Source: JICA Study Team

3.3 Methodology

3.3.1 Overall Assessment

The overall assessment was conducted with the existing data on environment and social status of the City of Lusaka, such as the Lusaka Environmental Outlook Report, topographic maps, hearing with relevant officials/experts, and findings during field visits.

3.3.2 Air and Noise Survey

The air quality and noise survey was conducted at 5 representative points in the project site. Sampling was conducted in Dec. 2008 and analysis was conducted in Jan. and Feb. 2009. Detailed methodologies for the survey were summarized in the following table.

Table 3.3.1 Air Quality Survey Method

Parameters	Equipment	Sampling No.	Sampling Height	Sampling Time	Prediction Methods
CO	Drager Pump BVS 04 ATEX H 068, Drager Safety AG & Co. KGaA, Germany & ISO 9001 Certified Detection Tubes	6 samples/ point * 5 points*2 time slots(morning/afternoon)	1.2m	Approx. 15-150 seconds/sample and the required no. of stroke varies depending on each parameter	-
CO_2					-
NOx					Puff Model
SO_2					-
PM_{10}	Personal Sampler & Aluminum Cyclone, SKC Inc., USA	1 sample/ point * 5 points	1.2m	8 hours/sample	Puff Model (*SPM was Predicted)
Total Dust					-
Lead					-

Source: JICA Study Team

Table 3.3.2 Noise Survey Method

Parameters	Equipment	Reading No.	Measurement Height	Measurement Time	Prediction Methods
LAeq	Integrated Sound Level Meter (ISML Model 1565B), Quest Technologies, USA	4 readings/time slot * 3 time slots (morning, noon & afternoon)	1.2m	10 min./reading	ASJ RTN-Model (Japan)

Source: JICA Study Team

3.3.3 Socio-economic Survey and RAP Framework

The socio-economic survey was conducted between Dec. 2008 and Jan. 2009, and the RAP Framework preparation including the data analysis of the socio-economic survey was conducted between Jan. and Feb. 2009. The socio-economic survey was conducted at 20% of the total number of the potential resettlers' households in accordance with one

of the international good practices specified by the Asian Development Bank. The draft entitlement matrix for the compensation and livelihood restoration assistance was formed in accordance with the World Bank's Operational Policy 4.12 on Involuntary Resettlement.

3.3.4 Stakeholder Meetings

Two (2) stages of the consultative meeting was organized at the Lusaka City Council on 7th November 2008 and 27th Jan. 2009 to discuss the environmental and social impacts of the project and the mitigation measures with representatives, namely chairpersons of the Ward Development Committee, ward councilors and community-based women's associations (NGOs).

CHAPTER 4. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 Legislative and Institutional Framework in Zambia

This section describes the policy, legislative and administrative frameworks which are relevant the EIA of the project. The acts below have been reviewed to ensure the project complies with relevant laws and regulations in Zambia and the other international guidelines on environmental and social considerations such as the JICA Guidelines for Environmental and Social Considerations and the World Bank Operational Policy 4.12 on Involuntary Resettlement.

4.1.1 National Environmental Strategy and Policy

(1) National Conservation Strategy

The National Conservation Strategy (NCS) is the principal environmental legislation in Zambia and was adopted in 1985. It led to the enactment of the Environmental Protection and Pollution Control Act (EPPCA) in 1990 and provided for the establishment of the Environmental Council of Zambia (ECZ). The NCS provides guidance for the sustainable development of Zambia through the use and conservation of natural resources and updated by the National Environmental Action Plan in 1992.

(2) National Environmental Action Plan (NEAP)
The aim of the plan is to integrate environmental concerns into the national social and economic planning. The NEAP has 3 basic principles consisting of (i) the right of citizens to a clean and healthy environment; (ii) local community and private sector participation in natural resources management; and (iii) obligatory EIA of major development projects in all sectors.

4.1.2 National Environmental Legislation

(1) Environmental Protection and Pollution Control Act (EPPCA)

The Environmental Protection and Pollution Control Act was passed in 1990 as the principal environmental law. It provided the establishment of the ECZ which has the responsibility of enforcing the EPPCA. The EPPCA provides the foundation of environmental quality standards for water, air, waste, pesticides and toxic substances, noise, ionising radiation and natural resources conservation. The relevant laws and regulations by environmental management type are listed below.

Environmental Impact Assessment:

In accordance with the EPCCA, in 1997, The Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations was established to provide detailed regulations and the official procedure of the EIA.

- Statutory Instrument No. 28 of 1997; and
- The Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations 1997.

Water Quality:
- Statutory Instrument No. 72 of 1993;

- The Environmental Protection and Pollution Control Act, 1990 (no. 12 of 1990); and
- The Water Pollution Control (Effluent and Waste Water) Regulations, 1993, Third Schedule (Regulation 5 (2)), Table of Standards (limits) for Effluents and Waste Water.

Air Quality:
- Statutory Instrument No. 141 of 1996;
- The Environmental Protection and Pollution Control Act, 1990 (no. 12 of 1990);
- The Air Pollution Control (Licensing and Emissions Standards) Regulations 1996, First Schedule (Regulation 3) Table of Guidelines for Ambient Air Pollutants.

Hazardous Waste:
- Statutory Instrument No. 125 of 2001;
- The Environmental Protection and Pollution Control Act, 1990 (no. 12 of 1990); and
- The Hazardous Waste Management Regulations, Fourth to Sixth Schedule for Definitions, and Seventh to Eighth Schedule for Disposal Operations, Transport and Storage.

Pesticides and Toxic Substances:
- Statutory Instrument No. 20 of 1994;
- The Environmental Protection and Pollution Control Act, 1990 (no. 12 of 1990); and
- The Pesticides and Toxic Substances Regulations, 1994, Instructions for storage, handling, definitions and occupational health and safety.

(2) Forest Act, Chapter 199

The Forest Act of 1974 deals with the management, conservation and protection of forests and trees. It was updated with the Forest Act of 1999. The act prohibits felling, collecting or injuring of forest products in protected forest areas or forest reserves without a license. It also prohibits excavation, construction and operation of machinery within forest reserves or protected areas.

(3) Water Act, Chapter 198

The Water Act provides the rules and regulations on the control, ownership and use of public and private water. Public water use is controlled by the Water Board by the allocation of water rights. Moreover, the act defines pollution of public water as an offence, although the Water Pollution Control Regulations are established by the EPPCA.

(4) National Heritage Conservation Commission Act

The National Heritage and Conservation Act, established the National Heritage Conservation Commission (NHCC), regulates the conservation of ancient, cultural and natural heritage, relics and objects of aesthetic, historical, prehistoric, archaeological or scientific interests by preservation, restoration, rehabilitation, reconstruction, adaptive use and good management. Permission must be obtained from the NHCC as regulated in Sections 35 and 36 of the National Heritage Conservation Commission Act, if any heritages are found in the implementation of the project. The consultation with NHCC on potential mitigation measures is required for the project proponent when finalizing the mitigation measures in the EIS.

(5) Public Health Act, Chapter 295

The Public Health Act empowers a Council to prevent diseases and pollution, dangerous to human health and to any water supply for domestic use.

3.4.12 Public Health Act, Cap 295

The Public Health Act is to prevent diseases and pollution dangerous to human health and to any water supply for domestic use.

(6) Factories Act, Chapter 441

The Factories Act provides a framework for regulations to ensure the safety, health and welfare of employees on construction work sites and in factories.

(7) Energy Regulation Act, Chapter 436

This act allows for the establishment of procedures for the transportation, handling and storage of fuels to minimize negative environmental impacts.

(8) Petroleum Act

The act provides regulations for the conveyance and storage of petroleum, inflammable oil and liquids. Where petroleum products are transported to or stored on site, the activities shall be done in compliance with the provisions of the act.

(9) Mines and Minerals Act, Cap 32

The act regulates activities relating to mines and minerals operations including quarrying and provides for regulations for environmental protection during prospecting and mining activities and construction of the areas mined. Moreover, the Ministry of Transport and Communications, Environmental guidelines Section 7.6 (2) states that *"Contractors shall obtain licenses from the Ministry of Mines to operate borrow areas"* and 7.10 (6) states that *"Contractors shall obtain mining licenses for quarrying"*.

(10) Local Government Act, Chapter 281

The Local Government Act enables the Council to implement environmental protection and natural resources management functions including prevention of pollution of water supplies and undertaking of mining operations. Therefore, the act supports that the location and restorations of borrow pits are subject to approval by the relevant government departments and local communities.

4.1.3 Resettlement Related Legislation

There is no resettlement policy or law in Zambia; however, there are three (3) major guiding legal documents on land acquisition.

(1) Article 16 of the Constitution of Zambia

The Constitution provides for the fundamental right to property and protects persons from the deprivation of property. It is stated that anyone cannot be deprived of property compulsorily unless it is required under the authority of an Act of Parliament providing sufficient compensation.

(2) The Land Act

The Land Act of 1995 is to guarantee peoples' right to land while at the same time enhancing development. The Act recognizes the holding of land under customary tenure and the Chief's role has been legally recognized. (e.g. land cannot be converted or alienated without approval of the Chief if the land is owned by the Chief).

(3) The Lands Acquisition Act No. 2 of 1970

The Act provides regulations for compulsory acquisition of land and property and compensation for such acquisition. Section 3 of the Land Acquisition Act provides the compensation procedure and conditions and secures the compensation at the open market price.

(4) Town and Country Planning Act.

Part VII of the Town and Country Planning Act also provides a legal guidance on land acquisition for public development and compulsory acquisition.

4.1.4 Road Related Framework

(1) Roads and Traffic Control Act, Chapter 464

The Roads and Traffic Control Act provides for the control of traffic and for the regulation of storm water disposal structures.

4.1.5 International and Regional Legislation

Zambia is a signatory to several number of the international and regional conventions. The conventions which are relevant to the EIA are listed below:

- Convention on the Protection of World Cultural and Natural Heritage
- Convention on International Trade in Endangered Species of Wild Flora and Fauna
- United Nations Framework Convention on Climate Change

The project takes into account the requirements of these conventions where applicable.

(1) Convention on International Trade in Endangered Species of Wild Plantlife and Wildlife

The Convention on International Trade in Endangered Species of Wild Plant life and Wildlife (CITES) came into force in 1980 and was ratified by Zambia in 1981. It is to provide protection to animal and plant species, which are deemed threatened by international trade. On ratification to CITES a country is committed to implementing the required regulations and procedures to ensure the objectives of the Convention.

(2) United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change (UNFCCC), signed in 1992. It has the objective *"To achieve stabilisation of greenhouse gas concentrations in the atmosphere…."*.

(3) Convention on Biological Diversity

The Convention on Biological Diversity was adopted in 1992. The objective is to encourage and enable all countries to conserve biodiversity and use its components sustainably in support of National Development. A number of plans falling under the

Department of Agriculture, Forestry, Fisheries and National Parks and Wildlife Services integrate the philosophy of this Convention. In Zambia, the National Environmental Action Plan addresses many of the relevant issues.

4.1.6 Institutional and Administrative Framework for Environmental Management

The Ministry of Tourism, Environment and Natural Resources (MTENR) is responsible for policy formulation on matters pertaining to natural resources management and the environment.

While, the Environmental Council of Zambia (ECZ) falls under the MENR and is responsible for the enforcement of the EPPCA, mainly for pollution control and natural resources management. The ECZ is a statutory institution created by an Act of Parliament and the EIA approving agency in Zambia

The National Heritage Conservation Commission is responsible for the identification and conservation of sites of cultural and historical interest. When finalizing the EIS, the NHCC shall be consulted by the project proponent on the potential mitigation measures if any heritage is found during construction.

The Ministry of Mines and Minerals Development is responsible for regulating the mining of mineral resources.

The Department of Water Affairs, under the Ministry of Energy and Water Development, is responsible for the management of water resources and liaises with the MTENR and the ECZ on matters pertaining to water pollution.

The Department of Energy is responsible for the management of petroleum and other fuels.

Local Authorities are concerned with the health of local community members, and the conservation of natural resources within the confines of their administrative influence.

The Ministry of Transport and Communications has an interest in ensuring that construction and civil engineering activities do not adversely affect the environment.

4.2 Requirements for EIA

Section 3 (1) of the EIA Regulations states that, "a developer shall not implement a project for which a project brief or environmental impact statement is required under these Regulations, unless the project brief or the environmental impact statement has been concluded in accordance with these regulations and the Environmental Council of Zambia has issued a decision letter."

The proposed project is outlined in the Environmental Impact Regulations S.I. No. 28 of 1997, Second Schedule (Regulations (7) (2)) Section 2(a) under the heading Transportation: The Regulations states that "*All major roads outside urban areas, the construction of new roads and major improvements over 10 km in length or over 1 km in length if the road passes through a National Park or Game Management Area"* shall require an Environmental Impact Assessment. The proposed inner-ring road is a major road inside the urban area which includes new construction and major improvement for more than 22km. Therefore, the project is subject to the EIA in Zambia.

4.3 The JICA Guidelines for Environmental and Social Considerations

The JICA Guidelines provide the policy guidance on the necessary environmental and social considerations for the JICA study. It requires environmental and social impact assessment including scoping, impact evaluation, preparation of mitigation measures (e.g. Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP) if applicable) and stakeholder meetings depending on the study type and the category of the environmental & social considerations.

In this study, since the inner-ring road is categorized A, the project is subject to environmental & social impact assessment, the stakeholder meetings at 3 stages when scoping, briefing results and preparing the draft report. However, outcomes of the initial stakeholder meeting are not included in the report since it was conducted as a part of the stakeholder meeting for the JICA Study on the Comprehensive Urban Development Plan for the City of Lusaka. The details of the guidelines are provided in Appendix 3.

4.4 The World Bank's Operational Policy 4.12 on Involuntary Resettlement

The Resettlement Action Plan (RAP) Framework was prepared in this study since resettlement is the most significant negative impact of the project. The RAP framework was prepared in accordance with the World Bank Operational Policy 4.12 on Involuntary Resettlement, which is the common practice when the RAP is required by the project in Zambia. The details of the guidelines are provided in Appendix 4.

CHAPTER 5. ALTERNATIVE CONSIDERATIONS INCLUDING ZERO-ALTERNATIVE

5.1 Concept of Alternative Selection

The Inner Ring Road uses the existing right of way along the power line and the existing road in Chibolya. This is the nearest route to the center of the city which is available for bypass. The construction of this road requires resettlement in Misisi, Chibolya, and Kanyama. Although the number of resettlement can be reduced if the road is constructed along low-density residential areas, the road can not satisfy the purpose as inner ring road if it is constructed far from the city center. The alternative route should be near the center of the city, and should connect Mumbwa Road, Los Angeles Road, Kafue Road, and a road which provides the access to Chilimbulu Road. There are two possible alternatives for the inner ring road which can reduce the number of resettlement and simultaneously satisfy the purpose. One is the route which uses Chifundo Road, and the other is the route which runs through low-residential areas to the south of Chawama.

The MFEZ access road connects Independence Avenue and Lusaka South MFEZ. The route alignment is defined to minimize the resettlement. The purpose of this road is to provide access to the MFEZ. An alternative to this road is the access route from Kafue Road, which is proposed in the master plan, and is under study as part of the MFEZ project. Another alternative for the access to the MFEZ is constructing a new road from Leopard Hill Road. However, this route might not attract investors for the MFEZ because it is long detour to the MFEZ. This route should be considered together with the eastern part of the outer ring road, which is currently regarded as a medium term project. Hence, only a “zero-option” is considered for this alternative.

5.2 Alternative Route

The alternative route is shown in Figure 5.2.1.

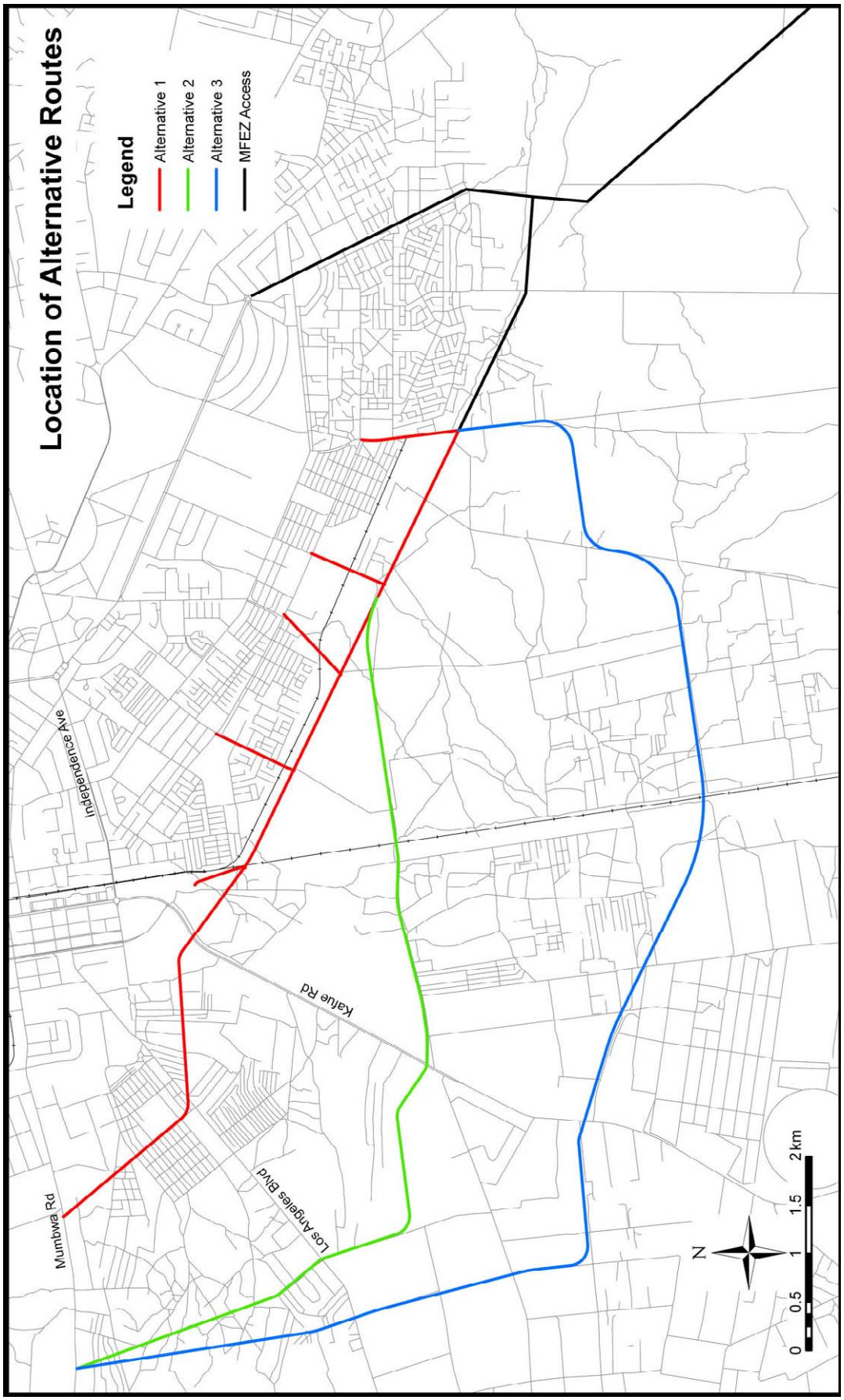
(1) Alternative 1: Power Line Route (master plan route): this is the proposed route as inner ring road in the master plan.

(2) Alternative 2: Chifundo Route:

This route uses Chifundo Road between Kafue Road and the railway line, and the south boundary of the populated area of John Laing between Kafue Road and Los Angeles Road. Resettlement is inevitable between Los Angeles Road and Mumbwa Road. This route connects Chifundo Road and the extension of Yotam Mulleya Road, running through Kamwala South where some resettlement is necessary.

(3) Alternative 3: Middle Ring Route:

This route starts from Kasama Road, and runs through Kamwala South area, the south of Jack, the north of York Farm, the existing roads in Makeni, and crosses Makeni Road, Los Angeles Road, until it reaches Mumbwa Road. This route is a similar route as the middle ring road proposed in the master plan.



Source: JICA Study Team

Figure 5.2.1 Alternative Route of Inner Ring Road

5.3 Design and Cost Estimate of Alternatives

The design and cost of the power line route (Master Plan) is studied in Sections 5.4 and 5.5. The same design was applied for the other alternatives. The permanent 2-lane road of 16-m width is used for the section between Mumbwa Road and Kafue Road, and the transitional 2-lane road of 16-m width is used for the section between Kafue Road and Kasama Road. Table 5.3.1 shows the length of the alternative routes by section and work type.

Table 5.3.1 Route Length by Alternative

Unit: km

Section	Work Type	Power Line Route (Alternative – 1)	Chifundo Route (Alternative – 2)	Middle Road Route (Alternative – 3)
Kafue West	Construction	4.88	4.98	5.75
	Upgrading	1.06	1.87	3.37
	Subtotal	5.94	6.85	9.12
Kafue East	Construction	1.53	3.86	4.91
	Upgrading	2.05	1.65	1.91
	Subtotal	3.58	5.51	6.82
	Total	9.52	12.35	15.93

Source: JICA Study Team

The cost of the power line route is estimated in Section 5.5, while the following unit cost was used for the cost estimation of the other alternatives. The detailed breakdown of the unit cost estimation is shown in Table 5.3.3 – 5.3.6.

Table 5.3.2 Unit Cost for Alternative Analysis

Unit: thousand USD per km

	Kafue West	Kafue East
Construction	1,724	1,763
Upgrading	1,598	1,648

Source: JICA Study Team

The other engineering aspects of the cost estimates are described in Sections 5.4 and 5.5.

The number of resettlement buildings for each alternative was counted using the satellite image (Quick Bird, 2007–2008). It was confirmed that the number of the displaced structures is 157 buildings for Alternative 1, 120 for Alternative 2, and 135 for Alternative 3.

The work period of the three alternatives were estimated at 24, 26, and 31 months for Alternatives 1, 2, and 3, respectively.

Table 5.3.3 Cost Estimation of Construction in Kafue East

Item	Description		Unit	Unit Cost (ZMK)	Quantity	Amount (ZMK)
EARTHWORK						
Clearing and Grubbing			m^2	1,200	0.00	0
Removal of Top Soil	less than 20cm		m^3	20,000	0.00	0
Embankment	Granular		m^3	144,000	0.00	0
Embankment	Earth & Sand		m^3	45,000	0.00	0
Hard Rock Excavation			m^3	160,000	4,800.00	768,000,000
Soft Rock Excavation			m^3	24,000	8,800.00	211,200,000
Subgrade Preparation			m^2	25,000	10,500.00	262,500,000
Subgrade		30 cm	m^3	45,000	3,150.00	141,750,000
PAVEMENT (Carriage Way)						
Wearing Course	As	5 cm	m^2	80,000	7,500.00	600,000,000
Binder Course	As	5 cm	m^2	80,000	7,500.00	600,000,000
Base	Granular	15 cm	m^3	65,000	1,125.00	73,125,000
Sub-Base	Granular	30 cm	m^3	55,000	2,250.00	123,750,000
Prime Coat			m^2	3,400	7,500.00	25,500,000
Tack Coat			m^2	1,500	7,500.00	11,250,000
PAVEMENT (Shoulder)						
Wearing Course	As	5 cm	m^2	80,000	3,000.00	240,000,000
Binder Course	As	5 cm	m^2	80,000	3,000.00	240,000,000
Base	Granular	15 cm	m^3	65,000	450.00	29,250,000
Sub-Base	Granular	30 cm	m^3	55,000	900.00	49,500,000
Prime Coat			m^2	3,400	3,000.00	10,200,000
Tack Coat			m^2	1,500	3,000.00	4,500,000
PAVEMENT (Sidewalk)						
Surface	DBST		m^2	30,000	3,000.00	90,000,000
Base		15 cm	m^3	65,000	450.00	29,250,000
Prime Coat			m^2	3,400	3,000.00	10,200,000
DRAINAGE						
Box Culvert			m	7,500,000	16.00	120,000,000
Pipe Culvert			m	1,750,000	32.00	56,000,000
Side Channel			m	517,500	2,000.00	1,035,000,000
ANCILLARY WORKS						
Traffic Signal			each	67,500,000	4.00	270,000,000
Marking			m	2,000	4,000.00	8,000,000
Delineator			m	0	1,000.00	0
Traffic Sign			each	3,500,000	4.00	14,000,000
Guard Rail			m	320,000	0.00	0
Traffic Light			each	8,000,000	14.00	112,000,000
Planting			each	370,000	0.00	0
Sub-Total						5,134,975,000
INDIRECT COST						
Overhead and Profit			%	5,134,975,000	10.00	513,497,500
Field Expenses			%	5,134,975,000	1.00	51,349,750
Temporary Works			%	5,134,975,000	10.00	513,497,500
Employer's Site Requirements			%	5,134,975,000	2.00	102,699,500
Sub-Total						1,181,044,250
Total						6,316,019,250

Source: JICA Study Team

Table 5.3.4 Cost Estimation of Upgrading in Kafue East

Item	Discription	Unit	Unit Cost (K)	Quantity	Amount (K)	Remarks
Upgrading Section / Existing Road Section						
EARTHWORK						
Clearing and Grubbing		m^2	1,200	0.00	0	
Removal of Top Soil	less than 20cm	m^3	20,000	0.00	0	
Embankment	Granular	m^3	144,000	0.00	0	
Embankment	Earth & Sand	m^3	45,000	0.00	0	
Hard Rock Excavation		m^3	160,000	3,150.00	504,000,000	
Soft Rock Excavation		m^3	24,000	5,775.00	138,600,000	
Subgrade Preparation		m^2	25,000	10,500.00	262,500,000	
Subgrade		m^3	45,000	3,150.00	141,750,000	
PAVEMENT (Carriage Way)						
Wearing Course	As 5 cm	m^2	80,000	7,500.00	600,000,000	
Binder Course	As 5 cm	m^2	80,000	7,500.00	600,000,000	
Base	Granular 15 cm	m^3	65,000	1,125.00	73,125,000	
Sub-Base	Granular 30 cm	m^3	55,000	2,250.00	123,750,000	
Prime Coat		m^2	3,400	7,500.00	25,500,000	
Tack Coat		m^2	1,500	7,500.00	11,250,000	
PAVEMENT (Shoulder)						
Wearing Course	As 5 cm	m^2	80,000	3,000.00	240,000,000	
Binder Course	As 5 cm	m^2	80,000	3,000.00	240,000,000	
Base	Granular 15 cm	m^3	65,000	450.00	29,250,000	
Sub-Base	Granular 30 cm	mv	55,000	900.00	49,500,000	
Prime Coat		m^2	3,400	3,000.00	10,200,000	
Tack Coat		m^2	1,500	3,000.00	4,500,000	
PAVEMENT (Sidewalk)						One Side
Surface	DBST	m^2	30,000	3,000.00	90,000,000	
Base	15 cm	m^3	65,000	450.00	29,250,000	
Prime Coat		m^2	3,400	3,000.00	10,200,000	
DRAINAGE						
Box Culvert		m	7,500,000	16.00	120,000,000	
Pipe Culvert		m	1,750,000	32.00	56,000,000	
Side Channel		m	517,500	2,000.00	1,035,000,000	
ANCELLARY WORKS						
Traffic Signal		each	67,500,000	4.00	270,000,000	
Marking		m	2,000	4,000.00	8,000,000	
Delineator		m	0	1,000.00	0	
Traffic Sign		each	3,500,000	4.00	14,000,000	
Guard Rail		m	320,000	0.00	0	
Traffic Light		each	8,000,000	14.00	112,000,000	
Planting		each	370,000	0.00	0	
Sub-total					4,798,375,000	
INDIRECT COST						
Overhead and Profit		%	4,798,375,000	10.00	479,837,500	
Field Expenses		%	4,798,375,000	1.00	47,983,750	
Temporary Works		%	4,798,375,000	10.00	479,837,500	
Employer's Site Requirements		%	4,798,375,000	2.00	95,967,500	
Sub-Total					1,103,626,250	
Total					5,902,001,250	

Source: JICA Study Team

Table 5.3.5 Cost Estimation of Construction in Kafue West

Item	Discription	Unit	Unit Cost (K)	Quantity	Amount (K)	Remarks
New Construction Section						
EARTHWORK						
Clearing and Grubbing		m2	1,200	0.00	0	
Removal of Top Soil	less than 20cm	m3	20,000	0.00	0	
Embankment	Granular	m3	144,000	0.00	0	
Embankment	Earth & Sand	m3	45,000	0.00	0	
Hard Rock Excavation		m3	160,000	4,800.00	768,000,000	
Soft Rock Excavation		m3	24,000	8,800.00	211,200,000	
Subgrade Preparation		m2	25,000	10,000.00	250,000,000	
Subgrade		m3	45,000	3,000.00	135,000,000	
PAVEMENT (Carriage Way)						
Wearing Course	As 5 cm	m2	80,000	7,000.00	560,000,000	
Binder Course	As 5 cm	m2	80,000	7,000.00	560,000,000	
Base	Granular 15 cm	m3	65,000	1,050.00	68,250,000	
Sub-Base	Granular 30 cm	m3	55,000	2,100.00	115,500,000	
Prime Coat		m2	3,400	7,000.00	23,800,000	
Tack Coat		m2	1,500	7,000.00	10,500,000	
PAVEMENT (Shoulder)						
Wearing Course	As 5 cm	m2	80,000	3,000.00	240,000,000	
Binder Course	As 5 cm	m2	80,000	3,000.00	240,000,000	
Base	Granular 15 cm	m3	65,000	450.00	29,250,000	
Sub-Base	Granular 30 cm	m3	55,000	900.00	49,500,000	
Prime Coat		m2	3,400	3,000.00	10,200,000	
Tack Coat		m2	1,500	3,000.00	4,500,000	
PAVEMENT (Sidewalk)						
Surface	DBST	m2	30,000	3,000.00	90,000,000	
Base	15 cm	m3	65,000	450.00	29,250,000	
Prime Coat		m2	3,400	3,000.00	10,200,000	
DRAINAGE						
Box Culvert		m	7,500,000	16.00	120,000,000	
Pipe Culvert		m	1,750,000	32.00	56,000,000	
Side Channel		m	517,500	2,000.00	1,035,000,000	
ANCELLARY WORKS						
Traffic Signal		each	67,500,000	4.00	270,000,000	
Marking		m	2,000	4,000.00	8,000,000	
Delineator		m	0	1,000.00	0	
Traffic Sign		each	3,500,000	4.00	14,000,000	
Guard Rail		m	320,000	0.00	0	
Traffic Light		each	8,000,000	14.00	112,000,000	
Planting		each	370,000	0.00	0	
Sub-total					5,020,150,000	
INDIRECT COST						
Overhead and Profit		%	5,020,150,000	10.00	502,015,000	
Field Expenses		%	5,020,150,000	1.00	50,201,500	
Temporary Works		%	5,020,150,000	10.00	502,015,000	
Employer's Site Requirements		%	5,020,150,000	2.00	100,403,000	
Sub-Total					1,154,634,500	
Total					6,174,784,500	

Source: JICA Study Team

Table 5.3.5 Cost Estimation of Upgrading in Kafue West

Item	Discription	Unit	Unit Cost (K)	Quantity	Amount (K)	Remarks
Upgrading Section / Existing Road Section						
EARTHWORK						
Clearing and Grubbing		m^2	1,200	0.00	0	
Removal of Top Soil	less than 20cm	m^3	20,000	0.00	0	
Embankment	Granular	m^3	144,000	0.00	0	
Embankment	Earth & Sand	m^3	45,000	0.00	0	
Hard Rock Excavation		m^3	160,000	3,000.00	480,000,000	
Soft Rock Excavation		m^3	24,000	5,500.00	132,000,000	
Subgrade Preparation		m^2	25,000	10,000.00	250,000,000	
Subgrade		m^3	45,000	3,000.00	135,000,000	
PAVEMENT (Carriage Way)						
Wearing Course	As 5 cm	m^2	80,000	7,000.00	560,000,000	
Binder Course	As 5 cm	m^2	80,000	7,000.00	560,000,000	
Base	Granular 15 cm	m^3	65,000	1,050.00	68,250,000	
Sub-Base	Granular 30 cm	m^3	55,000	2,100.00	115,500,000	
Prime Coat		m^2	3,400	7,000.00	23,800,000	
Tack Coat		m^2	1,500	7,000.00	10,500,000	
PAVEMENT (Shoulder)						
Wearing Course	As 5 cm	m^2	80,000	3,000.00	240,000,000	
Binder Course	As 5 cm	m^2	80,000	3,000.00	240,000,000	
Base	Granular 15 cm	m^3	65,000	450.00	29,250,000	
Sub-Base	Granular 30 cm	m^3	55,000	900.00	49,500,000	
Prime Coat		m^2	3,400	3,000.00	10,200,000	
Tack Coat		m^2	1,500	3,000.00	4,500,000	
PAVEMENT (Sidewalk)						
Surface	DBST	m^2	30,000	3,000.00	90,000,000	
Base	15 cm	m^3	65,000	450.00	29,250,000	
Prime Coat		m^2	3,400	3,000.00	10,200,000	
DRAINAGE						
Box Culvert		m	7,500,000	16.00	120,000,000	
Pipe Culvert		m	1,750,000	32.00	56,000,000	
Side Channel		m	517,500	2,000.00	1,035,000,000	
ANCELLARY WORKS						
Traffic Signal		each	67,500,000	4.00	270,000,000	
Marking		m	2,000	4,000.00	8,000,000	
Delineator		m	0	1,000.00	0	
Traffic Sign		each	3,500,000	4.00	14,000,000	
Guard Rail		m	320,000	0.00	0	
Traffic Light		each	8,000,000	14.00	112,000,000	
Planting		each	370,000	0.00	0	
Sub-total					4,652,950,000	
INDIRECT COST						
Overhead and Profit		%	4,652,950,000	10.00	465,295,000	
Field Expenses		%	4,652,950,000	1.00	46,529,500	
Temporary Works		%	4,652,950,000	10.00	465,295,000	
Employer's Site Requirements		%	4,652,950,000	2.00	93,059,000	
Sub-Total					1,070,178,500	
Total					5,723,128,500	

Source: JICA Study Team

Table 5.3.7 Construction Period Estimation

	Work Period per km	Alternative 1		Alternative 2		Alternative 3	
		Length (km)	Work Period Month	Length (km)	Work Period Month	Length (km)	Work Period Month
Kafue East							
New Construction							
Excavation	0.93	4.883	4.5	4.979	4.6	5.747	5.3
Base Course	0.61	4.883	3.0	4.979	1.5	5.747	1.8
Surface Course	0.28	4.883	1.4	4.979	1.4	5.747	1.6
Updrading							
Excavation	0.61	1.057	0.6	1.867	1.1	3.368	2.1
Base Course	0.31	1.057	0.3	1.867	0.6	3.368	1.0
Surface Course	0.28	1.057	0.3	1.867	0.5	3.368	0.9
Kafue West							
New Construction							
Excavation	0.93	1.528	1.4	3.855	3.6	4.903	4.6
Base Course	0.31	1.528	0.5	3.855	1.2	4.903	1.5
Surface Course	0.28	1.528	0.4	3.855	1.0	4.903	1.3
Updrading							
Excavation	0.58	2.047	1.2	1.650	1.0	1.916	1.1
Base Course	0.30	2.047	0.6	1.650	0.5	1.916	0.6
Surface Course	0.26	2.047	0.5	1.650	0.4	1.916	0.5
Others			9.0		9.0		9.0
TOTAL			23.7		26.4		31.3

Source: JICA Study Team

5.4 Traffic Volume Forecast of Alternative Routes

Traffic volume forecast for each alternative was carried out for the year 2015, by using the traffic forecast model in the master plan. Like in the master plan, the same origin-destination (OD) matrix in 2015 was used. The road network in the forecast consists of 1) the existing roads (2008), 2) the access road from Kafue Road to LS-MFEZ[1], and 3) each alternative route.

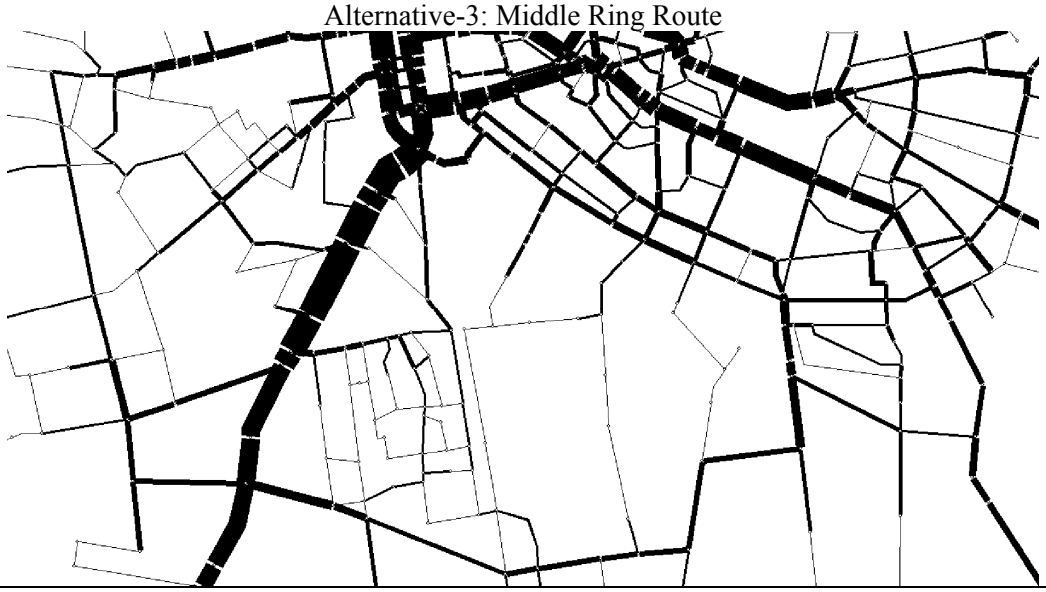
Figure 5.4.1 shows the result of the forecast. For Alternative-1, the result is the same as shown in Table 2.2.2. Traffic volume of Alternative-2 was estimated at 6,000 – 16,000 PCU per day, while that of Aternative-3 was 7,000 – 16,000 PCU per day. In all cases, traffic volume to the east of Kafue Road is higher than that to the west.

[1] The access road to the MFEZ from Kafue Road (a part of Outer Ring Road) is regarded as part of base network for each alternative, because if this road does not exist, there is no access to the MFEZ in case of "zero option".

Alternative -1: Power Line Route (Master Plan Route)

Alternative -2: Chifundo Route

Alternative-3: Middle Ring Route



Source: JICA Study Team

Figure 5.4.1 Traffic Flow for Alternatives

5.5 Evaluation of Alternatives

Alternative consideration was conducted in terms of economic, social and environmental aspects, and economic, technical, environmental and social indicators were evaluated equally without any weighting for specific indicators. In this section, quantitative alternative evaluation is discussed mainly from the economic and technical view points, and qualitative/quantitative alternative considerations in terms of environmental and social considerations are described later in Section 5.6.

Several indicators were calculated for the evaluation and as shown in Table 5.5.1. Traffic indicators like vehicle-kilometers are calculated for all traffic movements in Lusaka. All traffic indicators are high in case of the "zero-option". CO2 reduction is highest in case of Middle Ring Route. This case also shows the lowest vehicle operating cost (VOC). On the other hand, savings in travel time cost, which represents the impact of congestion relief, is most significant in the case of the power line route (Master Plan case). The total economic benefit is highest in the case of the middle ring route. However, the differences of traffic indicators and economic benefits are very small among the three alternatives.

In view of construction cost, the power line route is the best. Cost efficiency is also highest in this case at the first year return of 58.6%. However, the number of resettlement is largest in this case. The Chifundo route is the case with the smallest number of resettlement. However, this route will divide the community in Chawama and widening of the road to 4-lane in the future will be difficult because it will require additional land acquisition and resettlement. The widening of the road will be easy in case in the power line route.

For the drainage system which is an important factor of the road project in Lusaka, the power line route can use Ngwere Stream near Kafue Road as the outfall area, while other routes need to carry water up to Chunga Stream in the industrial area.

Table 5.5.1 Comparison of Alternatives for Inner Ring Project

	Unit	Zero Option	Alt-1	Alt-2	Alt-3
Length	Km	-	22.9	25.5	30.0
Vehicle-km /day	Million	5.73	5.65	5.66	5.69
Vehicle-hour /day	Thousand	211	202	202	202
Fuel Consumption /day	Thousand Litter	845	816	817	814
CO2 Emission /day	Ton	2087	2020	2023	2016
NOx Emission /day	Ton	3.15	3.13	3.14	3.14
SPM /day	Kg	166	165	166	166
VOC /day	USD thousand	1,391	1,348	1,349	1,345
Time Cost /day	USD thousand	771	735	736	737
Economic Benefit/ year	USD million	-	24.1	23.3	24.5
Economic Cost*[1]/ year	USD million	-	0.6	0.7	0.8
Construction Cost*[2]	USD million	-	50.4	59.4	66.1
Initial Economic Cost	USD million		39.9	45.2	51.7
First Year Return	%	-	55.7	45.4	42.5
Construction Period	Month	-	24	27	33
Area of land acquisition	ha	-	12.0	27.6	31.7
Resettlement	No.	-	157+3	120+3	135+3

Note *[1]: Annual economic cost = road maintenance cost
Note *[2]: Including land acquisition cost and resettlement cost
Note: FYR = (Annual Economic Benefit – Annual Economic Cost)/ Initial Economic Cost
Source: JICA Study Team.

5.6 Alternatives for Environmental and Social Considerations

The preliminary design was done considering environmental and social impacts. The number of resettlements was minimized under the planned alignment. In addition to economic and technical evaluation in Section 5.4, the environmental and social impacts of the alternatives are considered and summarized in Table 5.6.1. As a result, Alternative 1 is also considered the best option in terms of environmental and social considerations since overall its has more benefits, even though impact of resettlement would be the largest.

Table 5.6.1 Alternative Considerations for Environmental and Social Considerations

Items	Alt. 1	Alt. 2	Alt. 3	Zero Option	
Land Acquisition and Resettlement Cost in million USD	3.4	6.1	5.9	0	1. Not contributing to the planned Lusaka South MFEZ project; and 2. Negative impacts on social and economic activities by worsened traffic congestion.
No. of Structures to be Displaced	160	123	138	0	
Land Acquisition ha	12.0	27.6	31.7	0	
Difficulty to Connect to Existing Drainage	Not Difficult	Slightly Difficult	Slightly Difficult	n.a.	
Traffic Congestion Relief in Town and Access to Existing Roads	Good	Slightly Good	Slightly Good	n.a.	
Air Pollutant Emission ton /day	NOx: 3.13; SPM: 165	NOx: 3.14; SPM: 166	NOx: 3.14; SPM: 166	NOx: 3.15; SPM: 166	

Source: JICA Study Team

The flexibility of the design is constrained due to the site condition. In addition to the above-considerations, there are few more alternatives to reduce the number of resettlement from the planned alignment as follows:

Case-1: To change the location of intersection with Mumbwa Road

Case-2: To separate the road by Los Angeles Road

Case-3: To reduce the road width

The idea of Case-1 is to use a stone quarry to reduce the number of resettlements in Kanyama. In this case, the alignment of Inner Ring Road will not be conformed to the master plan network. In addition, construction cost will be larger because of the stone quarry. This case will take job opportunity at the stone quarry from the community.

In Case-2, the section between Mumbwa Road and Los Angeles Road and the section between Los Angeles Road and Kafue Road have different intersection with Los Angeles Road. In this case, two T-intersections of arterial roads will be close each other.

As for Case-3, the width of Inner Ring Road is proposed as 16m. It was proposed considering the function as an arterial road. Reduction in the width of walkway, shoulder, carriageway, and drainage space will reduce the function of the road. Increase in traffic accidents and environmental problem will be expected. In addition, the difference of the number of resettlements from the original width is small.

In conclusion, these alternatives of Case 1-3 will cause other negative social impacts of the planned design.

CHAPTER 6. BASELINE CONDITIONS ALONG THE PLANNED INNER RING ROAD

6.1 Biophysical Environment

In addition to the general environmental and social conditions of the City of Lusaka which is described in Chapter 7 of Main Text I, the project site specific information collected through the public hearings and site visits is presented in the following sections.

(1) Land Use

The land use and local economic status of the project site varies. The planned road runs through Unplanned Urban Settlements (UUS), namely the Kanyama Compound, Chibolya Compound and Misisi Compound near the central business and commercial area, goes through the open space along the power transmission line, and reaches a newly developing residential area up to the MFEZ project site which was a former forest reserve.

(2) Air Quality

According to the Lusaka Environment Outlook (LEO) Report, overall air quality in Lusaka is considered not polluted and fair, compared to other industrial areas such as Copperbelt. However, the quantitative ambient air quality level is unknown because it is not currently monitored in Zambia, even though an ambient air quality standard was established by the Air Pollution Control (Licensing and Emissions Standards) Regulations, 1996.

According to the LEO Report, ambient air quality is considered one of the emerging environmental issues in Lusaka due to the recent increase in vehicles, cement manufacturing industries, coal use by people, and the use of coal-, wood- and diesel-fired boilers. Additionally, the Environmental Council of Zambia (ECZ) considers vehicle emission as one of the critical air pollution issues and is planning to monitor emission gases from vehicles with the assistance from the WB and Nordic Development Fund.

In the project site, the air quality survey was conducted to understand the current air quality level. As for the NOx, there is a limitation on the survey equipment in Zambia, and supplementarily existing air quality data of NO_2 and PM_{10} on Cairo Road, where traffic is one of the heaviest areas, was used for analysis. Since the current traffic volume of the project site as well as the traffic demand of the Inner-ring Road was below that of the existing data, the existing results are able to be considered the potential maximum concentration of NO_2 and PM_{10} in the project site.

As a result, the air quality of the project site is in a fairly good condition except PM_{10}. PM_{10} exceeds the Zambian ambient air quality guidance limits at 3 sampling points. The summarized results are in following.

Table 6.1.1 Current Air Quality Level in the Project Site

Survey Date: 14-18 Dec.2008

Parameter	C6 -Eliba Guest House		C2-New Msisi Police Post		C1-ZESCO Power Station		D11-Green Container		D9-Victory Bible Church		**Zambian Ambient Air Guidance Limit *1**
	Morning	**Afternoon**	**Morning**	**Afternoon**	**Morning**	**Afternoon**	**Morning**	**Afternoon**	**Morning**	**Afternoon**	
SO2 ppm/m^3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.19ppm/m^3(10min) 0.13ppm/m^3(1hr)
SO2 µg/m^3	Reference Value*2: 4										500µg/m^3(10min) 350µg/m^3(1hr)
CO2 ppm/m^3	0.10	0.10	0.09	0.1	0.02	0.02	0.03	0.03	0.04	0.02	-
CO ppm/m^3	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	86ppm/m^3(15min) 51.6ppm/m^3(30min) 25.8ppm/m^3(1hr) 8.6ppm/m^3(8hrs)
NOx µg/m^3	Reference Value*2: 14 (Approx.0.007ppm)										400µg/m^3(1hr) 150µg/m^3(24hr)
PM_{10} µg/m^3	50		95		33		476		636		70µg/m^3(24hr)
Total Dus **mg/m^3***t*	2.013		1.12		3.525		7.041		1.066		-
Lead µg/m^3	<0.001		0.002		<0.001		<0.001		0.003		1.5µg/m^3(3months) 1.0µg/m^3(10monts)

Note: *1: the Zambian Ambient Air Guideline Limits were converted in the same unit of the survey results for comparison. The original standards is attached Appendix 1.
*2: Conducted at Featex Building, Cairo Road, in 1998.

Source: Field Survey and Ambient air quality monitoring system for Zambia, Norsk Institutt for luftforskning, 1998 for air quality; Basic Design Study on the Transportation Network for Lusaka City.

Table 6.1.2: Existing Results of SO_2 and NOx

Parameter	Concentration $\mu g/m^3$	Traffic Volume of Cairo Road in 1998	Sampling point
SO2	4	28,675 vehicles/daytime 12 hours	Featex Building, Cairo Road
NO2	14		

Source: Ambient air quality monitoring system for Zambia, Norsk Institutt for luftforskning, 1998 for air quality; Basic Design Study on the Transportation Network for Lusaka City; JICA Study, 1996 for traffic volume.

Table 6.1.3: Expected Traffic Volume on the Sampling Points

Site Code	Site Name	Expected Traffic Volume on the respective road sections by 2015
C6	Eliba Guest House	11,500 vehicles/day
C2	New Msisi Police Post	14,400 vehicles/day
C1	ZESCO Power Station	14,400 vehicles/day
D11	Green Container	14,400 vehicles/day
D9	Victory Bible church	8,000 vehicles/day

Source: JICA Study

(3) Noise & Vibration

There are no monitoring records or standards on noise and vibration levels for industrial, commercial, residential areas or for the roadsides in Zambia. The noise level and noise emission standards for construction sites, plants, machinery, motor vehicles, aircraft including sonic booms, industrial and commercial activities are planned to be established by the ECZ according to the EPPCA 1990. It is observed that recognition of noise and vibration as pollution is not yet common amongst people in Zambia because the standards have not yet been established and noise and vibration are still not included in the Third Schedule of "Issues to be Considered when Preparing Terms of Reference for Environmental Impact Statements" under the EPCC (EIA) Regulation 1997.

In the project site, the noise level, which is more recognized than vibration by Zambian people, was studied at 5 representative points. The overall noise level in the project site is considered fair except Points C1 and D11 since the project site does not have many major noise/vibration generating sources such industrial areas or heavy traffic.

However, at Points C1 and D11, there could be some localized noise impacts from drivers' and residents' behaviors such as loud music or blowing of horns. For instance, the other sources such as hooters from mini buses by beckoning people to board were reported at Point C1. The study results of the current noise level are summarized in below.

Table 6.1.4: Current Noise Level in the Project Site

Survey Date: 9-13 Dec. 2008

Site Code	Site Name	Noise Level dB(A)			Japanese Roadside Noise Standard*	WB/IFC Standards
		Morning	Noon	Afternoon		
C6	Eliba Guest House	71.6	68.6	62.8	65(day); 60(night)	Residential: 45 (day); 55(night); Industrial & Commercial: 70 (day/night)
C2	New Msisi Police Post	45.2	47.8	48.0		
C1	ZESCO Power Station	58.9	59.3	57.8		
D11	Green Container	67.5	69.5	58.9		
D9	Victory Bible church	59.8	55.1	59.3		

Note 1: The Japanese standards for the mixed land use (residential, commercial and industrial) with more than 2 lanes.
Source: Field Survey

(4) Hydrological Situation and Rainwater

Recently, the City of Lusaka experienced inundation in the past few years during the rainy season, and flooding had become one of the urgent environmental and sanitation issues. Based on the hearings with LCC staff, people in some areas of the project site, such as Chibolya and Misisi Compounds, suffered from inundation during the rainy season in 2008. Additionally, during the stakeholder meeting on 7th Nov. 2008, a participant expressed concern about inundation and questioned the availability of rainwater drainage structures in the inner-ring road project.

(5) Fauna, Flora & Biodiversity

There is no official protected area such as a forest reserve, national park or game management area in the project site. Additionally, most of the project site is located in the urban areas of the capital city.

6.2 Socio-economic Environment

The socio-economic status was analyzed by the secondary data as well as the primary data of the socio-economic survey. Details of the socio-economic data are presented in Appendix 2.

(1) Demographics

The CSO census carried out in year 2000 indicates that the total population of Lusaka District is 1.3 million people with a population density of 65.4 persons per square kilometer. It is the most urbanized and most populated district in the country. Lusaka is estimated to have one million people in transit due to the commercial enterprises and education facilities.

The overall growth rate of Lusaka District is 4.0%. These figures indicate that Lusaka district has one of the highest growth rates exceeding the average national rate of 2.9%. Over 51.2% of all inhabitants are between the ages of 0-14 years of age. There are more males (51.4%) than females (48.59%).

Table 6.2.1 Population and its Growth

	2000	2001	2002	2003
Population	1,150,000	1,198,080	1,248,000	1,300,000
Growth Rate	4.0%	4.0%	4.0%	4.0%

Source: CSO, 2000 & HMIS, LDHMT

A significant proportion of the growth rate in population can be attributed to the rural-urban migration. Lusaka District has seven (7) Constituencies and Thirty (30) Wards. There are two indigenous tribes namely, the Soli and the Lenje. The table below describes the demographic status of Lusaka district.

Table 6.2.2 Demographic Status of Lusaka

Category	%	Year			
		2005	**2006**	**2007**	**2008**
Children 0-11 months	4	64,713	67,172	69,725	72,375
Children <5 years	20	323,569	335,164	348,627	361,875
Children 5< 14	28	452,995	469,370	506,625	506,625
Women 15-45 years	22	355,925	368,791	383,489	398063
All Adults 15 years+	52	825,100	856,454	888,999	xx
Total Males (All ages)	49	792,741	821,397	856,594	886594
Total Females (All ages)	51	62,946	825,100	888,999	922,781
Total Population	100	1,617,843	1,676,321	1,743,136	1,809,375
Expected Pregnancies	5.4	87,364	90,683	94,129	97,706
Expected Deliveries	5.2	84,128	87,325	90,643	94088
Expected live births	4.95	80,083	83,126	86,285	89,564

Source: CSO, 2000 & HMIS, LDHMT

(2) Local Economy

Kanyama, Chibolya and Misisi Compounds are considered relatively low-cost residential areas. These compounds are located near the central area and consist of local markets, small-scale shops and small-scale but heavily populated low-cost residential structures. In Chibolya, there are some factories along the major road.

Industrial Area in Chibolya Compound
Photograph: JICA Study Team

Illegal Charcoal Market in Misisi Compound under Transmission Lines
Photograph: JICA Study Team

In Kamwala, Kabwata, Libala and Chilenge Wards, the proposed alignment passes through most of the open space along the ZESCO transmission line, which is used by local drivers and residents as a road. Along the transmission line, some residential areas with medium-sized structures were observed during the field surveys. Additionally, there are some illegal land uses such as small-scale movable shops, farming, quarrying and waste dumping along the transmission line.

Illegal Movable Shop along Transmission Lines
Photograph: JICA Study Team

Illegal Dumping along Transmission Lines
Photograph: JICA Study Team

In Lubwa Ward, there are already existing paved and unpaved roads. The major land use is residential with some commercial structures.

Lastly, in Chisankane Ward of Kafue District, there is a newly developed residential area with medium-scale structures, and housing construction has been mushrooming overnight.

Existing Road in Lubwa Ward
Photograph: JICA Study Team

Newly Developed Residential Area in Chilenje Ward
Photograph: JICA Study Team

(3) Employment

The occupation type of the affected households in the project area was studied in the socio-economic survey. They are involved in different sectors either government, private, or self-employed. Details are shown in the following.

Table 6.2.3 Demographic Status of Lusaka

Employment Types	No. of Respondents	%
1. Government/Public sector	6	7.14%
2. Private Sector	30	35.71%
3. Self-employed	31	36.90%
4. Farmer	1	1.19%
5. Casual Labour	1	1.19%
6. Unemployed	11	13.10%
7. Others		3.57%
N.A.	1	1.19%
Total	84	100.00%

Source: Socio-economic Survey, JICA Study Team

The economy of the affected area is driven by the private sector with the majority being self-employed accounting for 36.9% then followed by those employed by the private sector accounting for about 35.7% while the lowest number was that of the farmer and casual labour accounting for 1.2% respectively.

From the above-table, it can be observed that government is not the major employer of the people living in these affected areas. The majority of the people or rather three quarters of the people are self-employed, followed by those in the private sector then the unemployed, public sector, and lastly casual labourers and farmers respectively. From the above table, the local economy is mainly comprised of people who are in the informal sector.

(4) Education

The socio-economic survey results show the trend of education attainment level of the affected households. The majority of the respondents finished the basic school or/and the high school.

Table 6.2.3 Attainment Level of Education of the Affected Household

Education Level	No. of Respondents	% of Respondents
1.Illiterate	1	1.35%
2.Can Read Only	1	1.35%
3.Can Read and Write Both	3	4.05%
4.Basic School	28	37.84%
5.High School	29	39.19%
6. University	7	9.46%
7. Post Graduate and Above	3	4.05%
8. Others	2	2.70%
Total	74	100.00%

Source: Socio-economic Survey, JICA Study Team

(5) Vulnerables (Indigenous, Ethnic People, the Poor, the Women, the Elderly and the Youth)

There are two indigenous tribes in Lusaka, namely the Soli and the Lenje; however, in city of Lusaka according to the Lusaka Outlook Report; however, there are more tribes other than Soli and Lenje, and no conflict among tribes is observed.

Poverty is one of the biggest challenges in the city of Lusaka. According to the household interview survey of PT Survey conducted by the JICA Study Team, approximately 75% of the UUS residents live on income under the overall poverty line. Therefore, it is expected that the poor households in Chibolya and Misisi Compounds would be affected by the project.

Additionally, there are the female-headed households to be affected by the project. The socio-economic survey result shows that while 77% of the respondents are male-headed households and the rest 23% are female-headed ones.

More socio-economic status of the project site is described in the Resettlement Action Plan (RAP) Framework Report of Appendix 2.

6.3 Cultural and Historic Environment

No cultural heritage sites are identified by the field visits of the EIA Team and the List of Heritage Sites provided by the National Heritage Conservation Commission (NHCC). The initial consultation with the NHCC was made in Dec. 2008 and shall be follow-up to discuss the potential mitigation measures in case that any site or relic of cultural/historical interest is found during construction.

6.4 Directly Affected Parties

The residential and non-residential structures in the Right of Way (ROW) were initially identified with satellite images and the number of affected structures is approximately 162 as shown in Table 6.4.1. Amongst 162 residential and non-residential structures, 154 structures were identified as residential by the field survey. Overall, major involuntary resettlement is expected in three heavily populated compounds, namely Kanyama, Chibolya and Misisi.

Table 6.4.1 Approx. Number of Residential and Non-residential Structures in the ROW

Name of Compound/Ward	Harry Mwaanga Nkumbla Ward incl. Kanyama & Chibolya Compounds	Nkoloma Ward incl. Misisi Compounds	Kamwala Ward	Kabwata Ward	Chilenje Ward	Chisankane Ward	Total
No of Structures to be Displaced by Satellite Images*1.	95	64	Not available by satellite images	Not available by satellite images	Not available by satellite images	3	162
No. of Resettlers' Households by the field study *2	354 Residential Structures to be displaced (153 residential structures*2.3 households/structure)		None	None	None	None * Identified structures are non-residential.	354

Note: *1 Identified by satellite images taken between July 2007 and April 2008
*2 Identified by the field survey between Nov. 2008-Jan. 2009.
Source: JICA Study Team

CHAPTER 7. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT OF THE INNER RING ROAD PROJECT

The Environmental and Social Considerations Study was conducted for the inner-ring road project with the existing secondary data as well as the primary data of the air and noise survey as well as the socio-economic survey. The results of the impact assessment and proposed the Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP) are described in the following sections.

7.1 Predicted Air Quality Level of the Project

(1) Predicted Air Pollution Level

The air quality level (NOx and SPM) caused by the project was qualitatively predicted with the puff model. Due to the lack of the reliable and completed metrological data in Lusaka, the puff model which is used for non-continuous air pollution with low wind velocity/calm wind was adopted to examine the maximum negative impact around the project site. As a result, the predicted impact on air quality of the project is considered less significant and meets the Zambian Guideline Limits and/or Japanese Standards.

Table 7.1.1 Predicted Air Quality Level of the Project

Parameter	Predicted Results	Background	Total	Zambian Ambient Air Guideline Limit	Japanese Air Quality Standards
NOx	0.026ppm	0.007 ppm	0.033 ppm	0.21ppm or 400μg/m^3 (1hr) 0.08ppm or 150μg/m^3 (24hr)	0.04-0.06ppm (24hr)
SPM	0.003mg/m^3	-	-	-	0.20mg/m^3 (Average1hour/day); 0.10mg/m^3 (1hr)

Note: Prediction condition: No. small car/hour=1000, No. of Large Cars/hour=500, Speed=40km/h
The existing data of NOx at Cairo Road was used as the background level for this prediction due to the lack of the reliable data.
Source: JICA Study Team

(2) Predicted Regional CO_2 Reduction

CO_2 reduction is part of the economic benefits of the project. There is a quantifiable benefit and the reduction through the project. The yearly reduction was estimated at 8.7 million ton in 2015, 1.1 billion ton in 2020, and 18.3 million ton in 2030. However, the assumption for the calculation is not stable because the estimated fuel consumption for CO_2 emission was based on typical vehicle models in HDM-4. Hence, the method of determining the cost of CO_2 in tons in terms of USD is also unstable. Nevertheless, it is expected that vehicles will be replaced with more energy efficient types.

(3) Predicted Regional Reduction in Air Pollutants

The regional air quality impact was also predicted in terms of NOx and SPM in the Lusaka City and adjacent 3 districts. While air quality along the road would be negatively affected, the regional air pollution shall be improved because the inner-ring road will contribute to decongestion.

Therefore the amount of the NOx and SPM emission was predicted based on the

Japanese emission factors of the NOx and SPM, the current traffic volume as well as the traffic demand for the inner-ring road. As a result, the regional impact is expected to be improved by the project as shown in the following table.

Table 7.1.2 Predicted Regional Air Quality

Parameter	Planned Inner-ring Road in ton/day	Zero Option in ton/day
NOx	3.129	3.154
SPM	0.165	0.166

Source: JICA Study Team

7.2 Predicted Noise Level of the Project

The noise levels (LAeq) of the project was quantitatively predicted with the ASJ RTN-Model 2003 and the standardized road design, and the results of the predicted noise levels are summarized in the following table. As a result, the predicted noise impact of the project meets the reference standards of IFC/WB and Japan, compared to the standards for the mixed land use.

Table 7.2.1 Predicted Noise Level of the Project

Parameter	Predicted Results	IFC/WB Standards	Japanese Roadside Standard
LAeq	60.4	Residential: 55 (day) & 45 (night); Industrial & Commercial: 70 (day/night)	65(day)

Note: Prediction condition: No. small car/hour=1000, No. of Large Cars/hour=500, Speed=40km/h,
Source: JICA Study Team

7.3 Approaches to the Impact Assessment

The Environmental and Social Considerations study was conducted to assess environmental and social impacts of the project referring to the relevant laws, regulations and standards of Zambia and the JICA Guidelines for Environmental and Social Considerations. The relevant laws and regulations in Zambia are listed in Chapter 4. For the impact assessment, there are 31 environmental impact items that were ranked from A to D (both positive/negative) depending on their environmental and social significance in accordance with the rating criteria listed below.

Rating Criteria

- A+/-: Significant positive/negative impact is expected.
- B+/-: Positive/negative impact is expected to some extent.
- C+/-: Extent of positive/negative impact is unknown. (A further examination is needed, and the impact could be clarified as the study progresses)
- Blank: No impact is expected.

7.4 Summary of the Environmental and Social Impacts of the Inner Ring Road Project

The summary of environmental and social impacts of the inner ring road project is shown in Table 7.2.1. The descriptions of significant impacts are discussed in the following sections.

Table 7.2.1 Summary of Environmental & Social Impacts of the Inner-ring Road Project

Env. Impacts / Impact Phase	Social Environment														Natural Environment									Pollution							
	1.Involuntary Resettlement	2.Local Economy such as Employment & Livelihood, etc.	3.Land Use & Utilization of Local Resources	**4. Social Institutions such as Split of Communities**	5.Existing Social Infrastructures & Services	**6.The poor, indigenous & ethnic people**	7.Misdistribution of Benefit & Damage	8.Cultural Heritage	9.Local Conflict of Interest	10.Water Usage or Water Rights & Rights of Common	11.Sanitation	12.Hazards (Risk), Infectious Diseases such as HIV/AIDS	13.Accidents	14.Traffic Jam & Congestion	15.Topography & Geographical Features	16.Soil Erosion	17.Groundwater	18.Hydrological Situation & Rainwater	19.Coastal Zone	20.Fauna, Flora & Biodiversity	21.Meteorology	22.Landscape	23.Global Warming	24.Air Pollution	25.Water Pollution	26.Soil Contamination	27.Waste	28.Noise & Vibration	29.Ground Subsidence	30.Offensive Odor	31.Bottom Sediment
Design Phase	A-					A-																								
Construction Phase		B+	B+	B-	B-									B-										B-			B-	B-		B-	
Operation Phase		A+	B+/C-	A-			B-		B-				B+/-	A+				B+				B+	B+	B-				B-		B-	

Source: JICA Study Team

7.5 Expected Negative Environmental and Social Impacts

The description of environmental and social impacts of the inner-ring road project by each stage is shown in Table 7.5.1.

Table 7.5.1 Description of Environmental and Social Impacts of the Inner Ring Road Project

	No.	Impact Item	Ranking			Description
			Design	Construction	Operation	
Social Environment	1	Involuntary Resettlement	A-	-	-	Involuntary resettlement is expected in the built-up areas in Harry Mwaanga Nkumbula Ward, Nkoloma Ward, Kamwala Ward, Kabwata Ward, Libala Ward, Chilenje Ward, Lubwa Ward of Lusaka District and Chisankane Ward of Kafue District, although this has been minimized as much as possible by considering alternative routes. Especially, in UUSs such as Kanyama, Chibolya and Misisi Compounds, approximately 154 residential and non-residential structures are expected to be affected. Based on the survey results, currently, approx. 154 residential structures or 345 households are identified to be displaced by the field survey.
	2	Local Economy such as Employment & Livelihood, etc.	-	B+	A+	Economic activities would be facilitated due to improved access between the town and the planned economic zone in Chisankane, Multi-facility Economic Zone (MFEZ) provided by the inner ring road. People would be benefited by reduced traffic congestion in the town and a new route of the mini-bus services in the medium/long run, and employment of casual labor during construction in the short run.
	3	Land Use and Utilization of Local Resources	-	B+	B+/C-	Existing land use would not be changed significantly but improved by the project because it consists of 40% improvement of existing roads and 60% construction of a new road. Additionally, for the newly constructed road, approximately 7 km of the open space is used by local drivers and residents as a road. Utilization of local resources will also be improved by the inner-ring road project because the project is integrated and planned as a part of the Comprehensive Urban Development Plan. On the other hand, there would be a possibility that the inner-ring road construction would cause urban sprawl only if land use control is not effectively implemented. As for borrow pits, appropriate management of borrow pits is required in the EIA's approval by ECZ.
	4	Social Institutions such as Split of Communities	-	B-	A-	Division of communities is expected in the heavily populated areas where the inner-ring road is newly constructed such as Kanyama, Chibolya and Misisi Compounds and Chilenje during construction and operation.

	No.	Impact Item	Ranking			Description
			Design	Construction	Operation	
	5	Existing Social Infrastructures and Services such as Traffic/Existing Public Facilities	-	B-	B+	Access to existing social infrastructure such as the existing roads, schools, churches, police posts and other public facilities could be disturbed during construction. During operation, access to the existing social facilities such as University Teaching Hospital would be improved by the project.
	6	Vulenrables (e.g. Indigenous and ethnic people, the poor)	A-	-	-	Illegal occupants, who tend to be the poor, could be adversely affected if they are involuntarily resettled. However, the extent of the impact would be assessed by the results of the socio-economic survey which is still under process.
	7	Misdistribution of Benefit & Damage	-	-	B-	Inequality between beneficiaries and the Project Affected Persons (PAPs) would occur to some extent.
	8	Cultural Heritage	-	-	-	Cultural heritages are not identified by observations during the site visits.
	9	Local Conflict of Interests	-	-	B-	Conflicts of interests related to the road development could occur among beneficiaries and the PAPs.
	10	Water Usage or Water Rights & Rights of Common	-	-	-	No significant impact on water use is expected.
	11	Sanitation	-	-	-	In the short-term, deterioration of sanitary conditions could occur in & around the project site during construction.
	12	Hazards (Risk) Infectious Diseases such as HIV/AIDS	-	-	-	It is expected that most construction laborers would be hired locally in/around Lusaka, which has enough labor supply. The probability to spread infectious HIV/AIDS due to the project is considered low.
	13	Accidents	-	-	B+/-	Traffic accidents could increase due merely to the increased number of the vehicles. On the other hand, it could decrease because of the newly constructed sections when the road is designed in accordance with regulations and standards, and is improved from its unpaved de-facto conditions.
	14	Traffic Jam and Congestion	-	B-	A+	During construction, the access to the existing road would be disturbed for the short-term. Some traffic jam would be expected in the central area due to the construction in the short-term. In operation, the traffic jam would be improved not only in the inner-ring road network as well as the other major network around the town.

	No.	Impact Item	Ranking			Description
			Design	Construction	Operation	
Natural Environment	15	Topography & Geographical Features	-	-	-	No impact is identified since the project site is flat and located in the urban area.
	16	Soil Erosion	-	-	-	No impact is identified since the project site is flat and located in the urban area. Soil erosion could be caused at the borrow pits; however, it is unlikely to happen for the inner ring project since appropriate management of borrow pits is required in the EIA's approval by ECZ.
	17	Groundwater	-	-	-	No significant impact is identified in the inner ring road project.
	18	Hydrological Situation and Rainwater	-	-	B+	Flooding was identified as one of the urban problems during the rainy season by many stakeholders. The lined rainwater drainage has been originally designed for the inner ring project to prevent inundation in the lower areas of Lusaka.
	19	Coastal Zone (Mangroves, Coral Reefs, Tidal Flats, etc.)	-	-	-	There is no coastal zone in Zambia.
	20	Fauna, Flora and Biodiversity	-	-	-	There are no protected areas such as forest reserves or national parks in the project site. Precious fauna and flora rarely exist because the project site is located in the central area of the capital city.
	21	Meteorology	-	-	-	No significant impact is identified in the inner ring road project.
	22	Landscape	-	-	B+	The road construction would improve landscape in especially UUSs and along the transmission line.
	23	Global Warming	-	-	B+	The overall CO_2 emission would be decreased due to smooth traffic flow in the inner ring road.
	24	Air Pollution	-	B-	B-	Deterioration of ambient air quality along the inner-ring road would temporarily occur from construction machineries and vehicles during construction. Ambient air quality along the inner-ring road would be worsened by the increase in vehicle traffic during operation. However, the predicted results of NOx and SPM meet the standards, and the extent of the impact is not significant. Moreover, dust would be improved due to a change from unpaved to paved road conditions. Moreover, the regional air quality would be improved by decongestion in town.

	No.	Impact Item	Ranking			Description
			Design	Construction	Operation	
Pollution	25	Water Pollution	-	-	-	No impact on water quality is expected since water use/wastewater discharge would be very limited only at the construction site during construction.
	26	Soil Contamination	-	-	-	No impact on soil contamination is expected since waste water discharge would be very limited only at the construction site.
	27	Waste	-	B-	-	Disposal of the construction residue of the project would be expected during construction. Existing dumped waste in the project site needs to be appropriately cleared.
	28	Noise and Vibration	-	B-	B-	Noise (B-): Noise levels would temporarily be higher due to equipment and machineries used during construction. Moreover, noise level would be worsened by the increased number of vehicle traffic during operation; however, the extent of the impact is slightly insignificant since the predicted noise level of the project during operation meets the referential standards of the IFC/WB and Japan. Vibration (B-): At present, perception of vibration as a pollution problem in Zambia is very low. Additionally, the vibration impact is often localized and less direct compared to the noise impact. Therefore, impact of the vibration level is minor and negligible.
	29	Ground Subsidence	-	-	-	No impact is identified because the planned road project does not involve any dense structures even though bedrock is considered fragile in some areas of Lusaka City.
	30	Offensive Odor	-	B-	B-	Offensive odors could be caused by construction waste and machinery during construction. Offensive odors from vehicle emission gases are expected to worsen locally but with less significant impact.
	31	Bottom Sediment	-	-	-	No significant impact is identified in the inner ring road project because the planned road does not cross any river.

Source: JICA Study Team

CHAPTER 8. ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

8.1 Mitigation Measures for the Inner Ring Road Project

Significant negative impacts of the inner-ring road project are identified as follows. Mitigation measures are required to reduce the negative impacts. Therefore the environmental management plan was prepared to minimize the negative impact, while the environmental monitoring plan was formed to prevent future negative impacts.

Identified Negative Impacts in the previous section are as follows:

- Involuntary Resettlement during Design;
- Land Use and Utilization of Local Resources during Operation;
- Social Institutions such as Split of Communities during Construction & Operation;
- Existing Social Infrastructures and Services such as Traffic/Existing Public Facilities during Construction;
- Vulenrables (e.g. Indigenous and ethnic people, the poor) during Operation;
- Misdistribution of Benefit & Damage during Operation;
- Local Conflict of Interests during Operation;
- Accidents during Operation;
- Traffic Jam and Congestion during Construction;
- Air Pollution during Construction and Operation;
- Waste during Construction during Construction;
- Noise and Vibration during Construction & Operation; and
- Offensive Odor during Construction & Operation

8.2 Environmental Management Plan for the Inner Ring Road Project

The Environmental Management Plan (EMP) for the Inner Ring Road Project is proposed as described in Table 8.2.1.

Table 8.2.1 Outline of the EMP for the Inner Ring Road Project

Impact No.	Significant Negative Impacts	Proposed EMP	Implementing Organization	Responsible Organization
1	Involuntary Resettlement	Adequate public consultation with the PAPs and the Resettlement Action Plan shall be prepared in accordance with the World Bank's Operational Policy 4.12 by utilizing the RAP Framework prepared in the JICA Study. The RAP shall include consideration of the appropriate relocation site(s), information disclosure to and discussions with resettlers, appropriate infrastructure in a new relocation site(s) and compensations and livelihood assistance. Special attention shall be given to the vulnerable sectors, such as lower-income residents, the illegal occupants without the Occupancy License, the elderly, disabled, women and children.	LCC/MLGH	LCC/MLGH
3	Land Use and Utilization of Local Resources	Proper land use control shall be strengthened to prevent urban sprawl around the inner-ring road as suggested in the Urban Development Master Plan of City of Lusaka. The appropriate borrow pits shall be found not near the human settlements or heritage sites, and appropriate rehabilitation of the borrow pit shall be prepared.	LCC/MLGH	LCC/MLGH

Impact No.	Significant Negative Impacts	Proposed EMP	Implementing Organization	Responsible Organization
4	Social Institutions incl. split of communities	Sufficient consultation on the project and relocation with the PAPs shall be conducted to minimize impacts of split of communities by considering alternative relocation site(s) and crossings.	LCC/MLGH	LCC/MLGH
5	Existing Social Infrastructures & Services such as Traffic/Existing Public Facilities	Provide sufficient staff to control traffic during construction and detours access to existing social infrastructures such as schools, churches and hospitals.	Contractor	LCC/MLGH
14	Traffic Jam & Congestion			
6	The poor, Indigenous & Ethnic People ,	Adequate public consultation and agreement between the government and PAPs are needed. Special attention shall be given to the vulnerable sectors, such as the lower-income residents, the illegal occupants without the Occupancy License, the elderly, disabled, women and children.	LCC/MLGH	LCC/MLGH
7	Local Conflicts of Interest			
9	Misdistribution of Benefit & Damage			
13	Accidents	Safety design shall be ensured in accordance with regulations. Provide pedestrian ways and crossings with signals if applicable. During construction, the contractor needs to comply with Zambian and international laws and regulations on working conditions. Oil or any other chemical spillage shall be avoided to prevent any accidents as well as groundwater/soil contamination by providing workers with information and education on the proper handling of oil/chemicals.	Contractor	LCC
24	Air Pollution	To mitigate dusts during construction, periodically sprinkle water on the line, earth mixing sites and temporary roads where these are close to the communities. Equipment and vehicles shall be well-maintained to keep air pollution at a minimum. Adopt low air pollution emitting equipment, vehicles and methodology for construction, if available. Provide temporary barriers or screens during construction, if necessary. Provide roadside planting where adequate land is available.	Contractor	LCC
27	Waste	Consult with the Waste Management Unit of LCC to handle dumped waste in the project site in Chalala when clearing the site. Secure appropriate disposal sites for construction residue in advance. Consult with the local authority for use of the excess soil, if necessary.	Contractor	LCC
28	Noise & Vibration	Adopt low noise and vibration emitting equipment, vehicles and methodology for construction, if available. Avoid nighttime construction activities near communities. Provide temporary barriers or screens during construction, if necessary. Noise and vibration standards of industrial enterprises shall be enforced to protect construction workers. If there is strong noise, earplugs shall be worn, and working time shall be limited. Equipment and vehicles shall be well-maintained to keep their noise/vibration at a minimum. Provide roadside planting where adequate land is available.	Contractor	LCC
30	Offensive Odor	Keep equipment and vehicles well-maintained to minimize offensive odor. Provide roadside planting where adequate land is available.	Contractor	LCC

Source: JICA Study Team

8.3 Environmental Monitoring Plan for the Inner-ring Road Project

The Environmental Monitoring Plan (EMoP) for the Inner Ring Road Project is proposed as described in Table 8.3.1.

Table 8.3.1 Outline of the EMoP for the Inner-ring Road Project

Impact No.	Significant Negative Impacts	Proposed EMoP	
		Internal Monitoring	Auditing (External Monitoring)
1	Involuntary Resettlement	Monitoring of resettlement and compensation shall be formulated separately in the RAP by LCC/MLGH. Moreover, principle mitigation measures are proposed in the RAP Framework prepared separately within the JICA Study (Appendix 2).	• Environmental Auditing is required by the EPPC (EIA) Regulations, 1997 for the developer to conduct a post-assessment environmental audit within 12-16 months after the completion of the project or the commencement of the project, whichever is earlier. • Monitoring shall be conducted by at least 2 persons of the EIA Team or qualified persons appointed by the developer and approved by the ECZ. • The monitoring report shall be prepared by the developer and submitted to the ECZ.
24	Air Pollution	**During Construction:** Monitor dust regularly by a site visit of the person in charge from the LCC/MLGH. Monitor air quality (e.g. SO_2, PM_{10}, NOx, CO, Pb & dust) in consultation with ECZ, if necessary and/or when any complaints are received from local residents. **During Operation:** Monitor air quality (e.g. SO_2, PM_{10}, NOx, CO, Pb & dust) in consultation with ECZ, if necessary and/or when any complaints are received from local residents. If monitoring, measurement twice a year (dry season & rainy season) is suggested.	
26	Noise	**During Construction:** Monitor roadside noise level (LAeq) in consultation with ECZ, if necessary and/or when any complaints are received from local residents. **During Operation:** Monitor roadside noise level (LAeq) in consultation with ECZ, if necessary and/or when any complaints are received from local residents. If monitoring, measurement once a year is suggested.	

Source: JICA Study Team

CHAPTER 9. PUBLIC CONSULTATION THROUGH STAKEHOLDER MEETINGS

9.1 Approach and Methodology

The method adopted for community consultation was an open discussion amongst the relevant stakeholders, namely councillor of wards and chairpersons of the ward development committees, community-based women's organisations, and relevant officials of the LCC. The stakeholder meetings were organized at LCC at 2 stages when scoping and preparing the draft report on 7th Nov. 2008 and 27th Jan. 2009 respectively.

Letters stating the meeting objectives and requesting local participation were also distributed and the presentation materials were distributed to all the participants (see Appendix 2). Responses from participants and the relevant local information were considered to assess environmental and social concerns of the communities along the project in the study.

9.2 Presentations, Questions and Concerns from the Community Consultative Meetings on 7th Nov. 2008

The stakeholders meeting on the Inner-Ring Road Project was organized on 7 November 2008; i) to share understanding with the stakeholders on the expected environmental & social impacts by the project and the scope of the environmental & social impact assessment for the Project; and ii) to obtain comments and suggestions from the stakeholders to reflect to the surveys for the environmental & social impact assessment. Representatives from all the affected eight (8) wards (Nkoloma, Kamwala, Kabwata, Libala, Chilenje, Harry Mwaanga Nkumbula, Lubwa and Chisankane-Kafue) attended the meeting. Upon the request of the stakeholders, the site tour was organized separately by the LCC and MLGH. Details of the stakeholder meetings are included in Appendix 2.

These discussions were centred on:

- Safety measures for communities and pedestrians
- Impacts of the existing land use (former quarries and dumping sites) in the project site
- Economic benefit to local residents
- Compensation measures for resettlers and other Project Affected Persons
- Project site tour for the meeting participants
- Sensitization programme of the proposed project

Discussions in the Stakeholder Meeting
Photograph: JICA Study Team

Presentation in the Stakeholder Meeting
Photograph: JICA Study Team

9.3 Presentations, Questions and Concerns from the Community Consultative Meetings on 27th Jan. 2009

The stakeholders meeting on the Inner-Ring Road Project was organized on 27 Jan. 2009; i) to brief the study outcomes (e.g. air and noise survey and socio-economic survey) to the stakeholders; ii) to discuss the proposed mitigation measures for environmental and social impacts including the compensation and assistance for resettlers; and iii) to obtain comments and suggestions from the stakeholders. Representatives from all the affected eight wards (Nkoloma, Kamwala, Kabwata, Libala, Chilenje, Harry Mwaanga Nkumbula, Lubwa and Chisankane-Kafue) attended the meeting. Details of the stakeholder meetings are included in Appendix 2.

Major comments and suggestions were summarized below:

- Involvement of the Ward Development Committees was suggested for the implementation of land acquisition and resettlement.
- To find the resettlement site for resettlers, consultation with surrounding districts was suggested to see if they can help affected person and the project proponent.
- ZESCO and ECZ should also be brought on board since they are considered the big stakeholders.

Opening Remarks by Town Clerk
Photograph: JICA Study Team

Discussions in the Stakeholder Meeting
Photograph: JICA Study Team

CHAPTER 10. CONCLUSION AND RECOMMENDATIONS

10.1 Further EIA Procedure for the Inner Ring Road Project

The environmental and social considerations study of the inner ring road was conducted as a preliminary study for the official EIA to be implemented by the LCC and MLGH. Further required EIA process is descried in below.

(1) Need for the official EIA

The Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations of 1997 requires an EIA for the Inner Ring Road Project under the second schedule of the regulations which states as follows.

> *All major roads outside urban areas, the construction of new roads and major improvements over 10 km in length or over 1 km in length if the road passes though a National Park or Game Management Area.*

(2) Further EIA Procedure

The official procedure in Zambia is also described in Section 2.3.4 of Main Text I. The procedure has been started by LCC and MLGH with assistance from the JICA Study Team between Nov. 2008 and Feb. 2009 and the following Steps 1-4 have been conducted during the JICA Study:

1. A stakeholder meeting with ward representatives was organized on 7th Nov. 2008 for scoping impacts and the EIA's TOR preparation in accordance with ECCP (EIA) Regulations. Comments and suggestions from participants were collected.
2. The draft TOR together with CVs of the EIA Team, the Minutes of Meetings, and the participants' list with their signatures were submitted to the ECZ for approval.
3. Proceeding the socio-economic surveys for the RAP framework preparation and the air quality and noise baseline surveys for the EIA.
4. A stakeholder meeting with ward representatives was organized on 27th Jan. 2009 to inform the study outcomes and mitigation measures including RAP framework, and obtain comments and suggestions from participants.

The Environmental and Social Considerations Study in this report was conducted with not only the exiting secondary data but also the primary data of the air and noise survey, the socio-economic survey, the results of the stakeholder meetings, hearings and field visits.

It is necessary for the LCC/MLGH to obtain additional information to review of the detailed mitigation measures as the design of the inner-ring road is finalized.

Table 10.1.1 Proposed TOR of the EIA for the Inner-ring Road Project

Item	Description	Action Taken by	Remarks (Standards and References)
Activities to be conducted by MLGH & LCC within the JICA Study			
Alternative Consideration	Consideration of Alignments	Conducted within the JICA Study.	Minimize the number of households to be resettled and the magnitude of the split of communities as well as maximize the project benefits.
Air Quality	CO, NOx, SO_2, PM_{10}, Pb and Total Dust at 5 locations	Conducted within the JICA Study.	Evaluate impacts referring to the Zambian Ambient Air Standard, Japanese Ambient Air Standard,

Item	Description	Action Taken by	Remarks (Standards and References)
			or/and WHO air standard.
Noise	LAeq at 5 locations	Conducted within the JICA Study.	Evaluate impacts referring to the Japanese and/or IFC/WB ambient noise standard for road side.
Socio-economic Survey	Targeting 20% of the total number of households to be resettled	Conducted within the JICA Study.	Sampling rate of the Asian Development Bank's Good Practice Handbook shall be applied.
RAP Framework	Based on the results of the socio-economic survey, the census survey and stakeholder meetings held to prepare the RAP.	Conducted within the JICA Study.	In accordance with 1) the Zambian practice based on the Zambian Lands Acquisition Act, Town and Country Planning Act and the World Bank's Operational Policy as well as 2) the JICA Guidelines for Environmental and Social Considerations.
Stakeholder Meetings	Public consultation meetings during the three stages are required at minimum by the JICA Guidelines. A seminar on the master plan was conducted as the 1st stakeholder meeting to brief the project background on July 2008; One public consultation meeting was arranged as the 2nd stakeholder meeting in Nov. 2008 for scoping impacts; and Another public consultation meeting will be organized as the 3rd stakeholder meeting in Jan. 2009 to provide the outcomes of the EIA/RAP surveys.	Conducted within the JICA Study.	The JICA Guidelines require stakeholder meetings for the three stages. The seminar conducted in July 2008 was considered to be for the 1st stage Two stages of public consultation meetings are required by the Zambian EIA regulation, ECCP (EIA) Regulations.
Activities needed to be finalized by MLGH & LCC after the JICA Study			
Official EIA Finalization	The detailed mitigation measures of Environmental and Social Considerations Study shall be reviewed and updated by LCC/MLGH when submitting as an EIA report to the ECZ.	Needs to be updated and officially finalized by LCC and MLGH.	None.
Official RAP Formulation	Full RAP preparation including the full census survey and local stakeholder meetings with potential resettlers.	Needs to be updated and officially finalized by LCC and MLGH.	Same as described in above RAP Framework Section
Stakeholder Meetings	One to two more stage(s) of the public consultation meeting shall be conducted to finalize the RAP.	Needs to be organized by LCC and MLGH.	Same as described in above Stakeholder Meeting Section.

Source: JICA Study Team

10.2 Conclusion and Recommendations

The economic impacts of the inner-rind road is overall positive as the economic internal rate of return (EIRR) of 23% and the net present value (NPV) of 73 million USD can justify the project. Additionally, it is expected that residents near the road or in town would benefit from the project in terms of decongested traffic and easier access to existing roads.

Although the environmental impacts caused by the project are minor, the social impacts such as involuntary resettlement are significant. It is highly suggested to involve public in the further planning stage to discuss on the appropriate mitigation measures. Therefore, for the official EIA and RAP procedure, it is important for the LCC/MLGH to conduct adequate public consultation and involvement targeting resettlers and other relevant stakeholders (e.g. ZESCO and ECZ).

APPENDIX

Appendix -1:

Specialist Study I: Air Quality and Noise Survey

THE INNER-RING ROAD PRIORITY PROJECT FOR THE STUDY ON COMPREHENSIVE URBAN DEVELOPMENT PLAN FOR THE CITY OF LUSAKA

AIR AND NOISE SURVEY REPORT

JICA Study Team
Lusaka City Council (LCC)
Ministry of Local Government and Housing (MLGH)

BY HILMA LIMITED FOR KAIZEN CONSULTING INTERNATIONAL

March 2009

TABLE OF CONTENT PAGE

ANNEX

(1) A Note on Report Participation

(2) Zambian Standards and Internationally Recognized Standards of Air Quality and Noise

(3) Detailed Baseline/Raw Data of Noise Measurements

(4) Detailed Baseline/Raw Data of Air Quality Measurements

(5) Pictures of Sampling Points

(6) Pictures during the Baseline Survey at All Sampling Points

ACRONYMS

CO	-	Carbon Monoxide
CO_2	-	Carbon Dioxide
dB	-	Decibels
ECZ	-	Environmental Council of Zambia
EMMP	-	Environmental Management and Mitigation Plan
EPPCA	-	Environmental Protection and Pollution Control
GRZ	-	Government of the Republic of Zambia
JICA	-	Japan International Cooperation Agency
KCI	-	Kaizen Consulting International
LCC	-	Lusaka City Council
MAC	-	Maximum Acceptable Concentration
ND	-	Not Detectable
NOx	-	Nitrogen Oxide
PACs	-	Potential Areas of Concerns
SO_2	-	Sulphur Dioxide
ZESCO	-	Zambia Electricity Supply Corporation

EXECUTIVE SUMMARY

The survey was conducted to identify potential impacts on air quality and sound level that are likely to emanate during construction and operation of the Inner-ring road and to mitigate these impacts as a part of the environmental & social considerations study in the Study on Comprehensive Urban Development Plan for the City of Lusaka. Moreover, a tentative schedule and operational budget has been suggested for the monitoring of these impacts.

As for noise impacts, the currently noise level at Eliba Guest House (C6) and Victory Bible Church (D9) exceed the referential Japanese roadside noise standard or IFC/WB noise standard. Thus, although the predicted noise level of the standard road design meet the both standards, the noise level would exceed the referential standards due to the other irregular noise sources such as loud music by residents or blowing of horns of general drivers and commercial drivers.

Eliba Guest House (C6) sampling point seemed to be the noisiest points of all the five sampled points and had very disruptive noise levels during morning time, above 70 dB(A), when people and vehicle are rushing into town for various economic chores of the day which subsides as the day progresses into evening time.

At ZESCO Power station, Victory Bible Church (D9) and Green Container (D11) sampling points, the noise levels could only be described as disruptive and ranging between 50 and 69 dB (A).

New Msisi Police Post (C2) sampling point was the only calm point of all the five surveyed points with noise levels ranging between 30 and 49 dB (A).

As for gases, the prediction results of NOx and SPM are below the Zambian Ambient Air Quality Guideline Limit as well as the other referential standards.

As for the baseline date of gases detected with the detection tubes, only traces of carbon dioxide (CO_2) could be detected in the air at all the five sampling points. The gas was detected in trace amounts at all the six triangulated sampling points both in the morning and in the afternoon sessions.

The other gases, namely SO_2, CO and NO_X were not detectable in the ambient air at sampling time at all the surveyed points. This could be attributed to the fact that much of the project area lies on the windward side of the industrial area and Lusaka town at large were the ambient air quality is fairly good.

More over, Lusaka, as opposed to the Copperbelt province, has no copper mining activities nearby where sulphur dioxide pollution in the air is most likely occurs. This was compounded by the fact that sampling time for air quality was conducted during the rain season as the rains could clear much of the NO_X fumes and dust particles from ambient air.

PM_{10} at New Misisi Police Post (C2), Green Container (D11) and Victory Bible Church (D9) significantly exceeded the Zambian Ambient Air Guideline Limits.

Traces of Lead in dust were detected at New Msisi Police Post (C2) and at Green Container (D11), but the level was below the Zambian Guideline Limit. The detections could be attributed to human activities and the source of laterite (gravel) respectively.

1 INTRODUCTION

1.1 Background

The Government of the Republic of Zambia (GRZ) through the Ministry of Local Government and Housing (MLGH) initiated the study on "Comprehensive Urban Development Plan for the City of Lusaka".

Hilma Limited was sub-contracted by Kaizen Consulting International (KCI) to conduct the air quality and noise survey components of the preliminary feasibility study of an inner-ring road priority project which has been planned to be conducted from October 2008 until February 2009.

The Inner-ring Road will connect Mumbwa, Los Angeles, and Kafue roads on the western part of the project. It will pass through Kanyama, Chibolya Misisi Compounds providing proper access to existing roads and to reduce traffic in the town. On the eastern fringe, the road will provide good access to the planned Lusaka South Multi-facility Economic Zone (LS-MFEZ) as well as access into/from town/Chilenje and Woodlands.

The works were conducted in accordance with the Zambian regulations as well as the internationally recognized methods used in Zambia as facilitated by Kaizen Consulting International and JICA Study Team.

1.2 Project Objectives

The main objectives of the air quality and noise survey components of the project are:

(1) To measure the baseline of current air quality and noise levels at five (5) points in the project;
(2) To asses impacts on air quality in both the qualitative and quantitative manner;
(3) To prepare the potential mitigation measure for air quality and noise; and
(4) To prepare the suggested schedule and budget of the EMP and EMoP.

1.3 Aim

The ultimate aim of this project is to identify the environmental impacts in terms of air quality and noise that the Inner-ring Road will have on the surrounding community and come up with measures to mitigate the identified impacts.

1.4 Project description

The project involved a field survey to identify the current air quality and noise levels by collection of both primary and secondary data through field walk over with Kaizen Consulting International and JICA Study Team.

During the field survey, five (5) sampling points were identified for air quality and noise. The sampling points consist of:

(1) Sampling point C6 at Eliba Guest House in Kanyama Compound,
(2) Sampling point C2 at New Police Post in Msisi Compound,
(3) Sampling point C1 at ZESCO power station in Chilenje South,
(4) Sampling point D11 at Green Container in Chalala/Woodlands, and
(5) Sampling point D9 at Victory Bible Church in Woodlands.

As mentioned above, the Inner-ring Road will connect Mumbwa, Los Angeles, and Kafue roads on the western part of the project and pass through Kanyama and Chibolya compounds to provide proper access into town on the eastern fringe. It will also act as a filter road from town into Mumbwa road and Los Angeles. The road will also provide good access into town for the Chilenje and Woodlands residents.

The construction of the Inner-ring Road is expected to adversely affect the environment and the communities in the immediate surroundings. Many of these impacts would not only arise during the operational phase, but also during construction. Thus, it was cardinal to conduct this study to safe guard the environment.

2 LEGAL FRAMEWORK & REGULATIONS FOR AIR QUALITY AND NOISE IN ZAMBIA

2.1 The Environmental Protection and Pollution Control Act (EPPCA) 1990

The above is the principle act on environment in Zambia. The act provides for the establishment of an Environmental Council whose main functions constitute the protection of the environment and control of pollution in particular so as to provide for the health and welfare of persons, animals, plants, and the environment in general. Specific Regulations under the Act which relate to the proposed project include the following:

2.1.1 Environmental Impact Assessment Regulations (SI No. 27 of 1997):

The Regulations state that a developer shall not implement a project for which a project brief or an environmental impact statement is required under the regulation, unless a Project Brief or an Environmental Impact Assessment has been concluded in accordance with the regulations and the Council has issued a decision letter.

2.1.2 The Air Pollution Control (Licensing and Emissions Standards) Regulations 1996:

The Regulations prohibit unauthorized discharge of pollutants into the air.

Relevance: The Regulations are relevant to the project in that gaseous emissions from combustible engines and dust emissions are at high risk and as such have potential to pollute the air along the project coverage area.

Compliance thereof: The project will be managed in such a way as to minimize discharge of the pollutants in question into the air.

2.2 The Environmental Protection and Pollution Control Act (EPPCA), Cap 204, on noise abatement.

The Regulations prohibit unauthorized generation of noise pollution into the environment

Relevance: The Regulations are relevant to the project in that noise generation from traffic and construction equipment before, during and after road construction is at high risk and as such has potential to pollute the environment.

Compliance thereof: The project will be managed in such a way as to minimize generation of noise into the environment

3 METHODOLOGY FOR NOISE SURVEY

3.1 Noise

Noise was measured using an integrated sound level meter placed at a sampling position of 1.2m from the ground. The meter records noise in digital form.

Five sampling points were strategically selected for the exercise. One reading was taken every 10 minutes at 30 minutes interval for 2hrs. This means from 06hrs to 08hrs in the morning, 12hrs to 14hrs at mid-day and 17hrs to 19hrs in the evening at every sampling site. A total of 12 readings were taken per sampling site.

The average per session and consequently, per sampling point, was calculated for each noise component. The findings of the above components are covered here in this report.

3.2 Implementation Schedule

Sampling for noise was conduct for five consecutive man-days; one man-day at each sampling site.

Table 1: Implementation Schedule-Noise

DAY	DATE	SITE CODE	SITE NAME
Day one	09th Dec.2008	C6	Eliba Guest House
Day two	10th Dec.2008	C2	New Misisi Police Post
Day three	11th Dec.2008	C1	ZESCO Power Station
Day four	12th Dec.2008	D11	Green Container
Day five	13th Dec.2008	D9	Victory Bible church

4 FINDINGS OF NOISE MEASUREMENT

Noise is measured in decibes (dB). The Decibel is a logarithmic function of acoustic pressure. Thus, the noise levels of two or more sounds are not added up as in conventional mathematics, but are multiplied and bearing in mind that noise is variable over time, measurements are expressed as mean values over a given time., Empirical data was collected in form of on spot measurements/readings straight from the integrated sound level meter.

4.1 Sampling Point C6 -Eliba Guest House

- ***Location and Site Description***

Eliba Guest House sampling point lies in a commercial, residential and education area. The point is situated along gravel (laterite) road that links into a tarmac road some 40m on the South-eastern direction. The point is surrounded by both medium and low cost residential homes. There is a guest house, a school, chains of small grocery shops and a fuel filling facility some 60m away and across the tarmac road.

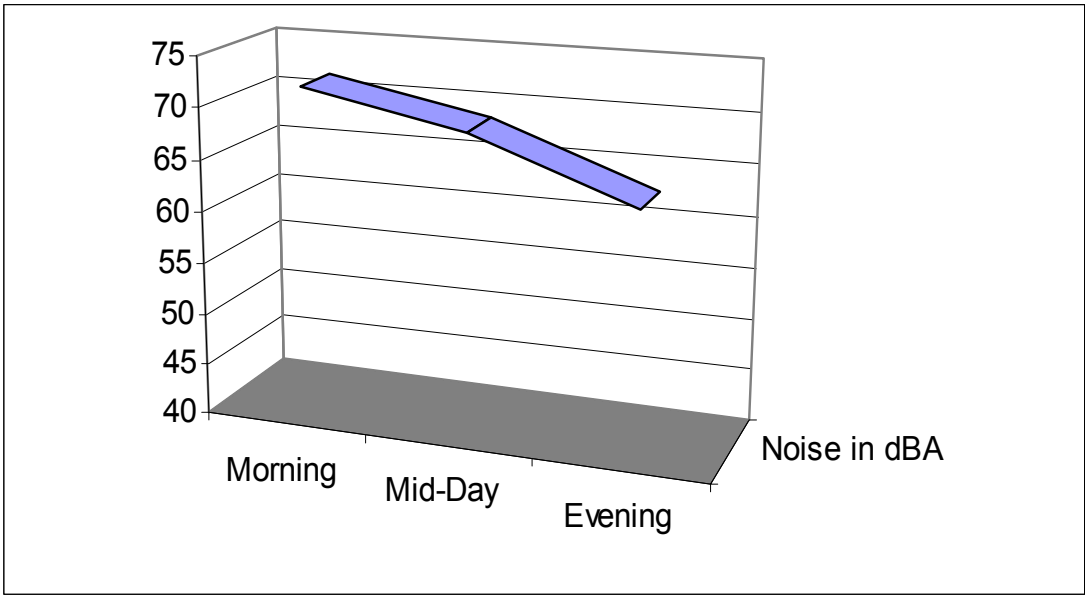
Morning time is characterized with hooters from mini buses by beckoning people to board. Hooters have a high pitched noise level. There are a few 7 to 10 ton trucks in the morning leaving the surrounding residential area (Kanyama Compound) going into town. Below is the GPS location of sampling point C6:-

South = 06º 35.466´
East = 82º 93.845´
Elevation = 1280m above sea level (asl)
Accuracy = 2.9m

DAY ONE: 09th December, 2008-C6-Eliba Guest House

Table 2: Summary Table of Session Means

SESSION	Noise in dBA	REMARK	Key: Interpretation of noise levels
Morning	*71.6*	*Very disruptive*	*Calm =30 – 50dB*
Mid-Day	*68.6*	*Disruptive*	*Disruptive = 51 – 69dB*
Evening	*62.8*	*Disruptive*	*Very Disruptive = 70+dB*



Figures 1: Graphic Presentation of Noise Data at Eliba Guest House

- ***DISCUSSION OF RESULTS***

The noise is very disruptive during morning time, when people and vehicle are rushing into town for various economic chores of the day. As can be seen from the results, the noise subsides as the day progresses into evening time.

Generally, Eliba Guest House sampling point is a relatively busy place the whole day in terms of traffic and pedestrians and street venders.

4.2 Sampling Point C2: New Msisi Police Post

- ***Location and Site Description***

New Msisi Police Post sampling point lies on the Northern end of Msisi Compound. Kafue/Lusaka Road lies about 130 m on the western side. Kamwala shopping area lies on the north eastern side of the sampling point. There is no road for vehicles, apart from a foot path. Thus, there is no traffic and the point is characterized by passersby only (people).

In the morning most of the passers by are those reporting for work in town followed by vendors and those going for other economic chores and coming from the poor or low income stratum people of Msisi and Chawama Compounds. The frequency of passers by is highest in the evening when every one is coming back home. Below is the GPS location of sampling point C2:-

South = 06º 37.588´
East = 82º 93.580´
Elevation = 1285m asl
Accuracy = 5.3m

DAY TWO: 10th December, 2008-C2- New Msisi Police Post

Table 3 Summary Table of Session Means

SESSION	Noise in dBA	REMARK	Key: Interpretation of noise levels
Morning	*45.2*	*Calm*	*Calm =30 – 50dB*
Mid-Day	*47.8*	*Calm*	*Disruptive = 51 – 69dB*
Evening	*48.0*	*Calm*	*Very Disruptive = 70+dB*

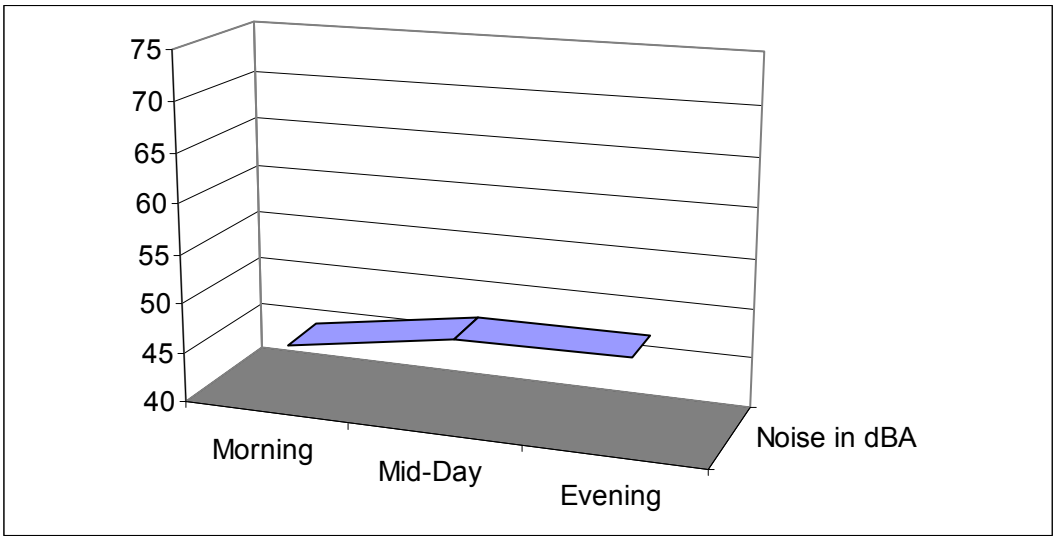


Figure 2: Graphic Presentation of Noise Data at New Misisi Police Post

- ***DISCUSSION OF RESULTS***

As can be seen from the results in the tables and graphs above, the point is generally calm. The noise levels increase slightly towards evening time.

4.3 Sampling Point C1: ZESCO Power Station

- ***Location and Site Description***

ZESCO Power Station sampling point lies in a quite, relatively high cost residential and educational area called Chilenje South Extension. The point has a gravel road with traffic mostly comprising of family cars. Once in a while, 7 to 10 ton trucks carrying building materials (sand and stones) pass through the road since the area is still under construction for residential homes.

A ZESCO Power Station lies some 100 m on the Northern part and a Lusaka Water and Sewerage Corporation's water treatment plant is situated some 300 m on the south eastern side. Below is the GPS location of sampling point C1:-

South = 06º 41.206´
East = 82º 91.615´
Elevation = 1293m asl
Accuracy = 5.5m

DAY THREE: 11th December, 2008-C1- **ZESCO Power Station**

Table 4: Summary Table of Session Means

SESSION	Noise in dBA	REMARK	Key: Interpretation of noise levels
Morning	*58.9*	*Disruptive*	*Calm =30 – 50dB*
Mid-Day	*59.3*	*Disruptive*	*Disruptive = 51 – 69dB*
Evening	*57.8*	*Disruptive*	*Very Disruptive = 70+dB*

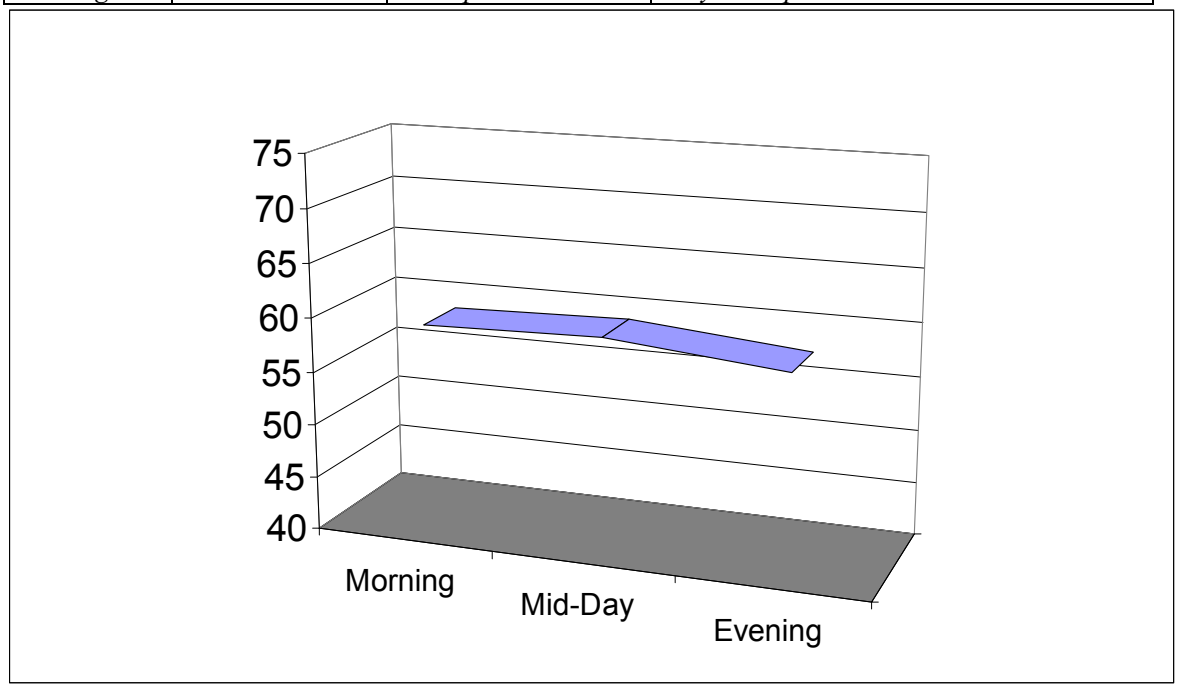


Figure 3: Graphic Presentation of Noise Data at Zesco Power Station

- ***DISCUSSION OF RESULTS***

From the results above, noise from the mentioned sources at the sampling point during survey time could be described as disruptive. There was no significant noise from other sources such as music systems and industrial activities or machinery. The only distant noise during survey time was that from transformers from the ZESCO Power Station. The noise level is at peak during mid-day and subsides as evening progresses.

4.4 Sampling Point D11: Green Container

- ***Location and Site Description***

Like ZESCO Power Station, sampling point D11 lies in a high cost residential area that is still under construction for dwelling homes. It is characterized with personal/family cars and mini buses. Once in a while, 7 to 10 trucks carrying building materials pass by and this mostly during morning time.

The sampling point lies between Chilenje compound on the Western side and Woodlands extension on the Eastern part. Below is the GPS location of sampling point C6:-
South = 06º 44.766´
East = 82º 90.272´
Elevation = 1299m asl
Accuracy = 6.6m

DAY FOUR: 12th December, 2008-D11- **Green Container**

Table 5: Summary Table of Session Means

SESSION	Noise in dB	REMARK	Key: Interpretation of noise levels
Morning	*59.8*	*Disruptive*	*Calm =30 – 50dB*
Mid-Day	*55.1*	*Disruptive*	*Disruptive = 51 – 69dB*
Evening	*59.3*	*Disruptive*	*Very Disruptive = 70+dB*

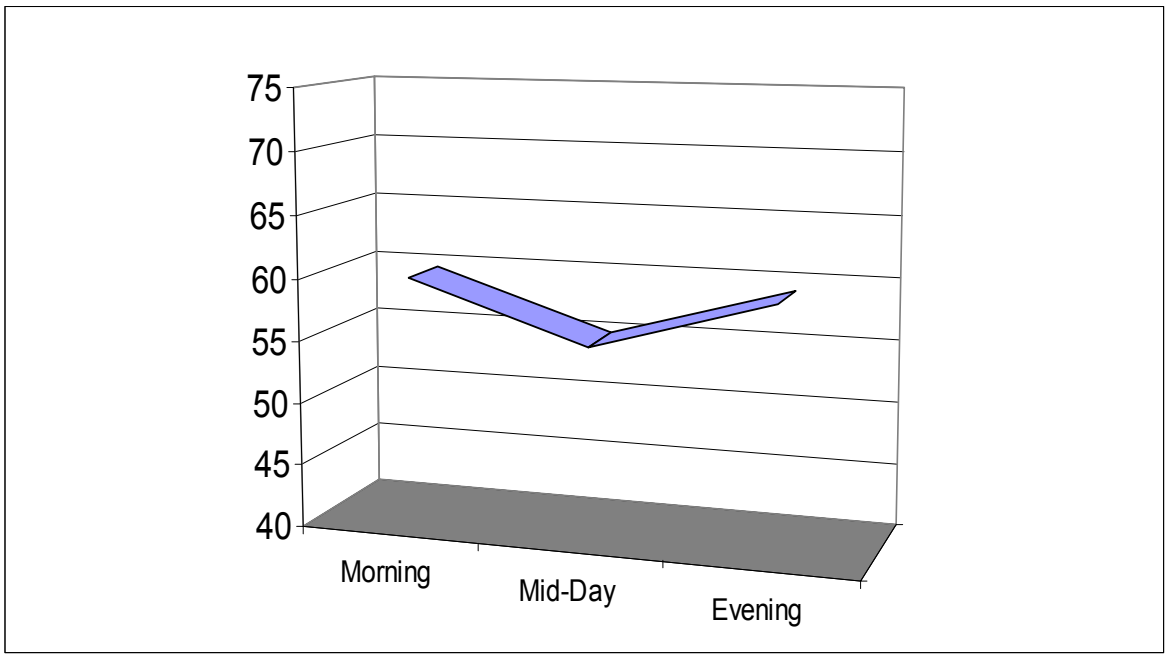


Figure 4: Graphic Presentation of Noise Data at Green Container

- ***DISCUSSION OF RESULTS***

During survey time, noise from the mentioned sources at the sampling point could be described as disruptive. The noise level is at peak in the morning and in the afternoon but minimal during mid-day. There was no significant noise from other sources such as music systems and industrial activities or machinery.

It would appear as if few residents drive back home for lunch during mid-day due to the distance from their various working places that are mostly in town.

4.5 Sampling Point D9: Victory Bible Church

- ***Location and Site Description***

Victory bible church sampling point lies between a, medium cost residential area called Chilenje on the southern part and a relatively high cost residential area which is partially under construction on the northern fringe. The point has a gravel road and traffic is mostly comprised of family cars. Once in a while, 7 to 10 ton trucks carrying building materials (sand and stones) pass through the road. Below is the GPS location of sampling point C9:-

South = 06º 44.908´
East = 82º 91.235´
Elevation = 1295m asl
Accuracy = 5.2m

DAY FIVE: 13th December, 2008- **D9-Victory Bible Church**

Table 6: Summary Table of Session Means

SESSION	Noise in dB	REMARK	Key: Interpretation of noise levels
Morning	*67.5*	*Disruptive*	*Calm =30 – 50dB*
Mid-Day	*69.5*	*Disruptive*	*Disruptive = 51 – 69dB*
Evening	*58.9*	*Disruptive*	*Very Disruptive = 70+dB*

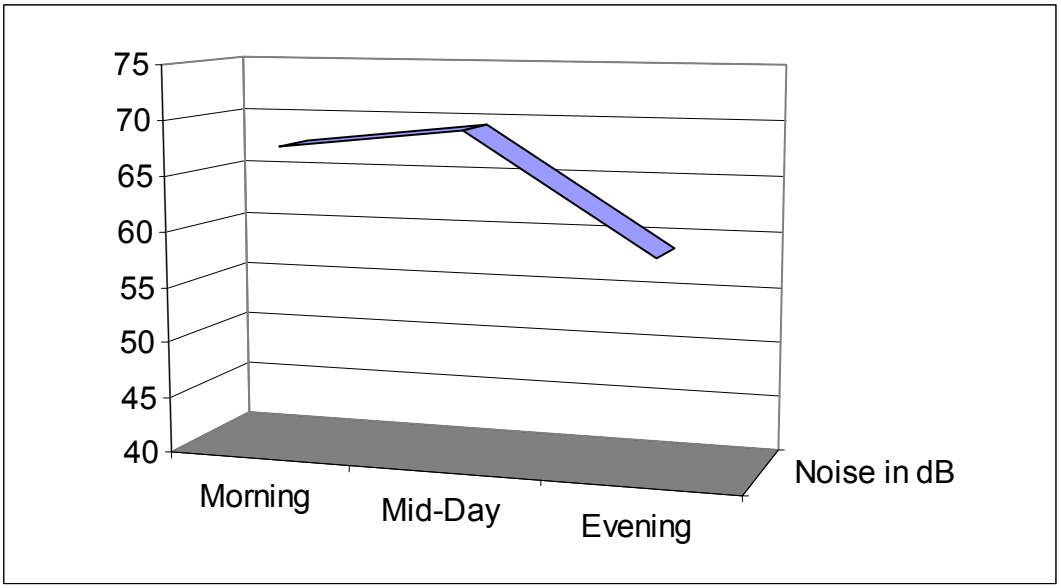


Figure 5: Graphic Presentation of Noise Data at Zesco Power Station

- ***DISCUSSION OF RESULTS***

  During survey time, noise from the mentioned sources at the sampling point could be described as disruptive. The noise level is at peak during mid-day and subsides as evening progresses. There was no noise from other sources such as music systems and industrial activities or machinery.

5 PREDICTED PROJECT IMPACTS ON NOISE

5.1 Project Impacts on Noise at Road Construction

During construction phase heavy machinery will be used for excavation and compaction. The machinery is noisy and will cause a remarkable degree of nuisance to the surrounding environment and communities. Some dangers of noise pollution are both health and behavioral in nature. Noise can harm physiological and psychological health. It can cause annoyance, and aggression hypertension, high stress levels, tinnitus, hearing loss, sleep disturbances. Acceptable levels of noise are regarded as 40 decibels at night and 50 decibels during the day.

5.2 Project Impacts during Operational Phase

The noise levels (LAeq) of the project was quantitatively predicted with the ASJ RTN-Model 2003 and the standardized road design. The ASJ RTN-Model 2003, a Japanese model, was used since there is no noise prediction model commonly used in Zambia.

The result of the predicted noise levels is summarized in the following table. As a result, the predicted noise impact of the project meets the reference standards of IFC/WB and Japan, compared to these standards for the mixed land use.

Table 7: Predicted Results of Noise

Parameter	Predicted Results	IFC/WB Standards	Japanese Roadside Standard
LAeq	60.4	Residential: 55 (day) & 45 (night); Industrial & Commercial: 70 (day/night)	65(day)

Note: Prediction conditions: No. small car/hour=1000, No. of Large Cars/hour=500, Speed=40km/h,

6 ENVIRONMENTAL MANAGEMENT PLAN-NOISE

This section highlights an Environmental Management and Mitigation Plans (EMMP) for the identified impacts. The section identifies the potential significant noise impacts associated with the construction and operational phases of the project as well as the proposed mitigation measures and the responsible parties.

6.1 Impact Mitigation Plan

The table below is a summarized mitigation plan addressing identified noise impacts that may be caused due to the construction and improvement of the Inner-ring Road project.

Table 8: Impact Mitigation Plan for Noise

IDENTIFIED IMPACT	MITIGATION OBJECTIVE	PROPOSED MITIGATION MEASURES	RESPONSIBILITY	MONITORING
Environmental Impacts				
1.0 Noise after road construction: Mostly from traffic or combustion engines and pedestrians.	**Minimization** (i) Through enforcement and in conformity with Environmental Protection and Pollution Control Act (EPPCA), Cap 204, on noise abatement. (ii) Enforcement of by-laws by the local authorities (LCC) (iii) Periodic monitoring of noise levels	➢ Sensitization programs to educate motorists (the road users) about the dangers of noise pollution especially that emanating from unnecessary hooting and raving of combustion engines. ➢ Placement of speed limit signage. ➢ Construction of speed limit humps or dips. ➢ Constant maintenance of the road to reduce pot holes which contribute to increased noise levels.	Local Government through Lusaka City Council	Local Government through Lusaka City Council (LCC) in collaboration with the Environmental Council of Zambia (ECZ)
2.0 Noise during construction: Emanating from construction machinery	**Minimization** (i) Through enforcement and in conformity with Environmental Protection and Pollution Control Act (EPPCA), Cap 204 on noise abatement	➢ Placement of speed limit signage. ➢ Construction of speed limit humps or dips. ➢ Working hours limited to day time only.	Local Government through Lusaka City Council and road contractors.	Local Government through Lusaka City Council (LCC) in collaboration with the Environmental Council of Zambia (ECZ

Table 9: Budget and Schedule for Noise Monitoring

Item	Parameter	Description	Schedule	Responsibility	Unit Cost (ZMK)	Annually (ZMK)
1	Noise Monitoring	Sound in Decibels(dBA)	Biannually	LCC	2,850,000.00	5,700,000.00

7 BASELINE DATA OF AIR QUALITY (GAS)

7.1 Gases

A Drager Pump (Bellow pump) which uses drager gas detection tubes was used for specified gas sampling. There are different tubes with respective chemical for a particular gas pollutant.

7.2 Sampling Procedure

The main air emissions considered during the survey were as follows:

Carbon monoxide (CO), Carbon dioxide (CO2), Sulphur dioxide (SO2) and Nitrogen oxides (NOx) from combustion engines.

Prior to sampling, the pump was hand held placed at a sampling position of 1.2m above ground level. Sampling was done according to the specifications of strokes on the tubes per specific gas.

One (1} reading of each gas component was taken at each sampling point and recorded. The test for each gas component was carried out six times at every site in a double triangulated manner. Thus, the number of readings were six (6) for each gas component at one location (refer to Tables A up to J in Annexure (4) DETAILED BASELINE/RAW DATA OF AIR QUALITY MEASUREMENTS for the detailed baseline/raw data of noise measurements).

Triangulation: To capture representative data, reduce the degree of error and increase precision, data was collected in a double triangulation manner as shown below.

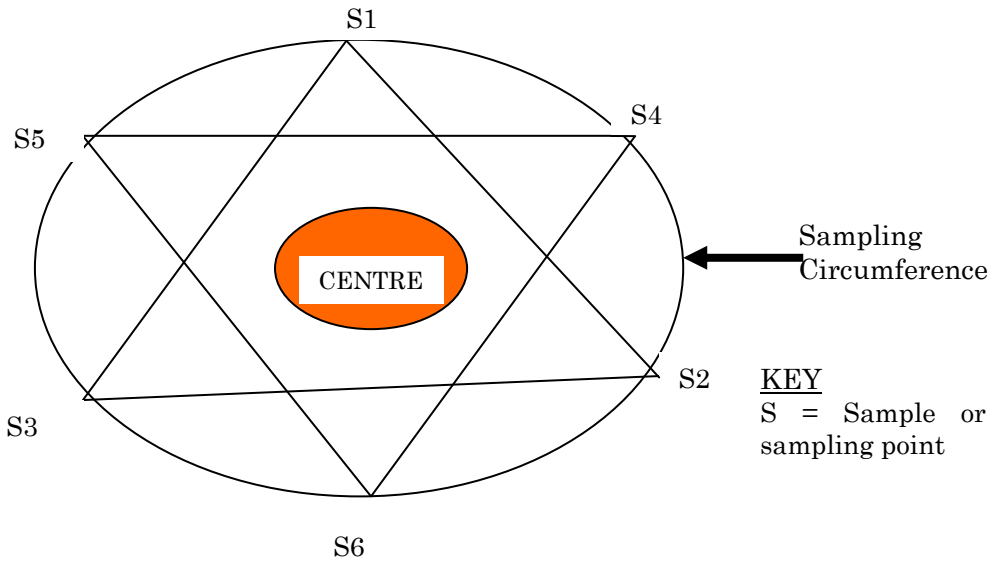


Figure 6: Sampling Positions

The average per session and consequently per sampling location was calculated for each gas component.

7.3 Sampling Schedule

Sampling for gases was conducted for five consecutive man-days. One man-day was spent at each sampling site.

Table 10: Implementation Schedule-Gases.

DAY	DATE	SITE CODE	SITE NAME
Day six	14th Dec.2008	C6	Eliba Guest House
Day seven	15th Dec.2008	C2	New Misisi Police Post
Day eight	16th Dec.2008	C1	ZESCO Power Station
Day nine	17th Dec.2008	D11	Green Container
Day ten	18th Dec.2008	D9	Victory Bible church

7.4 Sampling Point C6 –Eliba Guest House

***DAY SIX: 14th December, 2008* - Eliba Guest House**

Table 11: Summary Table of Gas Readings-Morning Session

Gas Component	**Sampling time**	**Reference Time**	**Mean**	***Zambian Guideline Limit (w/ Converted Unit)***	***Zambian Guideline Limit (w/ Original Unit)***
SO2 (ppm)	**150 seconds**	**n=10/30min/6hours (Sampling time = 1**	<0.05 ppm	0.19ppm/m^3(10min) 0.13ppm/m^3(1hr)	500µg/m^3(10min) 350µg/m^3(1hr)
CO2 (%)	**75 seconds**	**n=5/30min/6hours**	0.10	-	-
CO (ppm)	**150 seconds**	**n=10/30min/6hours**	<5.0 ppm	86ppm/m^3(15min) 51.6ppm/m^3(30min) 25.8ppm/m^3(1hr) 8.6ppm/m^3(8hrs)	100mg/m^3(15min) 60mg/m^3(30min) 30mg/m^3(1hr) 10mg/m^3(8hrs)
NOx (ppm)	**15 seconds**	**n=1/30min/6hours**	<50.0 ppm	0.21ppm/m^3(1hr) 0.08ppm/m^3(24hr)	400µg/m^3(1hr) 150µg/m^3(24hr)

n = manual drager pump strokes. One stroke took approx. 15 seconds

Table 11: Summary Table of Gas Readings-Afternoon Session

Gas Component	**Sampling time**	**Reference Time**	**Mean**	***Zambian Guideline Limit (w/ Converted Unit)***	***Zambian Guideline Limit (w/ Original Unit)***
SO2 (ppm)	**150 seconds**	**n=10/30min/6hours**	<0.05	0.19ppm/m^3(10min) 0.13ppm/m^3(1hr)	500µg/m^3(10min) 350µg/m^3(1hr)
CO2 (%)	**75 seconds**	**n=5/30min/6hours**	0.14	-	-
CO (ppm)	**150 seconds**	**n=10/30min/6hours**	<5.0	86ppm/m^3(15min) 51.6ppm/m^3(30min) 25.8ppm/m^3(1hr) 8.6ppm/m^3(8hrs)	100mg/m^3(15min) 60mg/m^3(30min) 30mg/m^3(1hr) 10mg/m^3(8hrs)
NOx (ppm)	**15 seconds**	**n=1/30min/6hours**	<50.0	0.21ppm/m^3(1hr) 0.08ppm/m^3(24hr)	400µg/m^3(1hr) 150µg/m^3(24hr)

n = manual drager pump strokes. One stroke took approx. 15 seconds

- ***DISCUSSION OF RESULTS***

Carbon dioxide (CO_2) was detected in the air. The carbon dioxide gas present was attributed mainly to emissions from combustion engines. The gas was detected in small amounts at all the six triangulated sampling points both in the morning and in the afternoon sessions.

The other gases; SO_2, CO and NO_X were not present (Not Detectable) in the air as at sampling time.

7.5 Sampling Point C2-New Msisi Police Post

DAY SEVEN: 15th December, 2008- **New Msisi Police Post**

Table 12: Summary Table of Gas Readings-Morning Session

Gas Component	**Sampling time**	**Reference Time**	**Mean**	***Zambian Guideline Limit (w/ Converted Unit)***	***Zambian Guideline Limit (w/ Original Unit)***
SO2 (ppm)	**150 seconds**	**n=10/30min/6hours**	<0.05	0.19ppm/m^3(10min) 0.13ppm/m^3(1hr)	500µg/m^3(10min) 350µg/m^3(1hr)
CO2 (%)	**75 seconds**	**n=5/30min/6hours**	0.09	-	-
CO (ppm)	**150 seconds**	**n=10/30min/6hours**	<5.0	86ppm/m^3(15min) 51.6ppm/m^3(30min) 25.8ppm/m^3(1hr) 8.6ppm/m^3(8hrs)	100mg/m^3(15min) 60mg/m^3(30min) 30mg/m^3(1hr) 10mg/m^3(8hrs)
NOx (ppm)	**15 seconds**	**n=1/30min/6hours**	<50.0	0.21ppm/m^3(1hr) 0.08ppm/m^3(24hr)	400µg/m^3(1hr) 150µg/m^3(24hr)

n = manual drager pump strokes. One stroke took approx. 15 seconds

Table 13: Summary Table of Gas Readings-Afternoon Session

Gas Component	**Sampling time**	**Reference Time**	**Mean**	***Zambian Guideline Limit (w/ Converted Unit)***	***Zambian Guideline Limit (w/ Original Unit)***
SO2 (ppm)	**150 seconds**	**n=10/30min/6hours**	<0.05	0.19ppm/m^3(10min) 0.13ppm/m^3(1hr)	500µg/m^3(10min) 350µg/m^3(1hr)
CO2 (%)	**75 seconds**	**n=5/30min/6hours**	0.1	-	-
CO (ppm)	**150 seconds**	**n=10/30min/6hours**	<5.0	86ppm/m^3(15min) 51.6ppm/m^3(30min) 25.8ppm/m^3(1hr) 8.6ppm/m^3(8hrs)	100mg/m^3(15min) 60mg/m^3(30min) 30mg/m^3(1hr) 10mg/m^3(8hrs)
NOx (ppm)	**15 seconds**	**n=1/30min/6hours**	<50.0	0.21ppm/m^3(1hr) 0.08ppm/m^3(24hr)	400µg/m^3(1hr) 150µg/m^3(24hr)

n = manual drager pump strokes. One stroke took approx. 15 seconds

- ***DISCUSSION OF RESULTS***

Only traces of Carbon Dioxide (CO_2) were detected in the air. The trace of carbon dioxide gas present in the air was attributed mainly to emissions from coal braziers in the compound where charcoal is mostly used as a source of energy for heating and cooking.

The gas was detected in trace amounts at all the six triangulated sampling points both in the morning and in the afternoon sessions.

The other gases; SO_2, CO and NO_X were not present (Not Detectable) in the air as at sampling time.

7.6 Sampling Point C1-ZESCO Power Station

DAY EIGHT: 16th December, 2008-**ZESCO Power Station**

Table 14: Summary Table of Gas Readings-Morning Session

Gas Component	Sampling Time	Reference Time	Mean	*Zambian Guideline Limit (w/ Converted Unit)*	*Zambian Guideline Limit (w/ Original Unit)*
SO2 (ppm)	**150 seconds**	**n=10/30min/6hours**	<0.05	0.19ppm/m^3(10min) 0.13ppm/m^3(1hr)	500µg/m^3(10min) 350µg/m^3(1hr)
CO2 (%)	**75 seconds**	**n=5/30min/6hours**	0.02	-	-
CO (ppm)	**150 seconds**	**n=10/30min/6hours**	<5.0	86ppm/m^3(15min) 51.6ppm/m^3(30min) 25.8ppm/m^3(1hr) 8.6ppm/m^3(8hrs)	100mg/m^3(15min) 60mg/m^3(30min) 30mg/m^3(1hr) 10mg/m^3(8hrs)
NOx (ppm)	**15 seconds**	**n=1/30min/6hours**	<50.0	0.21ppm/m^3(1hr) 0.08ppm/m^3(24hr)	400µg/m^3(1hr) 150µg/m^3(24hr)

n = manual drager pump strokes. One stroke took approx. 15 seconds

Table 15: Summary Table of Gas Readings-Afternoon Session

Gas Component	Sampling Time	Reference Time	Mean	*Zambian Guideline Limit (w/ Converted Unit)*	*Zambian Guideline Limit (w/ Original Unit)*
SO2 (ppm)	**150 seconds**	**n=10/30min/6hours**	<0.05	0.19ppm/m^3(10min) 0.13ppm/m^3(1hr)	500µg/m^3(10min) 350µg/m^3(1hr)
CO2 (%)	**75 seconds**	**n=5/30min/6hours**	0.02	-	-
CO (ppm)	**150 seconds**	**n=10/30min/6hours**	<5.0	86ppm/m^3(15min) 51.6ppm/m^3(30min) 25.8ppm/m^3(1hr) 8.6ppm/m^3(8hrs)	100mg/m^3(15min) 60mg/m^3(30min) 30mg/m^3(1hr) 10mg/m^3(8hrs)
NOx (ppm)	**15 seconds**	**n=1/30min/6hours**	<50.0	0.21ppm/m^3(1hr) 0.08ppm/m^3(24hr)	400µg/m^3(1hr) 150µg/m^3(24hr)

n = manual drager pump strokes. One stroke took approx. 15 seconds

- ***DISCUSSION OF RESULTS***

There were only traces of CO_2 detected in the air. The gas was detected in trace amounts at all the six triangulated sampling points both in the morning and in the afternoon sessions.

The other gases; SO_2, CO and NO_X were not present (Not Detectable) in the air as at sampling time.

7.7 Sampling Point D11-Green Container

***DAY NINEHT: 17th December, 2008*-Green Container**

Table 16: Summary Table of Gas Readings-Morning Session

Gas Component	Sampling Time	Reference Time	Mean	*Zambian Guideline Limit (w/ Converted Unit)*	*Zambian Guideline Limit (w/ Original Unit)*
SO2 (ppm)	**150 seconds**	**n=10/30min/6hours**	<0.05	0.19ppm/m^3(10min) 0.13ppm/m^3(1hr)	500µg/m^3(10min) 350µg/m^3(1hr)
CO2 (%)	**75 seconds**	**n=5/30min/6hours**	0.03	-	-
CO (ppm)	**150 seconds**	**n=10/30min/6hours**	<5.0	86ppm/m^3(15min) 51.6ppm/m^3(30min) 25.8ppm/m^3(1hr) 8.6ppm/m^3(8hrs)	100mg/m^3(15min) 60mg/m^3(30min) 30mg/m^3(1hr) 10mg/m^3(8hrs)
NOx (ppm)	**15 seconds**	**n=1/30min/6hours**	<50.0	0.21ppm/m^3(1hr) 0.08ppm/m^3(24hr)	400µg/m^3(1hr) 150µg/m^3(24hr)

n = manual drager pump strokes. One stroke took approx. 15 seconds

Table 17: Summary Table of Gas Readings-Afternoon Session

Gas Component	Sampling Time	Reference Time	Mean	*Zambian Guideline Limit (w/ Converted Unit)*	*Zambian Guideline Limit (w/ Original Unit)*
SO2 (ppm)	**150 seconds**	**n=10/30min/6hours**	<0.05	0.19ppm/m^3(10min) 0.13ppm/m^3(1hr)	500µg/m^3(10min) 350µg/m^3(1hr)
CO2 (%)	**75 seconds**	**n=5/30min/6hours**	0.03	-	-
CO (ppm)	**150 seconds**	**n=10/30min/6hours**	<5.0	86ppm/m^3(15min) 51.6ppm/m^3(30min) 25.8ppm/m^3(1hr) 8.6ppm/m^3(8hrs)	100mg/m^3(15min) 60mg/m^3(30min) 30mg/m^3(1hr) 10mg/m^3(8hrs)
NOx (ppm)	**15 seconds**	**n=1/30min/6hours**	<50.0	0.21ppm/m^3(1hr) 0.08ppm/m^3(24hr)	400µg/m^3(1hr) 150µg/m^3(24hr)

n = manual drager pump strokes. One stroke took approx. 15 seconds

- ***DISCUSSION OF RESULTS***

Like the other sampling points, only CO_2 was detected in the air. The gas was detected in trace amounts at all the six triangulated sampling points both in the morning and in the afternoon sessions.

The other gases namely SO_2, CO and NO_X were not present (Not Detectable) in the air as at sampling time.

7.8 Sampling Point D9-Victory Bible Church

***DAY TEN: 18th December, 2008*- Victory Bible Church Point**

Table 18: Summary Table of Gas Readings-Morning Session

Gas Component	Sampling Time	Reference Time	Mean	*Zambian Guideline Limit (w/ Converted Unit)*	*Zambian Guideline Limit (w/ Original Unit)*
SO2 (ppm)	**150 seconds**	**n=10/30min/6hours**	<0.05	0.19ppm/m^3(10min) 0.13ppm/m^3(1hr)	500µg/m^3(10min) 350µg/m^3(1hr)
CO2 (%)	**75 seconds**	**n=5/30min/6hours**	0.04	-	-
CO (ppm)	**150 seconds**	**n=10/30min/6hours**	<5.0	86ppm/m^3(15min) 51.6ppm/m^3(30min) 25.8ppm/m^3(1hr) 8.6ppm/m^3(8hrs)	100mg/m^3(15min) 60mg/m^3(30min) 30mg/m^3(1hr) 10mg/m^3(8hrs)
NOx (ppm)	**15 seconds**	**n=1/30min/6hours**	<50.0	0.21ppm/m^3(1hr) 0.08ppm/m^3(24hr)	400µg/m^3(1hr) 150µg/m^3(24hr)

n = manual drager pump strokes. One stroke took approx. 15 seconds

Table 19: Summary Table of Gas Readings-Afternoon Session

Gas Component	Sampling Time	Reference Time	Mean	*Zambian Guideline Limit (w/ Converted Unit)*	*Zambian Guideline Limit (w/ Original Unit)*
SO2 (ppm)	**150 seconds**	**n=10/30min/6hours**	<0.05	0.19ppm/m^3(10min) 0.13ppm/m^3(1hr)	500µg/m^3(10min) 350µg/m^3(1hr)
CO2 (%)	**75 seconds**	**n=5/30min/6hours**	0.02	-	-
CO (ppm)	**150 seconds**	**n=10/30min/6hours**	<5.0	86ppm/m^3(15min) 51.6ppm/m^3(30min) 25.8ppm/m^3(1hr) 8.6ppm/m^3(8hrs)	100mg/m^3(15min) 60mg/m^3(30min) 30mg/m^3(1hr) 10mg/m^3(8hrs)
NOx (ppm)	**15 seconds**	**n=1/30min/6hours**	<50.0	0.21ppm/m^3(1hr) 0.08ppm/m^3(24hr)	400µg/m^3(1hr) 150µg/m^3(24hr)

n = manual drager pump strokes. One stroke took approx. 15 seconds

- ***DISCUSSION OF RESULTS***

The trend for gas concentration in the air was the same at this point as the other five points. Only traces of CO_2 were detected in the air. The gas was detected in trace amounts at all the six triangulated sampling points both in the morning and in the afternoon sessions.

The other gases; SO_2, CO and NO_X were not present (Not Detectable) in the air as at sampling time.

8 BASELINE DATA OF AIR QUALITY (DUST)

In order to determine dust levels, a portable or personal area sampler was used. The sampler was fixed at the five locations at a height of 1.2m from the ground. It was made to run for 480 minutes, sampling at a flow rate of 2.5 liters per minute.

8.1 Methodology For Dust Survey

8.1.1 Respirable Dust (PM_{10}) Sampling

The sampler was stationed at a height of 1.2m above ground. The sampler incorporates a cyclone filter-cassette containing a weighed membrane filter and the out let side of which is connected by a flexible tube to a pump and a battery unit. A cyclone separates Respirable and non-respirable dust particles. The respirable fraction of dust that passes through the cyclone is deposited onto a filter inside a cassette. The completely assembled cassette consists of inlet and outlet plugs, top and bottom sections of the cassette, backing plates for the filter, and the filter.

Initiating, sampling and recording of information were achieved by turning on the pump and recording the starting time. Once the pump was started, it was observed for approximately 20 minutes and after every 2 hours to make sure that the flow rate of 2.5 liters per minute was maintained.

At the end of the sampling, the flow rate was checked and the pump was stopped. The end time was also recorded. The filter cassette was removed from the cyclone assembly in such a way that particles collected in the grit pot did not fall on the filter paper. The inlet and outlet were sealed with plugs and it was given a specimen number. The specimen was then taken to the laboratory to reweigh the filter paper. Prior to the next sampling, all parts of the cyclone were thoroughly cleaned including the interior of the grit pot.

8.1.2 Total Dust

Total dust (referred to as nuisance dust) was determined by removing the cyclone from the cassette leaving only the filter cassette connected to the pump. The whole set remains the same as described above.

8.2 Results of Dust Related Survey

Sampling for dust was conducted for five consecutive man-days. One man-day was spent at each sampling site. The samples for both Respirable dust and Total dust were conducted for 480 minutes at each point.

8.2.1 Sampling Schedule for Dust-related Parameters

The sampling for dust-related parameters was conducted as follows.

Table 20: Implementation Schedule-Respirable Dust and Total Dust.

DAY	DATE	SITE CODE	SITE NAME
Day Eleven	18 th Dec.2008	C6	Eliba Guest House
Day Twelve	19th Dec.2008	C2	New Msisi Police Post
Day Thirteen	20th Dec.2008	C1	ZESCO Power Station
Day Fourteen	21st Dec.2008	D11	Green Container
Day Fifteen	22nd Dec.2008	D9	Victory Bible Church

8.2.2 Current Total Dust Concentration

The results of total dust are as shown in the following table.

Table 21: Total Dust Concentration

Sampling Point	SITE NAME	Total Dust Concentration (mg/m³)
C6	Eliba Guest House	2.013
C2	New Msisi Police Post	1.12
C1	ZESCO Power Station	3.525
D11	Green Container	1.066
D9	Victory Bible Church	7.041

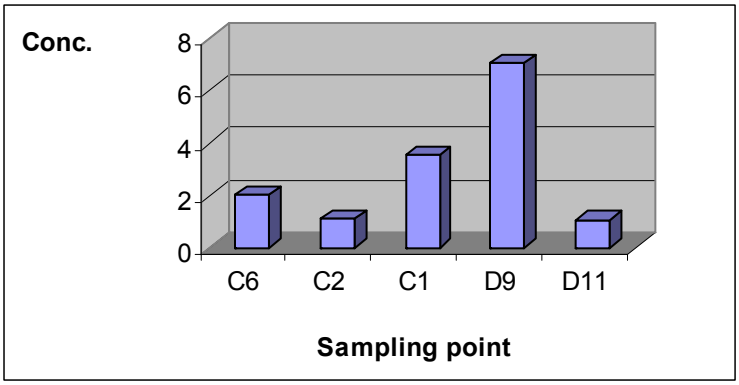


Figure 7 Total Dust Concentrations

- ***DISCUSSION OF RESULTS***

The results for total dust concentration at the five sampling points show that D11 had the highest total dust pollution in the air and the least polluted sites were C2 and D9.

8.2.3 Current PM_{10} Concentration

The results of PM_{10} are as shown in the following table.

Table 22: PM_{10} Concentration

Sampling Point	SITE NAME	PM_{10} (µg/m³)	*Zambian Guideline Limit*
C6	Eliba Guest House	50µg/m³	70µg/m³(24 hrs)
C2	New Msisi Police Post	95µg/m³	
C1	ZESCO Power Station	33µg/m³	
D11	Green Container	636µg/m³	
D9	Victory Bible Church	476µg/m³	

Below is the graphic presentation of PM_{10} concentration in ambient air.

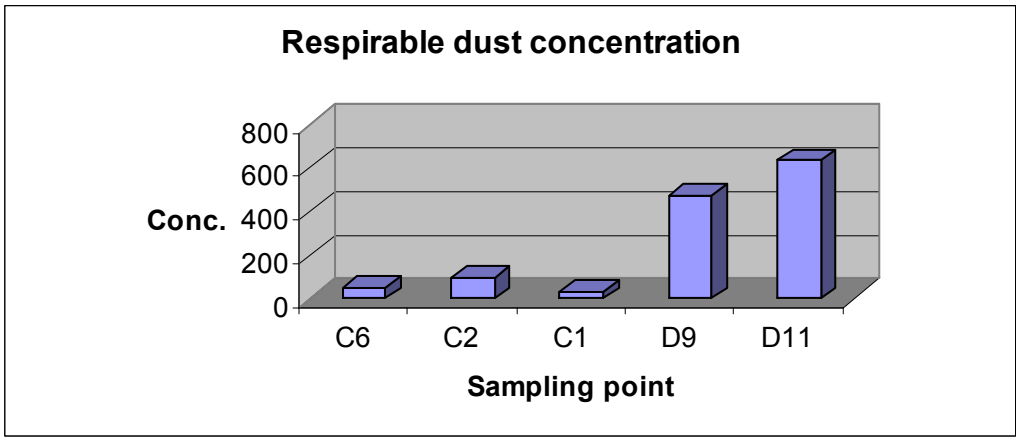


Figure 8 PM_{10} Concentration

- ***DISCUSSION OF RESULTS***

The results for PM_{10} concentration in the air at all the five sampling points show that it exceed the Zambian Ambient Air Guideline Limit at C2: New Msisi Police Post, D9: Victory Bible Church and D11: Green Container. D11 and D9 had the highest pollution of Respirable dust in the air and the least polluted were C6, C2 and C1.

Generally, the levels of Respirable dust pollution in the ambient at D11 and D9 exceeded the Zambian Maximum Acceptable Concentration of 70µg/m³ for ambient air and thus did not fall within the acceptable levels as at now.

9 LEAD

The samples collected at the five locations were pulverized to fine powder and then analyzed after digestion using atomic absorption spectrophotometry technique. The samples were analyzed at the University of Zambia School of Mines, Geo-chemical Analytical Laboratory.

9.1 Lead Analytical Results

The measurements for all analyze contents were less than 5% RSD (± 5%). Less than 0.001% also Lead also implies Not Detectable.

Table 23: Summary results of Lead

Sample Identity	**SITE NAME**	**Lead (µg/m³)**	***Zambian Guideline Limit***
C6	Eliba Guest House	<0.001	1.5µg/m³
C2	New Msisi Police Post	0.002	
C1	ZESCO Power Station	<0.001	
D11	Green Container	0.003	
D9	Victory Bible Church	<0.001	

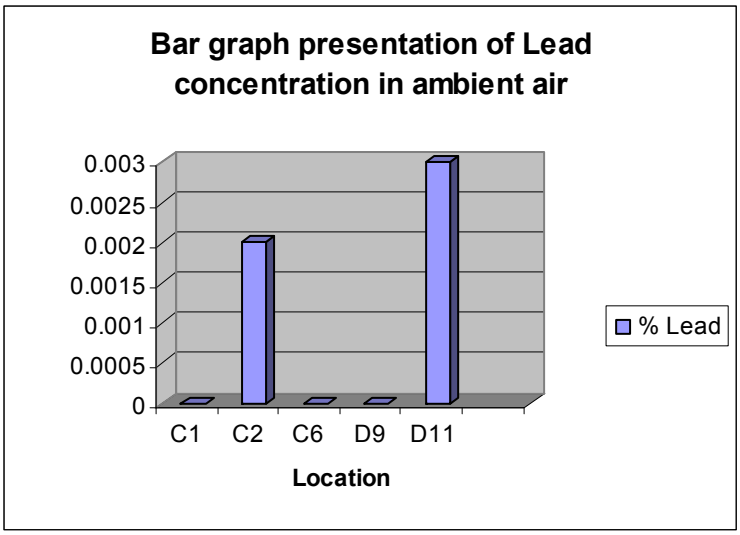


Figure 10: Summary Results of Lead

- ***DISCUSSION OF RESULTS-LEAD***

Traces of lead in dust were detected at New Msisi Police post-C2 and at Green Container-D11 points and this were attributed to human activities and the source of laterite (gravel) respectively. The concentrations at all the five sampling points were far below the Zambia Standards.

10 PROJECT IMPACTS ON AIR

10.1 Project Impacts at Construction on air.

As already mentioned, during construction phase, heavy machinery will be used for excavation and compaction. The machinery is likely to cause a remarkable degree of nuisance air pollution to the surrounding environment and communities in terms of combustion fumes from engines and dust emissions.

10.2 Project Impacts during Operational Phase on Air

(1) Prediction by Comparison with the Existing Data

Analysis of the future air quality was conducted for SO_2 and NOx by referring the existing air quality data at Cairo Road in 1998 done by Norwegian government. As a result, it is estimated the air quality in the inner-ring road during operation is considered below 4 $\mu g/m^3$ for SO_2 and 14 $\mu g/m_3$ for NO_2 and meet the Zambian air quality guideline limit since the traffic demand and the road design of the planned project is smaller than these of Cairo Road.

Table 24: Predicted Results of SO2 and NOx

Parameter	Concentration $\mu g/m^3$	Traffic Volume of Cairo Road in 1998	Sampling point
SO_2	4	28,675 vehicles/daytime 12 hours	Featex Building, Cairo Road
NO_2	14		

Source: Ambient air quality monitoring system for Zambia, Norsk Institutt for luftforskning, 1998 for air quality; Basic Design Study on the Transportation Network for Lusaka City, JICA Study Team, 1996 for traffic volume.

Table 25: Expected Traffic Volume on the Sampling Points

Site Code	Site Name	Expected Traffic Volume on the respective road sections by 2015
C6	Eliba Guest House	11,500 vehicles/day
C2	New Msisi Police Post	14,400 vehicles/day
C1	ZESCO Power Station	14,400 vehicles/day
D11	Green Container	14,400 vehicles/day
D9	Victory Bible church	8,000 vehicles/day

Source: Draft Final Report of the Comprehensive Master Plan for the City of Lusaka, Lusaka City, JICA Study, 2009.

(2) Prediction of NOx and SPM of the Project

The air quality level (NOx and SPM) caused by the project was qualitatively predicted with the puff model. Due to the lack of the reliable and completed metrological data in Lusaka, the puff model which is used for non-continuous air pollution with low wind velocity/calm wind was adopted to examine the maximum negative impact around the project site. As a result, the predicted impact on air quality of the project is considered less significant and meets the Zambian Guideline Limits and/or Japanese Standards.

Table 26: Predicted Air Quality Level of the Project

Parameter	Predicted Results	Background	Total	Zambian Ambient Air Guideline Limit	Japanese Air Quality Standards
NOx	0.026ppm	0.007 ppm	0.033ppm	0.21ppm or 400µg/m3(1hr) 0.08ppm or 150µg/m3(24hr)	0.04-0.06ppm (24hr)
SPM	0.003mg/m³	-	-	-	0.20mg/m3(Average1hour/day); 0.10mg/m3(1hr)

Note: Prediction condition: No. small car/hour=1000, No. of Large Cars/hour=500, Speed=40km/h
The existing data of NOx at Cairo Road was used as the background level for this prediction due to the lack of the reliable data.

11 ENVIRONMENTAL MANAGEMENT PLAN-AIR

This section highlights an Environmental Management and Mitigation Plans (EMMP) for the identified impacts on air. The section also identifies the potential significant air impacts associated with the construction and operational phases of the project as well as the proposed mitigation measures and the responsible parties for execution.

11.1 Impact Mitigation Plan

The table below is a summarized mitigation plan addressing identified air impacts that may be caused due to the construction, operation, and improvement of the Inner-ring Road project.

Table 27: Impact Mitigation Plan

IDENTIFIED IMPACT	MITIGATION OBJECTIVE	PROPOSED MITIGATION MEASURES	RESPONSIBILITY	MONITORING
Environmental Impacts				
1.0 Impacts on air during construction: Pollution caused by fumes (SO_2, CO and NO_X) from combustion engines and dust from construction equipment.	**Minimization** Through conformity with Environmental Protection and Pollution Control Act (EPPCA), Cap 204 on Air.	➢ Dust suppression through regular watering of road and ground surfaces using water bulzers. ➢ Construction equipment maintenance to be in proper working condition. ➢ Sensitization programs for road users about the dangers of air pollution from combustion engines for vehicles to be road worth.	Road contractor Local Government through LCC in collaboration with ECZ	Local Government through Lusaka City Council (LCC) in collaboration with the Environmental Council of Zambia (ECZ). Local Government through Lusaka City Council (LCC) in collaboration with the Environmental Council of Zambia (ECZ).
2.0 After road construction (During operational phase): Pollution caused by fumes (SO_2, CO and NO_X) from traffic combustion engines and dust from access roads and loose soils on cleared area along the road alignment.	**Minimization** Through conformity with Environmental Protection and Pollution Control Act (EPPCA), Cap 204 on Air.	➢ Planting roadside trees and glass if land is available.	Road contractor	Local Government through Lusaka City Council (LCC)

Table 28: Budget and Schedule for Air Quality Monitoring

Item	Parameter	Description	Schedule	Responsibility	Unit Cost (ZMK)	Annually (ZMK)
1	Ambient Air	(Gases) SO2,, CO, NOx	Once quarterly	LCC	4,070,000.00	16,280,000.00
2	Respirable Dust	Particles with diameter < 10 micrometers	Once quarterly	LCC	5,400,000.00	21,600,000.00
3	Total Dust	Particles with diameter < 45 micrometers	Once quarterly	LCC	5,400,000.00	21,600,000.00
4	Lead in Dust	Heavy metal	Biannually	LCC	5,200,000.00	10,400,000.00

ANNEX

(1) A NOTE ON REPORT PARTICIPATION

Project conducted by Hilma Limited	Postal address: Postnet 399,P/B E891Lusaka Contact person:- Geoffery Yung'ana Cell 0955854987/0977854987
Contracted by Kaizen Consulting International	Postal address: P.O. BOX 28087, KITWE, ZAMBIA/Suit 41, 4th Floor, Bowmaker House, City Square, Zambia. Tel: +(260)-977-758-591 Contact person:- Jacob Chishiba/Daniel Mukonde
Data collected by Hilma Limited	Edmonds Sichalwe and Derek Mwape Cell:- 0977945988 and 0977218964 respectively
Report Writing	Derek Mwape, Edmonds Sichalwe and Geoffery Yung'ana
Report Editing	Geoffery Yung'ana

(2) ZAMBIAN STANDARDS AND INTENRATIONALLY RECOGNIZED STANDARDS OF AIR QUALITY AND NOISE

A. Noise

Table A1 Noise Guideline Limit of the IFC/World Bank

Category	Maximum Allowable Leq (hourly), in dBA	
	Daytime (07:00-22:00)	Nighttime (22:00-07:00)
Residential; Institutional; Educational	55	45
Industrial; Commercial	70	70

Table A2 Road Side Noise Standard of Japan

Category	Daytime: 6AM-10PM (LAeq)	Nighttime: 10PM-6AM (LAeq)
Area A- Residential Area facing 2 lanes	60dB	55dB
Area B & C - Area B which is mostly residential area and Area C which is mixed use of Residential, Commercial and Industrial Area facing 2 lanes	65dB	60dB
Exceptional Standards near Trunk Roads	70dB	65dB

B. Air Quality

Table A3 Zambian Ambient Air Guideline Limit

Parameter		Reference Time	Guideline Limit
1. Sulphur dioxide (SO_2)		10 min.	500µg/m^3
		1 hour	350µg/m^3
2. Sulphur dioxide (SO_2) with Total Suspended Particles (TSP) *1 and PM_{10}	SO_2	24 hours	125µg/m^3
		6 months	50µg/m^3
	TSP	24 hours	120µg/m^3
		6 months	50µg/m^3
	PM_{10}	24 hours	70µg/m^3
3. Respirable Particulate Matter (PM10) *2	PM_{10}	24 hours	70µg/m^3
4. Oxides of Nitrogen (NOx) as Nitrogen Dioxide (NO_2)		1 hour	400µg/m^3
		24 hours	150µg/m^3
5. Carbon Monoxide (CO)		15 min.	100mg/m^3
		30 min.	60mg/m^3
		1 hour	30mg/m^3
		8 hours	10mg/m^3
6. Ambient Lead (Pb)		3 months	1.5µg/m^3
		12 months	1.0µg/m^3
7. Dust Fall		30 days	7.5 tonnes/km^2

*1) Total Suspended Particles (TSP) are particles with diameter less than 45 micrometers (µm)

*2) Respirable Particles (PM10) are particles with diameter less than 10 micrometers (µm). These can penetrate to the anciliated regions of the deep lung.

Source: The Air Pollution Control (Licensing and Emissions Standards) Regulations, 1996.

Table A4 Road Side Ambient Air Quality Standard of Japan

	Japanese Ambient Air Quality	WHO Air Quality Standard
SO_2	0.04ppm (1hr Ave.), 0.1ppm (1hr Ave./day)	12.5µg/NCM
CO	10ppm (1hr Ave./day) 20ppm (1hr Ave/8hr)	10mg/m^3 for 8hrs
SPM	0.10mg/m3 (1hr Ave./day), 0.20mg/m3 (1hr Ave.)	-
NO_2	0.04-0.06ppm (24hrs)	40µg/NCM

(3) DETAILED BASELINE/RAW DATA OF NOISE MEASUREMENTS

(A) Digital Noise readings per session in Decibels as 10 minute means at C6-Eliba guest house, Kanyama compound.

		TIME		
SESSION	**READING**	**FROM**	**TO**	**NOISE IN DECIBELS (10 MINUTE MEANS)**
MORNING	**1**	**06:30**	**06:40**	70.0
	2	**06:40**	**06:50**	74.6
	3	**06:50**	**07:00**	73:0
	4	**07:10**	**07:20**	68.8
SESSION MEAN				***71.6***
MID-DAY	**1**	**12:32**	**12:42**	65.6
	2	**12:42**	**12:52**	66.0
	3	**12:52**	**13:02**	70.3
	4	**13:02**	**13:12**	72.6
SESSION MEAN				***68.6***
EVENING	**1**	**17:00**	**17:10**	56.9
	2	**17:10**	**17:20**	58.4
	3	**17:20**	**17:30**	68.2
	4	**17:30**	**17:40**	67.8
SESSION MEAN				**62.8**

(B) Digital Noise readings per session in Decibels as 10 minute means at C2-New Msisi Police Post

		TIME		
SESSION	**READING**	**FROM**	**TO**	**NOISE IN DECIBELS (10 MINUTE MEANS)**
MORNING	**1**	**06:10**	**06:20**	43.6
	2	**06:20**	**06:30**	48.7
	3	**06:30**	**06:40**	45.2
	4	**06:40**	**07:50**	43.4
SESSION MEAN				***45.2***
MID-DAY	**1**	**13:50**	**14:00**	48.4
	2	**14:00**	**14:10**	51.7
	3	**14:10**	**14:20**	44.0
	4	**14:20**	**14:30**	46.9
SESSION MEAN				***47.8***
EVENING	**1**	**17:00**	**17:10**	45.2
	2	**17:10**	**17:20**	47.3
	3	**17:20**	**17:30**	50.1
	4	**17:30**	**17:40**	49.4
SESSION MEAN				***48.0***

(C) Digital Noise readings per session in Decibels as 10 minute means at C1-ZESCO Power station, Chilenje south.

		TIME		
SESSION	**READING**	**FROM**	**TO**	**NOISE IN DECIBELS (10 MINUTE MEANS)**
MORNING	**1**	**06:35**	**06:45**	56.8
	2	**06:45**	**06:55**	59.9
	3	**06:55**	**07:05**	57.4
	4	**07:05**	**07:15**	61.3
SESSION MEAN				***58.9***
MID-DAY	**1**	**13:00**	**13:10**	54.6
	2	**13:10**	**13:20**	52.7
	3	**13:20**	**13:30**	67.5
	4	**13:30**	**13:40**	62.2
SESSION MEAN				***59.3***
EVENING	**1**	**17:05**	**17:15**	62.3
	2	**17:15**	**17:25**	56.8
	3	**17:25**	**17:35**	58.5
	4	**17:35**	**17:45**	53.4
SESSION MEAN				***57.8***

(D) Table 9.0: Digital Noise readings per session in Decibels as 10 minute means at D9-Victory Bible Church, Woodlands.

		TIME		
SESSION	**READING**	**FROM**	**TO**	**NOISE IN DECIBELS (10 MINUTE MEANS)**
MORNING	**1**	**06:15**	**06:25**	58.9
	2	**06:25**	**06:35**	59.6
	3	**06:35**	**06:45**	68.2
	4	**07:45**	**05:55**	83.2
SESSION MEAN				***67.5***
MID-DAY	**1**	**13:00**	**13:10**	77.1
	2	**13:10**	**13:20**	62.3
	3	**13:20**	**13:30**	75.5
	4	**13:30**	**13:40**	63.2
SESSION MEAN				***69.5***
EVENING	**1**	**17:05**	**17:15**	59.4
	2	**17:15**	**17:25**	59.5
	3	**17:25**	**17:35**	61.5
	4	**17:35**	**17:45**	55.0
SESSION MEAN				***58.9***

(E) Digital Noise readings per session in Decibels as 10 minute means at D11-Green container, Chalala/Woodlands.

		TIME		
SESSION	**READING**	**FROM**	**TO**	**NOISE IN DECIBELS (10 MINUTE MEANS)**
MORNING	**1**	**06:20**	**06:30**	54.3
	2	**06:30**	**06:40**	70.0
	3	**06:40**	**06:50**	56.7
	4	**07:50**	**07:00**	58.2
SESSION MEAN				***59.8***
MID-DAY	**1**	**12:00**	**12:10**	60.8
	2	**12:10**	**12:20**	58.6
	3	**12:20**	**12:30**	48.0
	4	**12:30**	**12:40**	53.0
SESSION MEAN				***55.1***
EVENING	**1**	**17:20**	**17:30**	53.4
	2	**17:30**	**17:40**	58.9
	3	**17:40**	**17:50**	56.0
	4	**17:50**	**18:00**	69.0
SESSION MEAN				***59.3***

(4) DETAILED BASELINE/RAW DATA OF AIR QUALITY MEASUREMENTS

(A) Gas readings/raw data at 30minute interval at C6-Eliba guest house, Kanyama compound.

Morning Session							
Gas Component	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**Mean**
SO2 (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
CO2 (%)	0.05	0.15	0.07	0.13	0.17	0.12	**0.10**
CO (ppm)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
NOx (ppm)	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

R = Reading; ppm = parts per million.

(B) Gas readings at 30minute interval

Afternoon Session							
Gas Component	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**Mean**
SO2 (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
CO2 (%)	0.06	0.18	0.09	0.16	0.19	0.14	**0.14**
CO (ppm)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
NOx (ppm)	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

R = Reading; ppm = parts per million.

(C) Gas readings at 30minute interval at C2-New Msisi Police Post

Morning Session							
Gas Component	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**Mean**
SO2 (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
CO2 (%)	*0.1*	*0.07*	*0.04*	*0.09*	*0.11*	*0.1*	***0.09***
CO (ppm)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
NOx (ppm)	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

(D) Gas readings at 30min interval at C2-New Msisi Police Post

Afternoon Session							
Gas Component	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**Mean**
SO2 (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
CO2 (%)	0.13	0.09	0.1	0.08	0.12	0.07	**0.1**
CO (ppm)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
NOx (ppm)	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

(E) Gas readings at 30minute interval at C1-ZESCO Power station

Morning Session							
Gas Component	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**Mean**
SO2 (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
CO2 (%)	*<0.01*	*<0.01*	*0.05*	*0.03*	*0.02*	*0.03*	***0.02***
CO (ppm)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
NOx (ppm)	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

(F) Gas readings at 30min interval at C1-ZESCO Power station

Afternoon Session							
Gas Component	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**Mean**
SO2 (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

CO2 (%)	0.02	0.01	0.02	0.03	0.04	0.02	**0.02**
CO (ppm)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
NOx (ppm)	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

(G) Gas readings at 30minute interval at D11-Green container

Morning Session							
Gas Component	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**Mean**
SO2 (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
CO2 (%)	*<0.01*	*0.02*	*0.06*	*0.02*	*0.02*	*0.03*	***0.03***
CO (ppm)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
NOx (ppm)	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

(H) Gas readings at 30min interval at D11-Green container

Afternoon Session							
Gas Component	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**Mean**
SO2 (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
CO2 (%)	0.05	0.03	<0.01	<0.01	0.04	0.05	**0.03**
CO (ppm)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
NOx (ppm)	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

(I) Gas readings at 30minute interval at D9-Victory Bible Church

Morning Session							
Gas Component	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**Mean**
SO2 (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
CO2 (%)	*0.02*	*0.02*	*0.04*	*0.06*	*0.04*	*0.08*	***0.04***
CO (ppm)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
NOx (ppm)	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

(J) Gas readings at 30min interval at D9-Victory Bible Church

Afternoon Session							
Gas Component	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**Mean**
SO2 (ppm)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
CO2 (%)	0.02	0.04	<0.01	0.03	0.01	<0.01	**0.02**
CO (ppm)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
NOx (ppm)	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0	<50.0

DETAILED RAW DATA ON DUST MEASUREMENTS

(K) Total Dust

Date	Sample Description-Cassette	Weight. Before Sample (mg)	Weight After sample (mg)	Variance (mg)	Total Concentration (mg/m³)
18 Dec.2008	C6-Eliba guest house = H	15.118	17.534	2.416	2.013
19th Dec.2008	C2-Msisi Police Post = L	11.622	13.082	1.46	1.12
20th Dec.2008	C1-ZESCO Power station = A	12.360	16.590	4.23	3.525
21st Dec.2008	D11-Green Container = No.6	12.694	13.975	1.28	1.066
22nd Dec.2008	D9-Victory Bible Church = H1	13.156	21.606	8.45	7.041

(L) Respirable Dust

Date	Sample Description-Cassette	Weight. Before Sample (mg)	Weight After sample (mg)	Variance (mg)	Total Concentration (mg/m³)
18 Dec.2008	C6-Eliba guest house = J	11.792	11.852	0.060	0.050
19th Dec.2008	C2-Msisi Police Post = U	14.706	14.820	0.114	0.095
20th Dec.2008	C1-ZESCO Power station = G	12.554	12.594	0.400	0.033
21st Dec.2008	D11-Green Container = Y	11.804	12.568	0.764	0.636
22nd Dec.2008	D9-Victory Bible Church = K	14.282	14.854	0.572	0.476

(M) Lead results

Sample Identity	Lead (µg/m³)	Maximum Acceptable Concentration (µg/m³) *(Zambian Limit)*	Lower Detection Limit (µg/m³)
Eliba Guest house-C6	<0.001	1.5	0.001
New Msisi Police Post-C2	0.002	1.5	0.001
ZESCO Power station-C1	<0.001	1.5	0.001
Green Container-D11	0.003	1.5	0.001
Victory Bible Church-D9	<0.001	1.5	0.001

(5) PICTURES OF SAMPING POINTS

Picture 1: Guest House

Picture 2: Misisi Police Post

Picture 3 ZESCO Power Station

Picture 4 Green Container

Picture 5: Victory Bible Church

(6) PICTURES DURING THE BASELINE SURVEY AT ALL SAMPING POINTS

Plate 1 *Plate 2* *Plate 3*

Plates 1,2 and 3: Hilma field personnel taking noise data at C6-Eliba G H, the existing road showing some variation in traffic and pedestrians.

Plate 4 *Plate 5*

Plates 4 and 5: *Hilma field personnel taking noise data at C2- New Msisi Police Post*

Plate 6 *Plate 7*

Plates 6 and 7: Southern view of the C1-ZESCO power station and some surrounding structures

Plate 8 *Plate 9*

Plates 8 and 9: Hilma field personnel taking noise data at D9-Victory Bible Church sampling point

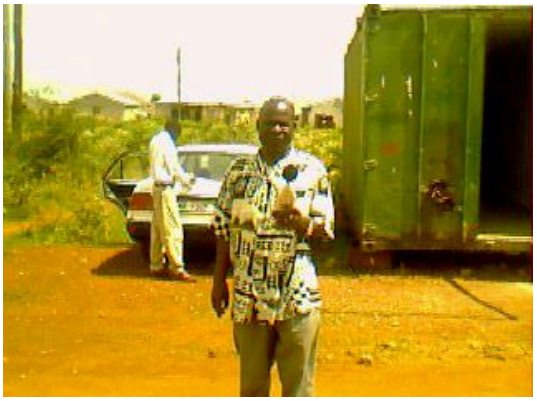


Plate 10 *Plate 11*

Plates 10 and 11: Hilma field personnel taking noise data at D11- Green Container sampling point

Plate 12 *Plate 13*

Plates 12 and 13: Gas sampling at C6-Eliba guest house

Plate 14 *Plate 15*

Plates 14 and 15: Taking readings in trace amounts was strenuous. Thus, a magnifying glass was some times vital.

Plate 16 *Plate 17*

Plates 16 and 17: Gas sampling at C2-New Msisi Police Post. Note Msisi shanty compound on the left and construction for industrial structure far right.

Plate 18 *Plate 19*

Plates 18 and 19: Gas sampling at C1-ZESCO power station. Note the illegal stone quarrying activity in the back ground.

Plate 20 *Plate 21*

Plates 20 and 21: Gas sampling at D11- Green container site.

Plate 22

Plate 22: Process of gas sampling at D9-Victory Bible Church.

Appendix -2

Specialist Study I: Resettlement Action Plan Framework including the Stakeholder Meeting Records

JICA Study Team
Lusaka City Council
Ministry of Local Government and Housing

The Environmental and Social Considerations

Study of

The Inner Ring Road Priority Project for

The Study on Comprehensive Urban Development Plan for the City of Lusaka

RAP FRAMEWORK

February 2009

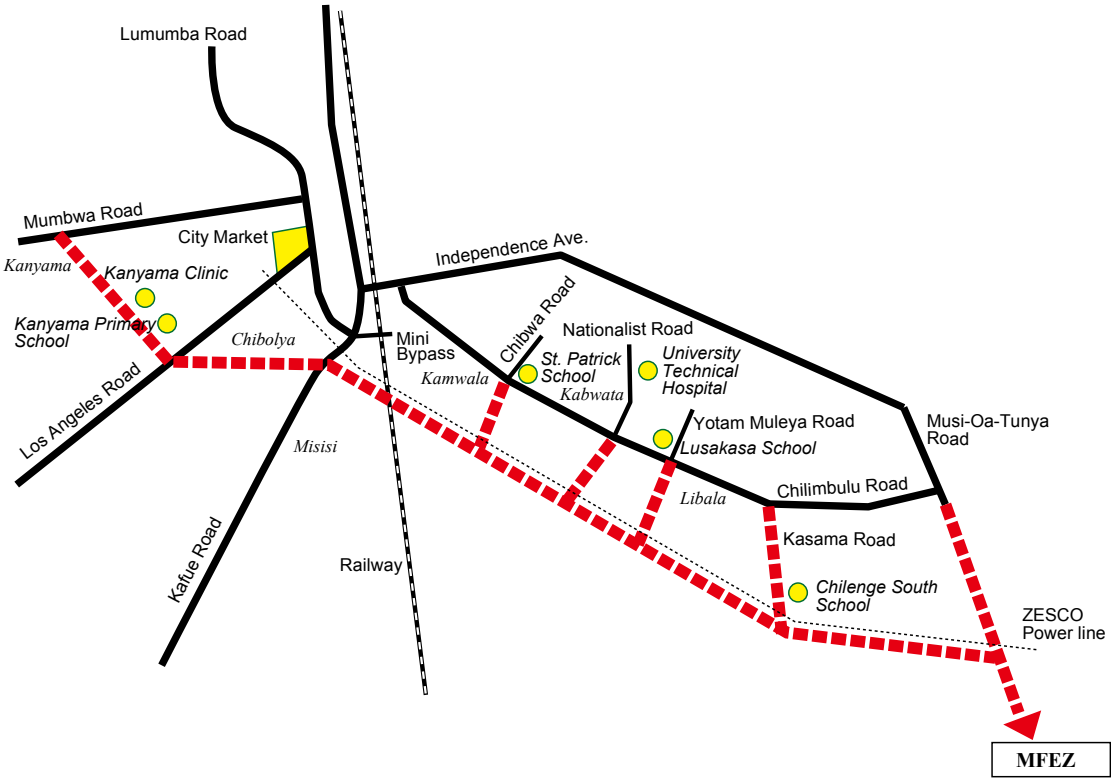
Prepared by Kaizen Consulting International
P.O. BOX 28087, KITWE, ZAMBIA
Suit 41, 4th Floor, Bowmaker House, City Square, Zambia.
Tel: +(260)-977-758-591 email: jchishiba@yahoo.com

ACRONYMS

PAPs	-	Project Affected Persons
RAP	-	Resettlement Action Plan
EIA	-	Environmental Impact Assessment
GRZ	-	Government of Republic of Zambia
LCC	-	Lusaka City Council
MLGH	-	Ministry of Local Government and Housing
JICA	-	Japan International Cooperation Agency
SHM	-	Stakeholder Meetings
ZESCO	-	Zambian Energy Supply Corporation
MFEZ	-	Multi-facility Economic Zone
WB	-	World Bank
OP	-	Operational Policy

TABLE OF CONTENTS

LOCATION MAP



Source: JICA Study Team

Figure 1 Project Site

1.0 BACKGROUND

The Government of the Republic of Zambia (GRZ) intends to construct an Inner Ring Road in Lusaka District. The Inner Ring Road is a priority project in the proposed Lusaka City Master Plan which has been assisted by the JICA and provides road access and public transport to Kamwala South area; improving living environment in Chibolya and Kanyama; promoting economic development of the planned Lusaka South Multi-facility Economic Zone (MFEZ); and address traffic congestion in the city by providing bypass routes for cars.

The Inner Ring Road will pass through residential areas namely Kanyama, Chibolya, Misisi, Kamwala South, Libala South and Chilenje South before joining the already existing tarmac. One of the negative impacts of this road is involuntary displacement of about 154 residential structures. Most structures are located in Kanyama, Chibolya and Misisi Compounds.

The project has considered all alternatives to minimize involuntary displacement of households and as such has followed the already existing road alignment and ZESCO Overhead Power line as much as possible. With this alternative, it is inevitable that 154 structures face displacement. The Government has therefore considered undertaking an involuntary resettlement of the affected people that are in the Right of Way in accordance with the World Bank Safeguarding Policies as the best mitigation measures that will pave way for the construction of the road at the same time improve the livelihood of the Project Affected Persons (PAPs). Resettlement is therefore perceived to be in the best interest of the PAPs.

1.1 Project Description

The GRZ intends to construct an Inner Ring Road in Lusaka District, which is a priority project in the proposed Lusaka City Master Plan and seeks to providing road access and public transport to Kamwala South area; and address traffic congestion in the city by providing bypass routes for cars.

The Inner Ring Road will pass through residential areas namely Kanyama, Chibolya, Misisi, Kamwala South, Libala South and Chilenje South before joining the already existing tarmac. One of the negative impacts of this road is involuntary displacement of about 154 structures. These structures are located in Kanyama, Chibolya and Misisi Compounds.

The project has considered all alternatives to minimize involuntary displacement of households such as following the already existing road alignment and ZESCO Overhead Power line as much as possible. With this alternative, it is inevitable that 154 structures face displacement. Resettlement of the affected structures has therefore been considered as the best mitigation measure that that is in the best interest of the affected people.

The project therefore involves a preparation of a Resettlement Action Plan (RAP) Framework according to a World Bank (WB) Safeguarding Policy of the Operational Policy (OP) 4.12 on Involuntary Resettlement and a new draft of Zambian Legislation on Involuntary Resettlement to guide the resettlement process. This document is therefore a RAP Framework Report. This report will be utilized for the official Environmental Impact Assessment (EIA) to be conducted by the MLGH and LCC.

1.2 Project Objectives

The objectives of the Inner Ring Road Project are:

1. to provide road access and public transport to Kamwala South area;
2. to improve the living environment in Chibolya and Kanyama;
3. to promote economic development of the planned Lusaka South MFEZ; and
4. to address traffic congestion in the city by providing bypass routes for cars.

2.0 LEGAL FRAMEWORK OF LAND AQUISITION IN ZAMBIA

Constitutions

Zambia has various pieces of legislations that provide for acquisition of property and land. Article 16 of the Constitution of Zambia provides for the fundamental rights to property and protects persons to deprivation of property. It states that the person cannot be deprived of property compulsorily except under the Authority of an Act of Parliament, which provides for adequate payment of compensation. Article 16 further provides that the Act of Parliament under reference shall provide that in default of agreement on the amount of compensation payable, a court of competent jurisdiction shall determine the amount of compensation.

Land Acquisition Act

Land Acquisition Act Chapter 189 of the Laws of Zambia Section Three empowers the president of the Republic of Zambia to compulsorily acquire property. Section 5-7 of the Act provides for the issuing of notice to show intention to acquire, notice to yield up property and to take up possession. Section 10 of the Act provides for compensation as consisting of such moneys as may be agreed form moneys appropriated for the purpose by Parliament. In addition, this section provides that where the property to be compulsorily acquired is land, the President, with the consent of the person entitled to compensation shall make, in lieu or in addition to any compensation payable under the section, grant other land not exceeding in value of land acquired. Section 11 of the Land Acquisition Act provides for the resettlement of disputes relating to the amount of compensation in the High Court.

The Land Acquisition Act premises the principles of compensation on the basis that the value of property for the purpose of compensation shall be the value of the amount which the property might be expected to realize if sold on an open market by the willing seller at the time of the publication of notice to yield up possession of property.

3.0 WORLD BANK SAFEGUARDING POLICIES

The WB's OP 4.12 on Involuntary Resettlements Safeguards against impoverishment risks of involuntary resettlement that may be associated with a development project. The policy covers not only physical relocation by projects but any loss of land and other assets including:

1. Relocation or loss of shelter;
2. Loss of assets or access to assets; and
3. Loss in income sources or means of livelihood, whether or not the affected people must move to another location.

The policy addresses risks such as production systems may be dismantled; people may face impoverishment when their production assets or income sources are lost; people may be relocated to an environment where the productive skills may be less applicable and the competition for resources greater; community institutions and social networks may be

weakened; kin groups may be dispersed; and cultural identity, traditional authority and potential for mutual help may be diminished or lost.

The objective of the Bank's Policy is to ensure that the population displaced by a project receives benefits from it. World Bank therefore conceives resettlement as an integral part of project design which should be dealt with from the earliest stages of project preparation taking into account the following policy considerations:

(a) Involuntary Resettlement should be avoided or minimized where feasible, exploring all viable alternative project designs.

(b) Where displacement is unavoidable, resettlement plans should be developed which should conceive and execute resettlement as a development programme, with resettlers' provided sufficient investment resources and opportunities to share in project benefits. Therefore, displaced persons should be (i) compensated for their losses at full replacement cost prior to the actual move; (ii) assisted with the move and supported during the transition period in the resettlement site; and (iii) assisted in their efforts to improve their former living standards, income earning capacity, and production levels, or at least to restore them. Particular attention should be paid to the needs of the poorest groups to be resettled.

(c) Community participation in planning and implementing resettlement should be encouraged. Appropriate patterns of social organization should be established, and existing social and cultural institutions of resettlers and their hosts should be supported and used to the greatest extent possible.

(d) Resettlers should be integrated socially and economically into host communities so that adverse impacts on host communities are minimized. The best way of achieving this integration is for resettlement to be planned in areas benefiting from the project and through consultation with the future hosts.

(e) Land, housing, infrastructure, and other compensation should be provided to the adversely affected population, indigenous groups, ethnic minorities, and pastoralists who may have usufruct or customary rights to the land or other resources taken for the project. The absence of legal title to land by such groups should not be a bar to compensation.

4.0 DIFFRENCES IN COMPENSATION BETWEEN ZAMBIAN LEGISLATION AND WORLD BANK STANDARDS

While the Zambian Legal Framework does have similarities with the WB's OP, there are some differences on compensation in the two legal frameworks as outlined below:

Firstly, in determining the cost of compensation, the Bank cost estimate is given as the new replacement value of property being lost whereas in the case of national legislation, it is the value the property can fetch at an open market if it is to be sold to a willing buyer.

Secondly, the emphasis of WB is on restoration or maintenance of previous livelihood levels whereas the Zambian Government responsibility ends at replacing the depreciated value of the lost asset.

Thirdly, the WB, unlike the Zambian Legislation, recognizes informal occupancy as a form of customary tenure. Therefore, according to WB, squatters are therefore entitled to certain compensation and assistances but not for the land if they can establish informal occupancy before the project cut-off-date.

4.1 Methodology

This Resettlement Action Plan（RAP） Framework was prepared based on the socio-economic survey, key stakeholders consultative meetings and literature review.

The workshop attended by community leaders of affected wards (ward councillors and chairpersons of the Ward Development Committee (WDC), staff from relevant departments of the LCC, a staff of MLGH, the Consultants and a staff of JICA Study Team and discussed on the project and how best it could be implemented (See the Minutes in the Appendix).

The socio-economic survey was conducted along the project site but done in Kanyama, Chibolya and Misisi compounds. These are the residential areas that face potential displacement of residential structures. The other residential areas had no residential structures to be displaced, only a church in Chalara at the time of the survey. A sample of 84 households in the above mentioned three residential areas was randomly selected for the purpose of this RAP socio-economic survey. This accounts for about 24 % of the total number of resettlers' households (estimated), which is within the range of the recommended survey percentage by the Asian Development Bank for the socio-economic survey. The sample is distributed as shown below:

Table 1 Distribution by Place of Residential

Area Name (Compound Name)	Frequency	Percent
Chibolya	20	23.8
Chinika (Kanyama)	12	14.3
Chinika Kanyama, (Kanyama)	7	8.3
Harry Mwanga Nkumbula	6	7.1
Kanyama, (Kanyama)	29	34.5
Misisi	10	11.9
Total	**84**	**100.0**

Source: Field Data

From the socio-economic survey, it was estimated that about 354 households would be affected by the project.

The questionnaire was used to collect data from the affected households which are located within 16m of the proposed road reserve identified on the satellite images provided by the JICA Study Team. In collecting data for the socio-economic survey, the owners/tenants of the affected house or any relative above the age of 18 years old were identified as a data source. The consultant has submitted all the filled in questionnaires.

Literature review was also conducted in the preparation of this framework. The consultant reviewed literature on Zambian legal framework for resettlement employing a content analysis with specific focus on the WB's Operational Manual on Involuntary Resettlement and Zambian legislations on involuntary resettlement. Based on this analysis, the consultant compared the Zambian legal framework with the WB's Safeguarding Policy of OP4.12 on Involuntary Resettlement, a process that ultimately enabled the consultant to draft a Resettlement Action Plan (RAP) Framework that will be applicable to the project which is highlighted below.

The consultant created a database for storing field data. Results from socio-economic questionnaires were stored in a dataset using SPSS as well as Microsoft Excel. The consultant then synthesized and analyzed data using the software. Data will further be augmented by soliciting feedback from all concerned stakeholders during the RAP dissemination meeting.

4.2 Limitations

In preparing this framework, the consultant faced several unexpected limitations. Firstly, the Consultant had no reliable and complete data on household income from questionnaire respondents. This can be attributed to the fact the most of the respondents did not know the incomes of the head of the households while those who did overestimated their incomes.

Based on this, the consultant could not compute accurate average annual incomes of the affected households. It is hoped that more accurate data will be collected in the official inventory/asset survey for a detailed RAP Report by targeting the Head of family as a data source.

Secondly, the survey could not collect comprehensive and accurate data on affected immovable assets like houses, trees and pit latrines. It shall be officially captured by the further official asset inventory survey for a detailed RAP report.

Thirdly, collecting data from Misisi compound was difficult since this compound has politically been earmarked for demolition during conducting the field study. During the socio-economic survey was taken, the Consultant faced receiving some resistance.

Lastly, sometimes the enumerators who are local students did not properly administer the questionnaire despite being trained twice, even though it is a common practice to hire local students for the socio-economic survey for the RAP in Zambia. This undermined the quality and completeness of data as which is reflected both in the database and report. Therefore, the information gap shall be filled by the official inventory/asset survey which is required for the RAP in Zambia and conduced by the qualified evaluators.

4.3 Profile of Lusaka District

Geographical Location

Lusaka district that serves as the Capital city of Zambia is situated on the Central African plateau at an attitude of 1,280m above sea level in Lusaka Province. It is also a Provincial Headquarters of the Province. It shares borders with Chibombo to the North, Mumbwa to the West, Kafue to the South, Chongwe to the East.

Lusaka is situated on a plateau that covers approximately 360 $km^{2.}$ Escarpments lie to the east and north of the district which end in the Luangwa Valley.

Population and Population Growth Rates

Estimates from CSO based on census carried out in year 2000 indicate that the total population of Lusaka District is 1.3 million people with a population density of 65.4 persons per square kilometre and is the most urbanised and most populated district in the country and within southern region. Lusaka is estimated to have one million people in transit due to the commercial enterprises and education facilities.

The overall growth rate of Lusaka District is 4.0%. These figures indicate that Lusaka district has one of the highest growth rates exceeding the average national rate of 2.9%. Over 51.2% of all inhabitants are between the ages of 0-14 years of age. There are more males (51.4%) than females (48.59%).

Table 2 Population and its Growth

	2000	2001	2002	2003
Population	1,150,000	1,198,080	1,248,000	1,300,000
Growth rate	4.0%	4.0%	4.0%	4.0%

Source: CSO

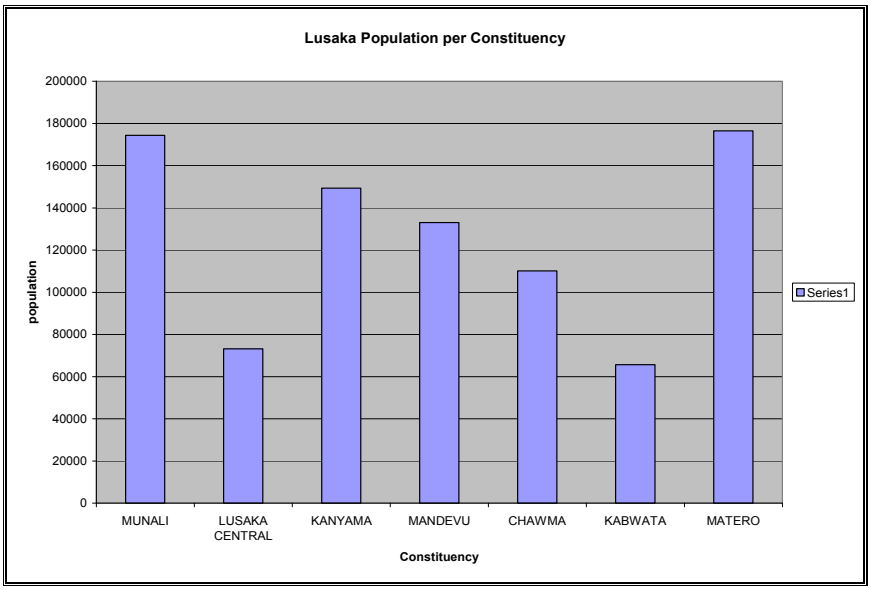
A significant proportion of the growth rate in population can be attributed to the rural-urban migration. Lusaka District has seven (7) Constituencies and Thirty (30) Wards. There are two indigenous tribes namely, the Soli and the Lenje. The table below describes the demographic status of Lusaka district.

Table 3 Demographic Status of Lusaka

Category	%	2005	2006	2007	2008
Children 0-11 months	4	64,713	67,172	69,725	72,375
Children <5 years	20	323,569	335,164	348,627	361,875
Children 5< 14	28	452,995	469,370	506,625	506,625
Women 15-45 years	22	355,925	368,791	383,489	398063
All Adults 15 years+	52	825,100	856,454	888,999	-
Total Males (All ages)	49	792,741	821,397	856,594	886594
Total Females (All ages)	51	62,946	825,100	888,999	922,781
Total Population	100	1,617,843	1,676,321	1,743,136	1,809,375
Expected Pregnancies	5.4	87,364	90,683	94,129	97,706
Expected Deliveries	5.2	84,128	87,325	90,643	94088
Expected live births	4.95	80,083	83,126	86,285	89,564

Source: CSO, 2000 & HMIS, LDHMT

The graph below shows the population of Lusaka district per constituency



Source: CSO, 2000 & HMIS, LDHMT

Figure 2 Population of Lusaka District per Constituency

Human Settlements

Residential and small holding development account for 30% of the total district and 10% of the total area is used for cultivation and plantation. It is estimated that at least 13% of Zambia's population live in the urban centre of Lusaka District. The higher residential densities are located on the outskirts of the city and lower densities where most of the urban facilities are situated. Most of the administrative structures and services are concentrated within the Government area which is along Independence Avenue. Commercial and business activities are concentrated in the central business area which is bounded by Cairo and Lumumba Roads. Lusaka District hosts about 80 residential and industrial built up areas. Concentration of infrastructural facilities and job opportunities in Lusaka has resulted in the movement of people from other districts into the District. The influx of people into Lusaka and other nearby urban settlements like Kafue has brought considerable stress on the already inadequate infrastructure, including the shortage of suitable housing and other basic amenities. The situation has led to the development of unplanned and illegal settlements and consequent degradation of the District environment. Lusaka District hosts over 10 unplanned settlements. Lusaka like any other district in the country, has a diverse mix of ethnic or tribal groupings most of them with their corresponding Bantu languages. The most predominant spoken language of communication in the district province is Chewa and Nyanja.

Governance and District Administration

Lusaka City Council and the central government are responsible for the authority of directing public affairs of community/country/organisation through structures such as government, council area based organisation etc by controlling, directing, influencing and managing affairs.

District Administration supervises co-ordinates and monitors the operations of Government Departments, parastatals and co-operating Non Governmental Organizations (NGOs) and collaborates with the Local Authorities, which includes the formulation and implementation of development projects and programmes in developing the district. This is done to promote integrated development planning through structure like District Development Coordinating Committee (DDCC).

Constituency Specific Profile

The proposed ring road which starts from Oriental Steel Manufacturing along Mumbwa road will pass through and affect households in Chinika, Kanyama, Chibolya, Misisi, Kamwala South, Libala South and Chilenje South before joining the already existing tarmac. These residential areas fall under Nkoloma, Harry Mwaanga, Kanyama, Chilenje Kabwata, Kamwala and Libala Wards in Lusaka and Chisankane Ward of Kafue District.

Chawama constituency where Nkoloma ward falls, has a total of 28,750 households (HH).There are 71,436 males and 68,562 female with a total percentage distribution of 51.3 males and 48.97 females.

Of the total 28,750 HH in the whole constituency, 104 78 HH are in Nkoloma ward. The ward has a total population of 49,282 of which 25,387are males and 23895 females. The total percentage distribution is 51.51 males and 48.49 females.

Kanyama constituency has a total of 37,594 HH and an approximate population of 170,803 of which 83,185are female and 87,618 males.

Harry Mwaanga has a total of 17,075 HH, a total population of 79,375 with 40,415 males and 38,960 females. And Kanyama ward has a total population of 15,775 HH and a total population of 69,016 with 35,767 males 33,249 females.

In terms of housing, the ward has houses made of both concrete blocks and burnt ones in certain areas. In terms of the houses to be affected, the transects carried out during field work revealed that 90% of them are made of concrete blocks, and have asbestos as roofing.

Of all the affected areas, the areas with high quality houses,- made of quality concrete material, quality roofing etc are Kamwala south, Libala South and Kabwata.

In terms of health facilities, the affected communities access their health services at Kanyama, Kamwala, Kabwata, Chilenje Health Centres, a number of traditional healers and other private clinics within their vicinity.

In terms of educational facilities, the constituencies and wards have a number of private pre, primary and secondary schools. Notable among the private primary schools are Lady Diana, ZPAS Schools among others. The prominent government schools which are accessible by the community are Kanyama Basic, Chibolya and Johnlaing, Kamwala, Kabwata, Libala schools.

Like many other low cost townships in Lusaka, the communities (Chinika, Kanyama, Chibolya and Misisi) are poorly drained and therefore susceptible to water born diseases like diarrhea and dysentery. Sanitary conditions in these communities are generally poor.

4.4 Profile of Affected Area

4.4.1 Profile of Households to be Affected

Out of the sample, a total of 42 structures that answered the question on households have 97 households in these structures which give an average of about 2.3 households per structure. Therefore, there are an estimated 354 (2.3*154 structures) households to be affected by the project.

(1) Years of Living

Number of years which the respondent households have been living the area is as follows:

Table 4 Living Years of Respondents' Households

Years and/above-below	No. of respondents	%
0-5	26	30.95%
5-10	24	28.57%
10-15	12	14.29%
15-20	3	3.57%
20-	5	5.95%
n.a.	14	16.67%
Total	84	100.00%

Source: Field Data

(2) Number of Family Members

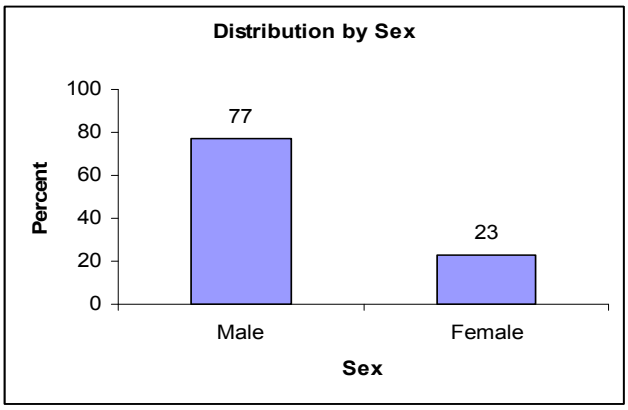
Number of family members of the respondent households is as follows:

Table 5 No. of Family Members

Number	Frequency	Percent (%)
2	5	6.3
3	7	8.9
4	14	17.7
5	11	13.9
6	15	19.0
7	6	7.6
8	9	11.4
9	3	3.8
10	4	5.1
11	2	2.5
12	2	2.5
21	1	1.3
No response	5	-
Total	**84**	**100.0**

Source: Field Data

(3) Head of Household



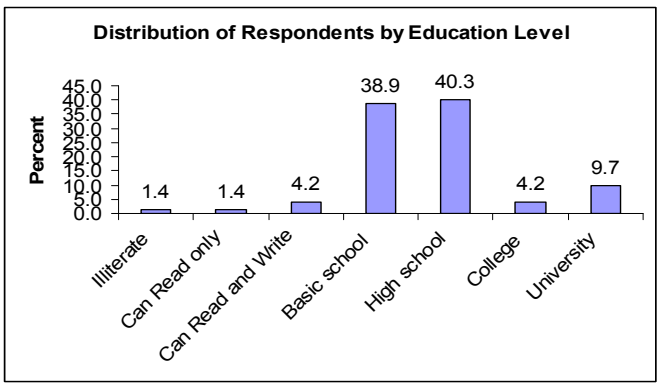
Source: Field Data

Figure 3 No. Households Head by Sex

While 77% of the repondets are male-headed households, the rest 23% are female-headed ones.

(4) Attainment Level of Education

Educational attainment of heads of the respondent households is as follows:

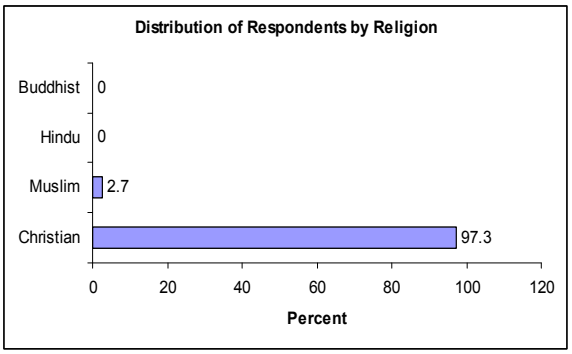


Source: Field Data

Figure 4 No. Education Attainment Level of the Households

(5) Religion

The most dominant religious institution is Christianity accounting for 97.3% than followed by Muslims who account for about 2.7%. The high percentage of Christians as compared to the number of other religions can be attributed to the factor that Zambia has been declared a Christian nation hence the high percentage of Christians being represented.



Source: Field Data

Figure 5 Respondents' Locational Distribution

(5) Occupation

The study also analyzed the economic aspects of the area to be affected. Occupation of the households in the area was taken into consideration as a way of finding the major sources of income in the community. They are involved in different sectors either government, private, or self-employed. Details are shown in the following table:

Table 6 Employment of Households

	No. of Respondents	%
1. Government/Public sector	6	7.14%
2. Private Sector	30	35.71%
3. Self-employed	31	36.90%
4. Farmer	1	1.19%
5. Casual Labour	1	1.19%
6. Unemployed	11	13.10%
7. Others		3.57%
N.A.	1	1.19%
Total	84	100.00%

Source: Field Data

The economy of the affected area is driven by the private sector with the majority being self-employed accounting for 36.9% then followed by those employed by the private sector accounting for about 35.7% while the lowest number was that of the farmer and casual labour accounting for 1.2% respectively.

From the graph above, it can be seen that government is not the major employer of the people living in these affected areas. The majority of the people or rather three quarters of the people are self –employed, followed by those in the private sector then the unemployed, public sector, and lastly casual labourers and farmers respectively. From the above table, the local economy is mainly comprised of people who are in the informal sector.

4.4.2 Utilities

(1) Water Supply

Water is a very essential basic need of life, it is among the most vital and if you are attaching an economic value to an asset such as a house; access to clean water supply is among those necessities given the first priority. If a certain area has no reliable water supply then you'll find that its value at the market will fetch low. For instance, a house situated in an area with access to good water supply will fetch high on the market as compared to one which has no access to water supply.

The table below shows sources for portable water in the project area indicating the sources of water by the residents.

Table 7 Source of Water

Source	Percent
Hand-dug well (private)	2.3
Hand-dug well (common)	8.1
Pump well (private)	10.5
Pump well (common)	23.3
Piped public water supply	50
Bought from vendors (Kiosk)	1.2
Natural water resources(Quarry)	4.6
Total	**100.0**

Source: Field Data

From the information above piped public water supply accounts for 50% accounting for about 42 households, 27 houses use pump well (common) accounting for 23%.The lowest percentages was that of vendors and hand-dug well (private) accounting for 1% and 2% respectively.

From the graph above it is evident that the majority of the people living in the affected areas have access to clean piped public water supply provided by the cities water utility company (Lusaka Water and Sewerage Company), followed by those with access to pump well which is common.

(2) Sanitation

Table 8 Toilet Type

Toilet Facility	Frequency	Percent
Water Bond -Toilet (Private)	1	1.2
Water Bond -Toilet (Common)	0	0.0
Pit Toilets (Private)	49	58.3
Pit Toilets (Common)	23	27.4
No Toilet	11	13.1
Total	84	100.0

Source: Field Data

Sanitation plays an important part in human development and as a component of public health. The social economic study reviewed that about 58.3% of the sample use pit toilet private followed by those using the pit toilet common accounting for 27.4%.

(3) Electricity

Status of accessibility to electricity is as follows. Nearly 60% of the respondents have access to power line.

Table 9 Electricity Source

Source	Frequency	Percent
Power Line	50	59.5
Generator (Private)	6	7.1
Solar energy	1	1.2
Car battery	10	11.9
Not Available	15	17.9
No Answer	2	2.4
Total	**84**	**100.0**

Source: Field Data

4.4.3 Social Institutions

A number of social institutions are available in the area among these include LCC and Ward Development Committee (WDC). A number of NGOs are also fund in the area; these include care International, Society for Family Health, CIDRZ and Network for African Children. Accessibility to these social institutions ranges differently based on average.

(1) Average Time and Distance to the Social Institutions

The average time it takes to reach the local market and other social services are shown as follows:

Table 10 Access to Public Facilities

Average Time Taken to Reach Facility	
Facility	**Average Time (Minutes)**
WDC	23
Local Market	21
Workplace	39
Basic School	27
High School	55
Farming Land	168
Health centre	26.6
Religious Centre	22

Source: Field Data

Table 11 Time to Public Facilities

Average Distance to Reach Facility	
Facility	**Average Distance (Km)**
WDC	10.1
Local Market	3.4
Workplace	8.4
Basic School	4.4
High School	5.4
Farming Land	9.0
Health centre	4.2
Religious Centre	3.3

Source: Field Data

The longest time taken on average is that of going to the farming land. The accessibility to these social institutions that are within the area is not that difficult.

(2) Mode of Transport to Access to the Social Institutions

Transport network system in the area is well agonized people don't have to walk long distances to get to the bus stop. The project area is also just near town which is a walking distance and that a number of people walk on foot to get to town. The road network within the affected project area is very poor. The most common form of transport in the area is vehicular transport. People can have access to the many roads within a walking distance of about 21.15 minutes on average. The rail line passes through the project area even if it does not carter for short distance in terms of offering goods and services.

Table 12 Mode of Transport used to Reach Facilities

Mode	Percent
Foot	84.8
Bicycle	1.4
Motor Bike	0.6
Car	3.3
Bus	10.0
Total	**100.0**

Source: Field Data

4.5 Land/Structures to be Affected/Lost

4.5.1 Land to be Affected/Lost

(1) Status of Residential Land Holding

Status of residential land holding of the respondent is as follows:

Table 13 Land Ownership

Status of Land Holding	Percent
With Certificate of Title	34.3
With Occupancy License	10.0
Tenant	30.0
Illegal occupation with Land Card	10.0
Illegal occupation with applying for Land Card	7.1
Uncertain	8.6
Total	**100.0**

Source: Field Data

(2) Agricultural land

The agricultural land in this case implies gardens which will be affected. From study, many households do not have agricultural land. The study show that a total of 16 m^2 is agricultural land is owned, out of which 8 m^2 will be lost. The nature of the cropland in this area is not a commercial agriculture land but it is mostly a domestic garden of vegetables consisting of 1 to 2 ridges meant for home supply for nutritional purposes; mostly this will be a partial loss.

4.5.2 Structures to be Affected/Lost

(1) Structures to be Affected/Lost

A total of 58 residential houses, 5 residential-commercial, and 1 boundary wall fences will be lost. These structures have an average age of 11 years. Among other assets that will be lost include trees, toilets, and wells. However, the total number of these structures could not be

captured in this study as sometimes the accurate answers could not be provided by the respondents. This should therefore be done in the census or the asset inventory survey later on.

Table 14 Types of Structures to be Lost/ Affected by the Project

Type of Structure	Frequency	Percent
Residential Building/house	58	69.0
Commercial	1	1.2
Residential + Commercial	5	6.0
Farm House	2	2.4
Animal Shed/Wall Fencing	1	1.2
Boundary wall/fencing	1	1.2
Well/Hand pump	0	0.0
Graveyard/Crematorium Ground	1	1.2

Source: Field Data

(2) Ownership of Structures

Status of ownership of structures to be affected/lost is as follows:

Table 15 Structure Ownership

Status of ownership of structure	Percent
Self-owned	62.3
Public-owned structure for rental	5.2
Private owned structure for rental	32.5
Total	**100.0**

Source: Field Data

(3) Economic Structure to be Affected

A number of economic structures will be affected. The study shows that a total area of commercial plots to be lost is 69 m^2. This commercial land area is made up of a shop covering 25 m^2, a workshop covering 4 m^2, and a deport covering 40 m^2. This will affect PAP's livelihood as most of them earn their living in the informal sector. It should also be pointed out that a large scale companies will be displaced by the project.

4.6 Perception on the Project and Resettlement

The Inner Ring Road Project and resettlement to be planned due to the Project were perceived as follows in accordance with the results of the socio-economic survey.

4.6.1 Economic Benefits

More than half (51.2%) of the respondents thought the Project would provide benefits in the area. The expected economic benefits are business opportunity (17 respondents) and wage employment (14 respondents).

4.6.2 Impacts of the Project

Respondents regarded the following issues as the expected social impacts of the Project**.**

Table 16 Loss Type

Social Impacts (multiple choices)	No. of Respondents	%
1. Loss of residential building/house	81	96.43%
2. Loss of agricultural plots	4	4.76%
3. Loss of crops, trees and fixed assets	28	33.33%
4. Loss of plots/fixed assets for businesses/trading	16	19.05%
5. Loss of businesses/trading activities	16	19.05%
6. Loss of sources of income and livelihoods	15	17.86%
7. Loss of access to working place	26	30.95%
8. Loss of access to public facilities and services	33	39.29%
9. Others	4	4.76%
Total	84	

Source: Field Data

4.6.3 Perception on Resettlement

(1) Difficulties

Respondents thought that they would face the following difficulties due to the resettlement.

Table 17 Difficulties by the Resettlement

Difficulties of Resettlement	No. of Respondents	%
1: Find new income source	31	36.90%
2: Find new residential building/house	65	77.38%
3: Find new suitable farmland in the resettlement site	2	2.38%
4: Find new plots/fixed assets for business/trading	21	25.00%
5: Difficulty in commuting to workplace	19	22.62%
6: Find suitable school for child/children	31	36.90%
7: Difficulty in commuting to school for child/children	16	19.05%
8: Acclimatizing in the resettlement site	3	3.57%
9: Security in the resettlement site	21	25.00%
10: Access to markets	37	44.05%
11: Access to public facilities and services (clinic, WDC, etc.)	38	45.24%
12: Access to utilities (water, toilet, electricity, etc.)	28	33.33%
13. Others	0	0.00%
Total	84	

Source: Field Data

(2) Preferences of Resettlements

In case of being displaced by the Project, 58.3% of the respondents preferred that the Project would assist their resettlements with provision of plots and structures, while 20.2% preferred self relocation with payment of compensation.
Moreover, 53.6% of them preferred to be resettled with their community members.

Regarding the resettlement site, 28.6% and 6.0% of the respondents preferred to be resettled in the same community and in the same ward, respectively. 38.1% answered that resettlement location did not matter.

4.7 Effect on Public Safety

With the construction of the new road, it is anticipated that there will be an increase in traffic in the affected residential areas with potential increase in the number of road

vehicle/pedestrians, vehicle/animal, and vehicle to vehicle accidents. Safety should therefore be addressed.

4.8 Effect on Fruit Trees and Standing Crops

Although the enumerators could not capture trees, the transect walk showed that some trees will be lost while the field data reported of only one garden. However, the details of this shall be covered in the future official survey.

4.9 Effects on Utilization of Natural Resources

The affected area is not land-based or natural resource–based. Apart from land, there are no natural resources utilized by the community or livelihood.

5.0 RING ROAD RESETTLEMENT POLICY FRAMEWORK

As already stated, involuntary resettlement has been minimized by routing the Ring Road in an already existing road alignment and following ZESCO Overhead Power line as much as possible. Displacement of about 354 households in 154 structures is therefore inevitable and unavoidable. These have to be resettled. The consultant has therefore drafted a Resettlement Policy Framework that will apply to this project. This policy framework is a combination of the Zambian legal framework on resettlement and the WB's OP without contradictions in the two. Where the principles in the two are at variance, the policy framework has adopted the principle which is higher or broader and as such has implicitly accommodated the other principle. The RAP framework for the Project is outlined below:

Compensation and Assistance

1. Displaced persons should be compensated for their losses at full replacement cost prior to the actual move;
2. Displaced persons should be assisted with the movement and supported during the transition period in the resettlement site;
3. Displaced persons should be assisted in their efforts to improve their former living standards, income earning capacity, and production levels, or at least to restore them;

Relocation

1. Appropriate patterns of social organization should be established;
2. Community participation in planning and implementing resettlement should be encouraged;
3. If the resettlers prefer, relocate neighbour households together to the relocation site; and
4. If a small portion of the community is separated and left due to the resettlement, these remained households shall be displaced to the relocation sites together with resettlers upon request.

Integration with Host Communities

1. Find out the appropriate relocation site which has the similar social and economic environment to resettlers;
2. Existing social and cultural institutions of resettlers and their hosts should be supported and used to the greatest extent possible;

3. Resettlers should be integrated socially and economically into host communities so that adverse impacts on host communities are minimized;

Others

1. Particular attention should be paid to the needs of the vulnerable groups to be resettled;
2. Land, housing, infrastructure, and other compensation should be provided to the adversely affected population who may have usufruct or customary rights to the land or other resources taken for the project.

6.0 ELIGIBILITY AND ENTITLEMENT FRAMEWORK

6.1 Eligibility

The affected community is defined as those who stand to lose all or part of their physical and non-physical assets including social and cultural networks as a result of a the project. To be eligible to compensation, one should have formal legal rights to land or other assets or should prove informal occupancy (In case of illegal settlers).

6.2 Entitlement Matrix

Based on the adopted Policy Framework, outlined below is a summarised entitlement matrix for the PAPs. This matrix reflects all categories of affected people and all types of losses associated with each category.

Table 18 Preliminary Entitlement Matrix

Loss Type	Application	Definition of AP	Entitlement
Agricultural Land	Land Acquired by the Ring-road	Title holders/informal occupants who can prove ownership and/or payment for land ownership	Equivalent land or compensation at full replacement cost
Residential Land	Land Acquired by the Ring-road	Title holders/informal occupants who can prove ownership and/or payment for land ownership	Equivalent land or compensation at full replacement cost
Commercial Land	Land Acquired by the Ring-road	Title holders/informal occupants who can prove ownership and/or payment for land ownership	Equivalent land or compensation at full replacement cost
House	House on Acquired Land	Owner of houses	Replacement or compensation at full replacement cost
Other Built Structures (fence, pit latrines, depot wells & shops)	Built Structures on Acquired Land	Owners of built structures	Replacement or compensation at full replacement cost
Trees	Trees on Acquired Land	Trees: Owners of Trees (e.g. Landlords); Fruits of the Trees: Tenants (if any) or Owners of Trees (Landlords)	Compensation equivalent to value of trees/fruits/crops based on Ministry of Agriculture & Co-operative assessment
Crops	Crops on Acquired Land	Owners of Crops	
Cost of Moving	Displaced Households	Displaced Households including tenants	Allowance to enable displaced households to move to the new sites

Loss Type	Application	Definition of AP	Entitlement
Loss of Business	Displaced Business Owner	Displaced business owner with an affected fixed commercial structure excluding business owners with a movable asset	Allowance to enable displaced business owner to restore his/her business

Source: JICA Study Team

7.0 RESETTLEMENT SITE

A number of options were available in the study namely self relocation with payment of compensation and resettlement with provision of plots/buildings. Out of the respondent that answered on resettlement options, 17 (20.2%) chose self relocation with payment of compensation, 49 (58.3%) chose resettlement with provision of buildings while 6 (7.1%) chose other options. Regarding where displaced household would want to go, 24 (28.6%) and 5 (6.0%) said they would want to be resettled within the same community and within the same ward respectively while 32 (38.1%) indicated that resettlement location does not matter.

Based on the above findings, it is imperative that the project finds alternative resettlement land if it is to meet the aspirations of the majority of the affected people. The basic principles to select the appropriate resettlement site(s) are as shown below:

Priority of the Relocation Site Selection for Resettlers

1. Relocation within the same community/zone if possible and upon request;
2. Relocation within the same ward upon request;
3. Relocate resettlers to the relocation site(s) with similar social, economical, cultural and environmental conditions of the resettlers' community.

The resettlement site should be preferably close to the area of displacement so as to meet the locational advantage of the displaced site and minimise social disarticulation. In an event that no land should be found, the project should find land elsewhere but provide amenities so that the new site has better if not similar locational advantages to the old site.

However it's the duty of the local government and other government departments to look for the resettlement site that should adhere to the international guideline on resettlement as well as the local resettlement policy that takes into considerations the human rights approach that aims at advancing both social and political sustainability.

Specifically, to examine appropriateness of the relocation site(s), the survey on the social and economic status of the potential host communities shall be conducted by the proponents. The discussions with the residents/representatives of the host communities are also required for planning and designing the resettlement sites.

8.0 INCOME RESTORATION PROGRAMME

In case of loss of sources of livelihood caused by the displacement out of the 57 households that answered the question on resettlement option, 6 opted for provision of new agricultural plot, 33 were for the provision of new plots/assets for economic activity, 3 opted for training for self employment and 15 were for cash grant equivalent to loss. In this regard, the majority of the PAPs prefer assets for self-employment to continue using the skills which they already have. Income restoration programme for PAPs should therefore focus on helping the displaced community restore their self-employment activities. NGOs dealing in urban

livelihood should therefore be contracted to design and implement a livelihood restoration programme for the PAPs.

9.0 IMPLEMENTATION ARRANGEMENT

The consultant has proposed implementation strategy highlighted below in line with the proposed Resettlement Policy Framework. However, choosing of the appropriate implementation options should be done baring in mind the available resource envelop as well as preference of the affected people.

9.1 Organizational Responsibility

When implementing the resettlement programme, it is imperative that roles and responsibilities of all the relevant stakeholders are clearly defined and outlined. Stakeholders in this document are defined as individuals or groups that are affected by or that are believed to be affected by the project; and individuals or groups that can play a significant role in shaping the project, either positively or negatively. It is recommended that the implementation of the resettlement programme for the displaced households should be done based on the following organizational framework.

The Ministry of Local Government being the executing agency should be responsible for overall resource mobilization, coordination and financing of the implementation of resettlement programme. The main focus of the ministry should therefore include:

Resources mobilization of for Resettlement Programme implementation;

- Overall co-ordination of Resettlement Programme implementation;
- Planning and financing of the implementation of resettlement programme; and
- Addressing grievances.

At District level: A coordinating committee at LCC chaired by the LCC and drawing its membership from local leaderships, affected community, relevant government departments and civil society should be responsible for coordinating the implementation of the programme. This committee could also be used in the grievance redress system if need arises. This committee will act as a sub committee for the District Development Co-ordinating Committee (DDCC). The main focus of this committee should be:

- Monitor the disbursement of funds;
- Guide and monitor the implementation of resettlement programme;
- Coordinate activities between the various organizations involved in resettlement;
- Monitor resettlement activities;
- Review progress reports and report to DDCC; and
- Serve as a pool of technical expertise for resettlement

For effective execution of these mandates, MLGH should ensure that the capacity of this committee is built. The civil society in the area should be engaged into dialogue aimed at supplementing efforts of this committee especially in the area of livelihood restoration.

At Community level: At community level, a sub-committee reporting to the coordinating committee and drawing its membership from the affected community, host community and

local leadership should be formed and should be responsible for spearheading the actual implementation of the resettlement plan. The committee is expected to play a pivotal role when negotiating for compensation on behalf of the affected people as well as monitoring the day to day implementation activities of the resettlement programme. The main focus of this committee will include:

- Act as representative body for the affected community;
- Monitor the implementation of programme at community level;
- Serve as a channel of communication for grievances of the affected community by processing and channeling grievances to the main committee
- Negotiate for compensation on behalf of the affected community; and
- Serve as a channel of on-going disclosure of RAP implementation status to the affected community

Like with the Overall Coordinating Committee, the capacity of this committee should be built by MLGH for easy articulation of issues pertaining to implementation of resettlement programme.

Table 19 Summary of Roles for Respective Key Stakeholders

No.	Key Stakeholder	Roles In RAP
1	Ministry of Local Government and Housing	- Mobilization of resources for resettlement program - Co-ordination of programme implementation - Disbursement of compensation and other entitlements to the affected people
2	Co-ordinating Committee	- Monitor the disbursement of funds; - Guide and monitor the implementation of resettlement; - Coordinate activities between the various organizations involved in resettlement; - Review progress reports; and - Address resettlement grievances - Serve as a pool of technical experts for Addressing Resettlement Issues
3	Sub -Committee	- Serve as a channel for grievance redress - Monitoring the day to day implementation of RAP activities - Negotiating for compensation - link for community to district office - Serve as a channel for on-going RAP disclosure to the community

Source: JICA Study Team

9.2 Community Participation

The affected and host community should be involved at all levels of planning, implementation, monitoring and evaluation of the Resettlement Programme. This will facilitate greater transparency and fair play in compensation procedures and encourage greater community involvement and ownership.

To ensure effective community participation, the following activities should be considered:

a) Ensure all stakeholders understand the programme process through on-going disclosure mechanism;

b) Formation of a sub coordinating committee with representation from the affected and host communities as well as the local leadership as Ward Councilors and the chairperson of the Ward Development Committee; and

c) Establish the grievance redress mechanism.

9.3 Integration of AP with Host Community

The community residing within or near the area for relocation of affected people is termed as host community. The host community can either welcome or resent the resettled community. To ensure smooth integration the following actions should be considered.

- Conduct the survey on social, economic, cultural and environmental status of the potential host communities;
- Ensure full participation of host community at all stages of the programme implementation;
- Host community should have representation on the sub committee;
- In case the project opts for group resettlement, there should not be pronounced disparity in the standard of houses between the PAPs and the host community; and
- Usage of social facilities should be extended to the host community.

10.0 GRIEVANCE REDRESS MECHANISM

Grievances are a common phenomenon in involuntary resettlement which if not amicably and timely resolved inevitably give rise to local resistance, political tension and unnecessary delays in executing the project. Litigation in the court of law is one of the options for grievance redress. However, using such formal channels takes longer and may affect the pace of implementation of the programme. It is therefore recommended that all efforts should be made by the project to resolve all grievances at project level without resorting to the Courts of Law. The consultant has proposed the process as highlighted below:

- Allow the aggrieved person to lounge a complaint or claim to the sub committee. The sub committee should in consultation with the complainant clearly define the claim and forward it to the coordinating committee at district level.
- The coordinating committee should then consider such claims and their merits aimed at making a rational judgement. This should be done in consultation with MLGH.
- If the aggrieved person is not satisfied with the decision of the coordinating committee. The complaint should be referred to the Court of Law for redress.

11.0 CONSULTATIONS

The resettlement should be implemented in the spirit of widespread and multiple stakeholder consultations. The affected and host communities and all key stakeholders should be consulted and informed at all levels of resettlement.

12.0 MONITORING AND EVALUATION

Monitoring and evaluation should be done at two levels namely internal and external. Internal monitoring should mainly assess whether the implementation of the resettlement programme is in accordance with the approved plans. This should be done on a quarterly basis and will involve the review of the actual implementation process, against the planned time schedule and budget; assessing how the operationalised channels of communication are working, whether compensation due to affected persons are being met and assessing the adherence to

approved mechanisms. The co-ordinating committee should be responsible for the internal monitoring.

External monitoring and evaluation should assess the overall compliance of the resettlement to RAP and the World Bank Safeguards as well as indications of effectiveness of mitigation measures. This should be conducted annually until the objectives of resettlement are fully met.

13.0 IMPLEMENTATION SCHEDULE

The implementation schedule should be devised in close collaboration with the key stakeholders and should take into account seasonal activities or events such as school calendar to minimize potential disruption of social activities.

The schedule should be phased as outlined below.

- Announcement of cut-off date
- Census of all the affected households
- Preparation of the detailed RAP
- Relocation site selection with the social and economic study on the host community
- Formation of organisational structures and signing of memorandum of understanding among key stakeholders
- Signing of contract with the NGO for livelihood restoration
- Compensating all affected households/preparation of the habitants
- Relocation
- Construction of the inner-ring road

The proposed schedule needs to be reviewed and modified by the MLGH and LCC while the Monitoring and Evaluation will be on-going commencing immediately after project implementation.

14.0 BUDGETING

The budget should reflect all the aspects of resettlement. It should consider compensation for all immovable assets such as residential buildings, commercial structures, Fruit Trees, other immovable assets of value. Compensation for houses should be based on the actual valuation in order to determine the full replacement cost of the structures to be lost. The budget should also consider all costs for monitoring and evaluation as well as capacity building of the implementing team.

15.0 CONCLUSION

Involuntary Resettlements are very sensitive and can generate negative socio-economic impacts and as such special attention should be paid to every detail in the resettlement. The propositions on how resettlement should be undertaken presented in this framework draw their strength from findings from field surveys. In other words, these may be taken as the wish of the affected people.

When choosing among the given options, decisions should not only be based on the preferences of the affected community but consideration should also be made to the possible

environmental and social economic impacts that may come as a result of under taking such actions.

16.0 LIST OF REFERENCES

The World Bank Operational Manual, World Bank, June 1990

The World Bank Involuntary Resettlement Sourcebook, World Bank, 2004

The Handbook on Resettlement A Guide to Good Practice Operational Manual, Asia Development Bank, 1998

JICA Guidelines for Environmental & Social Considerations, JICA, 2004

17.0 APPENDICES

Appendix -1: 1st Stakeholder Meeting Materials

LUSAKA CITY COUNCIL
OFFICE OF THE TOWN CLERK
INDEPENDENCE AVENUE CIVIC CENTRE

Telephone: 260 1 250773
FAX : 026 1 252141
Verbal Enquiries To:

P.O. Box 30077
Civic Centre Lusaka
Republic of Zambia 10101

Reference: ESD/5/3/29/SM/fzl

29th October, 2008

1. The Ward Councillor
   The Chairperson (WDC)
   Nkoloma (Ward 1), **LUSAKA**

2. The Ward Councillor
   The Chairperson (WDC)
   Kamwala (Ward 5), **LUSAKA**

3. The Ward Councillor
   The Chairperson (WDC)
   Kabwata (Ward 6), **LUSAKA**

4. The Ward Councillor
   The Chairperson (WDC)
   Libala (Ward 7), **LUSAKA**

5. The Ward Councillor
   The Chairperson (WDC)
   Chilenje (Ward 8), **LUSAKA**

6. The Ward Councillor
   The Chairperson (WDC)
   Harry Mwaanga Nkumbula (Ward 11), **LUSAKA**

7. The Ward Councillor
   The Chairperson (WDC)
   Lubwa (Ward 15), **LUSAKA**

8. The Ward Councillor
   The Chairperson (WDC)
   Chisankane (Ward 4), **KAFUE**

RE: THE STUDY ON COMPREHENSIVE URBAN DEVELOPMENT PLAN FOR THE CITY OF LUSAKA

MEETING WITH STAKEHOLDERS ON INNER RING ROAD PRIORITY PROJECT

NOTICE IS HEREBY GIVEN: that there will be a meeting on the inner ring road priority project proposed by Ministry of Local Government and Housing (MLGH) and the LCC, together with the JICA Study Team on Comprehensive Urban Development Plan for the City of Lusaka as follows:

Date/Time: 08:30 hours -11:30 hours
7th November 2008, Friday

Venue: the Committee Room at Civic Centre (Lusaka City Council)

Agendas:
- Outlining of the inner ring road priority project
- Briefing on expected environmental/social impacts by the project
- Briefing on the proposed scope of the EIA (Environmental Impact Assessment) and RAP (Resettlement Action Plan) framework preparation
- Obtaining comments/suggestions from ward representatives

Kindly attend the meeting without fail.

TIMOTHY M. HAKUYU
TOWN CLERK

cc: JICA – The Study Team
Director of Engineering Services
Director of City Planning
Director of Housing and Social Services

START: 10:30 HRS
END: 12:30 HRS

ATTENDANCE SHEET — 27/11/08

	NAME	POSITION	WARD
1.	BWALYA PAUL	CHAIRPERSON ✓	KABWATA — 06
2	NGIRENDA STEMBRIDGE	TOP TRESURIS ✓	NKOLOMA — 01
3	Murell CHIBWE	women's groups Chairp Musosi	NKOLOMA — 01
4.	BONIFACE CHILESHE	CHAIRPERSON ✓	NKoloma — 01
5	GILBERT YASINI	SECRETARY ✓	CHISANKANE — KAFUE D.
6	Chanda Makanta	P.R.M.	L.C.C.
7.	RAYMARIUS MUSAFILI	Cllr Kabwata Ward 6	KABWATA — 06
8.	DONALD NSONGA	Cllr Libala Ward 07	Libala 07
9.	Simon SINYANGWE	Cllr. Ward 11	Harry Mwanga NKumbula
10,	Ev Lesson Chibalamuna	CHAIRMAN ✓	Harry Mwanga NKUmbula Ward 11
11	BILLY MULUNGA	Chairperson ✓	Chelenje ward 8.
12	TROPHIUS KUFANGA	ENVIRONMENTAL PLANNER	L.C.C
13	MRS Judith E.K. Mwangani	chairperson.	chelenje
14	Daniel Mukonde	Consultant	Kaizen Consultancy
15.	Angela Banda	Chairperson. Ward 05 ✓	Kamwala Ward 05
16	[illegible] FRANCIS J.	Councillor WARD 01	NKOLOMA ward 01
17.	MUKUPA JOSEPH. M	A.D.C.P	L.C.C.
18	MALUMO S	[illegible]	

19.	ZULU. M. JOSEPH ~~DD/C.P~~	~~DD~~/CP ~~LCC~~	LCC
20.	MATAWE BORNIFACE	DD/H.S.S ~~LCC~~	LCC
21.	JUSTINE K. MUSONDA	COUNCILLOR	LUBWA WARD
22.	GEORGE PHIRI	A/SENIOR COMMITTEE CLERK	LCC
23.	DANNY SILWAMBA	ASSISTANT COMMITTEE CLERK	LCC

LUSAKA CITY COUNCIL

INDEPENDENCE AVENUE CIVIC CENTRE

1st STAKEHOLDER MEETING ON THE INNER-RING ROAD PROJECT

Time & Date: 08:30-11:30, Friday 7th November 2008
Venue: Committee Room, 2nd Floor, Civic Centre

08:30 -08:40 Opening Remarks
by Mr. Bornwell Matawe, Deputy Director of Housing & Social Services

08:40- 08:50 Meeting Objectives
by Mr. Bornwell Matawe, Deputy Director of Housing & Social Services

08:50-09:30 Outline of the Inner-ring Road Project
by Mr. Simasiku Malumo, Deputy Director of Engineering Services

09:30-09:45 Environmental & Social Impacts by the Project
by Mr. Jacob Chishiba, Environmental Management Expert, Kaizen Consulting International

09:45-10:10 Environmental & Social Impact Assessment for the Project
by Mr. Jacob Chishiba, Environmental Management Expert, Kaizen Consulting International

10:10-11:20 Discussions & Questions
Facilitated by Mr. Jacob Chishiba, Environmental Management Expert, Kaizen Consulting International

11:20-11:30 Closing Remarks
by Mr. Bornwell Matawe, Deputy Director of Housing & Social Services

Stakeholder Meeting on Inner-Ring Road Project

08:30- 11:30
Friday, 7th November 2008
Committee Room, Civic Centre

Lusaka City Council (LCC)
Ministry of Local Government and Housing (MLGH)

1

Agenda

- Opening Remarks: LCC
- Meeting Objectives: LCC
- Outline of the Inner-Ring Road Project: LCC
- Environmental/Social Impacts by the Project: Kaizen
- Environmental/Social Impact Assessment for the Project: Kaizen
- Discussion and questions
- Closing Remarks: LCC

2

Meeting Objectives

To share understanding with the stakeholders (Ward representatives) on:

- the proposed Inner-Ring Road Project
- the expected environmental/social impacts by the Project
- “Social/Environmental Considerations Study” for the Project

To obtain comments/suggestions from the stakeholders to reflect to the Environmental and Social Impact Assessment

3

Outline of the Inner-Ring Road Project

Background of the Project

- The future road network up to 2030 is studied in the proposed Lusaka City Master Plan.
- This project (Inner-Ring Road) is proposed as the priority project in the master plan.
- Lusaka City Council is considering the implementation of this project.

4

Outline of the Inner-Ring Project

Proposed Inner-Ring Road

Wards in Lusaka District

Neighbouring Wards

Wards proposed Inner-Ring Road passes through:

Lusaka District

Harry Mwaanga Nkumbula
Nkoloma
Kamwala
Kabwata
Libala
Chilenje
Lubwa

Kafue District

Chisankane

5

Outline of the Inner-Ring Road Project

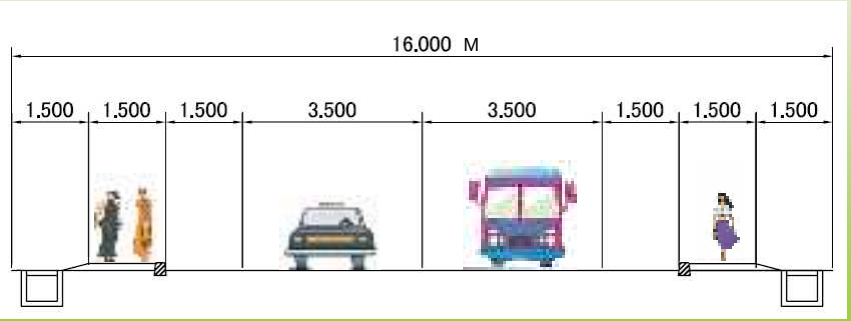
- Project Name: Inner-Ring Road Project
- Road construction & improvement
- Total length: 22.7km
  (9.1km for improvement of the existing roads)
- Major Section:
  - Mumbwa Road – Kafue Road – Kasama Road
  - Musi-Oa-Tuyna Road – MFEZ
- Minor Section:
  - Chibwa Road Ext, Nationalist Road Ext, Yotam Mueya Ext, Kasama Road, and Mini Bypass access

6

Outline of the Inner-Ring Road Project

- Typical Cross-Section

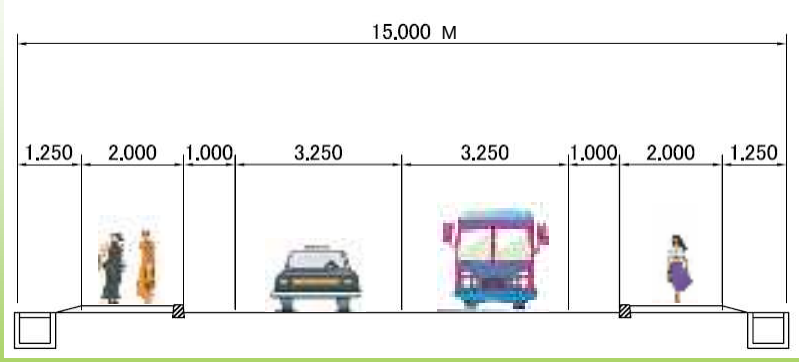
Following two types of typical cross-sections are proposed, in accordance with traffic function.



Type-1

7

Outline of the Inner-Ring Road Project



Type-2

8

Purpose of the Project

- Provide bypass route for cars to avoid traffic congestion in Town
  - Mumbwa Road – Los Angeles Road – Kafue Road, avoiding congestion around City Market
  - Kafue Road – Chilimbulu Road, avoiding congestion at Kafue Roundabout
- Provide road access and public transport to Kamwala South area
- Improve living environment in Chibolya and Kanyama
- Promote MFEZ (economic) development

9

Project Feature

- Utilise the existing road (right-of-way) along ZESCO power line
- Utilise the existing road in Chibolya and Kanyama
- Improve Chibwa Road Ext, Nationalist Road Ext, Yotam Mueya Ext, Kasama Road
- Need some resettlements in Misisi, Chibolya, Kanyama

10

Outline of the Inner-Ring Road Project

Kamwala South

Chilenje

11

Outline of the Inner-Ring Road Project

Chibolya

Misisi

12

Environmental/Social Impacts by the Project

What kinds of environmental and social impacts are expected by the Project?

1) Environmental Pollution

- Air Pollution
- Noise
- Vibration

13

Environmental/Social Impacts by the Project

2) Natural Environment

- No significant adverse impacts:

  i) No protected areas (e.g. national park, forest reserve) in the project site;

  ii) Project site is in urban area; and

  iii) Approx. 40% of the project site are existing roads.

14

Environmental/Social Impacts by the Project

3) Social Environment

- Resettlement: Approx. 150 buildings in the project site are identified in major sections, with satellite images.
- Road safety of pedestrians.
- Effect on the informal shops.

15

Environmental & Social Impact Assessment

- To determine whether a project may have significant adverse or beneficial impacts on the social and environmental conditions.
- Environmental Protection and Pollution Control Act (EPPCA) of Zambia requires EIA (Environmental Impact Assessment), RAP (Resettlement Action Plan), and public consultation for certain projects such as this Project.

16

Environmental & Social Impact Assessment

- Process of Environmental & Social Impact Assessment is as follows:
  - Preliminary confirmation on TOR by ECZ (Environmental Council of Zambia)
  - Public consultation
  - Identification of environmental & social impacts of a project
  - Identification of mitigation measures
  - Preparation of EIA and RAP reports
  - Submission of EIA and RAP reports to ECZ for its approval

17

Environmental & Social Impact Assessment

What activities will be conducted by the Environmental and Social Impact Assessment for this Project?

1) Alternative Considerations

- Alignment (route) considerations for minimising the number of the resettlers and maximising the project benefits.

18

Environmental & Social Impact Assessment

2) Air Quality Survey

- Air quality measurement: CO, NO_2, SO_2, PM_{10}, dust & Lead (Pb) at 5 sites
- Predict impacts by the Project
- Impact assessment
- Prepare mitigation measures

3) Noise Survey

- Noise level measurement at 5 sites
- Predict impacts of the noise level caused by the Project.
- Impact assessment
- Prepare mitigation measures

19

Environmental & Social Impact Assessment

4) Socio-Economic Survey

- To capture the socio-economic status of the potential resettles' households in the project area.

5) RAP

- Consideration on the condition of compensation and restoration of the people affected to replace all types of loss.

20

Next Meeting

Second Stakeholder Meeting will be organized on 22 January 2009 (to be confirmed) to brief the outcome of the Environmental and Social Impact Assessment.

21

Discussions and Questions

1) Any other environmental/social impacts expected by this Project?
2) Any comments/suggestions on the scope of the Environmental and Social Impact Assessment?
3) Any comments/suggestions on mitigation measures for environmental/social impacts caused by the Project?

Your comments & suggestions are highly appreciated.

22

Contacts

If you have further questions, please contact to

Department of Engineering Services
Lusaka City Council
Tel: 253012

23

RECORD OF THE STAKEHOLDER MEETING FOR THE INNER RING ROAD

HELD IN THE COMMITTEE ROOM OF THE CIVIC CENTRE ON 7th NOVEMBER 2008

The Agenda of the meeting was as follows:

1. Opening Remarks
2. Meeting Objectives
3. Outline of the Inner Ring Road Project
4. Environmental/Social Impacts of the Project
5. Environmental/Social Impact Assessment
6. Discussion and questions
7. Closing Remarks

The meeting was called to order at 09:05hrs by the Chairperson/Facilitator, Mr Bonwell Matawe, who immediately asked for a volunteer to offer an opening prayer. This was followed by a Roll Call, by way of self introduction of all the participants to the meeting.

1.0 OPENING REMARKS

In his introductory remarks, the chairperson gave a brief background to the Lusaka Inner Ring Road Project by first characterizing the current road traffic situation in the city of Lusaka. Further, he highlighted some of the major constraints facing the local authority in providing a lasting solution to the perennial traffic congestions on the major roads in the city. He therefore stressed that the proposed Inner Ring Road Project would provide a solution that would help de-congest the southern part of the city between Mumbwa Road and the eastern suburbs through to the government proposed Multi-facility Economic Zone （MFEZ）. It was for this reason, he said, that the Lusaka City Council, with the help of some cooperating partners had embarked on this project. He identified the meeting's objectives to be as follows:

- To share understanding with key stakeholders of the project (Ward representatives) on the proposed Inner Ring Road;
- To elaborate the potential environmental/ social impacts of the project;
- To identify components of the environmental/ social impact assessment; and
- To obtain comments/suggestions from stakeholders to reflect to the environmental/ social impact assessment.

Additionally, he stated that the future road network of the city up to 2030 had been studied as part of the proposed Greater City of Lusaka Master Plan. The Inner Ring Road was therefore considered a critical project under the Master Plan. It was for this reason that the Lusaka City Council had embarked on the implementation of this project.

After giving this brief background, the chairperson called on the Mr S Malumo to give an engineering perspective of the project. In his presentation, he highlighted the key features of the proposed inner ring road, such as the proposed route and developments that would possibly accompany the project. Firstly, a map of Lusaka was shown, so as to give the participants an insight into the route of the proposed project, vis-à-vis areas that were likely to be affected. Other information provided elaborated the major section of the project to include: the Mumbwa Road; Kafue Road; and Kasama Road, while another section of the road would cover Musi-Oa-Tunya Road, through Chalala to the MFEZ. Minor sections of the road would include the extension of Chibwa, Nationalist, Yotam Muleya,

Kasama roads and would terminate in a mini Bypass access into the MFEZ. Further, the presentation gave some of the key specifications of the road through use of cross-sections. In conclusion, the purpose of the proposed project was given:

- To provide a bypass route for cars to avoid traffic congestion in town;
- To provide a road access and public transport to Kamwala South area;
- To improve living environment in Chibolya and Kanyama; and
- To promote the MFEZ and its attendant economic gains.

This would be made possible through the utilization of the existing road along the ZESCO power line and the existing road in Chibolya and Kanyama. Other areas to benefit would include; the improvement of Chibwa, Nationalist, Yotam Muleya and Kasama. However, these developments would also call for the need to resettle some households and commercial entities in Misisi, Chibolya and Kanyama areas.

2.0 DISCUSSIONS/ QUESTIONS

After the two presentations from the Lusaka City Council, the facilitator called for some comments and clarifications, which were as follows:

Question: What was the status of Chalala? As some other names were already being used for the area, please confirm if these names had been approved by the Lusaka City Council.

Answer: As far as the Lusaka City Council was concerned, the names were yet to be approved, and to the best of the facilitator's knowledge, no such approval had been made.

Question: What type of drainage would the roads have, as it appeared that there was no mention of drainage in the engineering presentation?

Answer: Reference was made to the cross-section diagram showing the road, both sides had a trench, and the drainage would be concrete lined.

Question: Which power line would the planned road alignment be next to? Is the width of the land adequate for the proposed route?

Answer: The 33kv line running from Leopard Hill Sub-Station to the Lusaka Main Sub-station located close to Soweto Market would be used for the project.

Question: What was the status of the Njanji Commuter Railway Line, as some properties along the line were now as close as 10 meters from the line?

Answer: Improvement of the commuter line would be outside the project's ToR, and this issue should be discussed in another opportunity.

After exhausting the comments and clarifications, the facilitator called upon Mr Jacob Chishiba, the Environmental Management Expert to give a presentation on the Environmental Impact Assessment process.

In opening this session, Mr D Mukonde of Kaizen Consulting introduced the firm briefly. After this brief introduction, Mr Chishiba was called upon to make the presentation.

The presentation gave an overview of the environmental management framework of Zambia, as it applied to the Environmental Impact Assessment process, as provided for in the Environmental Protection and Pollution Control Act of 1990 and its subsidiary legislation of the EIA Regulations, Statutory Instrument No 28 of 1997. This was followed by an elaboration of the approach that would be used in undertaking the study, which would also provide a Resettlement Action Plan, as an output of the Environmental Impact Assessment. As a first step, the process used in conducting an EIA was presented, which highlighted the following:

1. Preliminary confirmation on ToR of environmental and social impact assessment by the Environmental Council of Zambia (ECZ)
2. Public consultation
3. Identification of environmental and social impacts of the project
4. Identification of mitigation measures
5. Preparation of EIA and RAP reports
6. Submission of EIA and RAP reports to the ECZ for approval.

Also covered in the presentation were aspects of the expected environmental and social impacts by the proposed project as follows:

1) Environmental pollution: air pollution, noise, and vibration will be expected as impacts by the project.
2) Natural environment: no significant adverse impacts are expected, considering the following factors:
    - The proposed project route had no protected areas, such as national parks or forest reserves;
    - The project will be done in an already built up area; and that
    - Approximately 40% of the project route was on already existing roads.
3) Social environment was characterized as follows:
    - Approximately 150 buildings were to be affected by the project;
    - It was imperative that road safety measures be in place; and
    - The project would have effect on small businesses such as shops.

Having highlighted the characteristics of the expected environmental/social impacts, the purpose of the assessment was given to be “to determine whether the project would have significant, adverse or beneficial impacts on the social and environmental conditions of the project route. Additionally, the Environmental Protection and Pollution Control Act was identified as the principal legislation under which the assessment would be carried out, and that this process provided for public consultation, where all pertinent issues related to the project would be discussed. Following the

presentation, the EIA expert emphasized the need for all key stakeholders of the project to make input in the formulation of the ToR of the study.

The scope of Environmental & Social Impact Assessment was explained by Mr Chishiba (For details, see the attached presentation)

In closing, the EIA expert informed the participants that a second meeting would be held with them on 22nd January 2009, where the findings of the study would be presented, to solicit their comments. Mr Chishiba handed over to the facilitator to continue with the deliberations.

Before calling for comments, the facilitator implored the participants that their full participation at this stage was critical, as the planning process and indeed the project had now commenced. The session was then opened to comments.

Question: What safety measures had been put in place, considering that most of the project route was along the power lines?

Answer: Mr Malumo explained that the proximity of the power lines had been taken into account and the road was planned at 15m away from the power line. He mentioned that the project team would work in consultation with relevant authorities like ZESCO during project implementation.

Question: The project site was partially occupied by quarries and dumping site. What effect would the indiscriminate disposal of waste have on the project?

Answer: To address this, the project would work closely with the Waste Management Unit of the Lusaka City Council to ensure all such issues were adequately addressed.

Question: Would the project bring any economic benefits particularly to the communities along the proposed route?

Answer: Presently, the benefits were identified to be at the macro level, as highlighted in the project document and captured in the presentation. However, the socio-economic assessment that would form part of the EIA would definitely identify some other benefits at micro level.

Question: What type of compensation would those to be affected by the project receive, considering that some of the structures along the project route, particularly illegal areas like Misisi? It needs a strong sensitization programme so that people can be psychologically prepared for the project. Additionally, the tour is needed so that we are able to explain the impacts of the project to people.

Answer: Presently, the World Bank guidelines on compensation were identified to be the most appropriate one. These would be further complemented by the Road Development Agency guidelines, as they applied to projects of such nature.

The suggestions of sensitization and the tour are noted. Today is the beginning of the project, so we are going to work on sensitization from now on. Sensitization through newspaper advertisement would also be considered. We are trying to arrange the suggested tour next week.

Question: What measures had been put in place to ensure the safety of people at where especially the project would go through densely populated areas like Chibolya and Misisi? Are there any compensation measures to avoid illegal structures?

Answer: The design would take care of the issues of safety, but an appeal was made to the participants most of whom were leaders to control the practice of trading along roads, as the case of Los Angeles Road was. Further it was highlighted that illegal structures were already mushrooming in parts of the proposed route, which also needed to be brought under control.

Question: What would the role of Chisankane Ward of Kafue District be?

Answer: there was considered equally important. In Chisankane, construction of houses is increasing over night. Hence the Ward Chairperson of Chisankane is at the meeting.

Question: What type of road would be constructed, whether single or dual carriageway?

Answer: A single carriageway road will be constructed due to limitation of space. A dual carriageway would have been the best if the available space could allow.

After exhausting all the comments and clarifications, the facilitator thanked all that had made it to the meeting. Further, all the participants were invited to be part of the tour of the proposed route which was temporarily planned for the week of 10-14 November 2008. Mr Matawe informed that the participants would also be informed of the developments on the project in the next meeting to be organized on 22 Jan. 2008.

The meeting closed with a prayer, after which the participants were invited to take some beverages. The meeting closed at 11:15hrs.

ATTENDANCE LIST

No	Name	Ward Name/Organization	Position
1	John Philip Ngoma	Libala Ward 07	Vice Chairperson
2	Boniface Chileshe	Nkoloma Ward 01	Chairperson
3	Billy Muwaika	Chilenje Ward 8	Chairperson
4	Gilbert Yasini	Chisankane Ward 04 Kafue	Secretary ADC
5	Angela Banda	Kamwala Ward 05	Chairperson
6	Matawe Bonwell	Lusaka City Council	Deputy Director – Housing and Social Services
7	Simasiku Malumo	Lusaka City Council	Deputy Director-Engineering Services
8	Musaiwale Mwewa	Kamwala Ward 05	Councillor
9	Judith Munacangani	Chilenje Home Based Care Womens Group	Chairperson
10	Muneill Chibwe	Misiss Womens Group	Chairperson
11	Bwalya Paul	Kabwata Ward 06	Chairperson
12	Musonda Justin K	Lubwa Ward 15	Councillor
13	Pantharius Musafili	Kabwata Ward 06	Councillor
14	Jacob Chishiba	Kaizen Consulting	Environmental Management Expert
15	Simon Sinyangwe	Harry Mwaanga Nkumbula Ward 11	Councillor
16	Ev, Lesson Chibalamuna	Harry Mwaanga Nkumbula Ward 11	Chairperson
17	Daka Francisko	Nkoloma Ward 01	Councillor
18	Steve Mubanga Chilatu	Chilenje Ward 08	Councillor
19	Donald Nsonga	Libala Ward 07	Councillor
20	Trophius Kufanga	Lusaka City Council City Planning	Environmental Planner
21	Albert Mutale	Kaizen Consulting	Environmental Specialist
22	Wizzy Chishiba	Kaizen Consulting	Socio-Economist
23	Dan Mukonde	Kaizen Consulting	Waste Management Specialist

Appendix -2: 2nd Stakeholder Meeting Materials

LUSAKA CITY COUNCIL
OFFICE OF THE TOWN CLERK
INDEPENDENCE AVENUE CIVIC CENTRE

Telephone: 260 1 250773
FAX : 026 1 252141
Verbal Enquiries To:

P.O. Box 30077
Civic Centre Lusaka
Republic of Zambia 10101

Reference: ESD/5/3/29/SM/fzl

16th January, 2009

1. The Ward Councillor
   The Chairperson (WDC)
   Nkoloma (Ward 1), **LUSAKA**

2. The Ward Councillor
   The Chairperson (WDC)
   Kamwala (Ward 5), **LUSAKA**

3. The Ward Councillor
   The Chairperson (WDC)
   Kabwata (Ward 6), **LUSAKA**

4. The Ward Councillor
   The Chairperson (WDC)
   Libala (Ward 7), **LUSAKA**

5. The Ward Councillor
   The Chairperson (WDC)
   Chilenje (Ward 8), **LUSAKA**

6. The Ward Councillor
   The Chairperson (WDC)
   Harry Mwaanga Nkumbula (Ward 11), **LUSAKA**

7. The Ward Councillor
   The Chairperson (WDC)
   Lubwa (Ward 15), **LUSAKA**

8. The Ward Councillor
   The Chairperson (WDC)
   Chisankane (Ward 4), **KAFUE**

9. Representatives
   Chilenje Home Based Care Women's Group
   Misisi Women's Group

RE: SECOND MEETING WITH STAKEHOLDERS ON INNER RING ROAD PRIORITY PROJECT PROPOSED BY THE STUDY ON COMPREHENSIVE URBAN DEVELOPMENT PLAN FOR THE CITY OF LUSAKA

NOTICE IS HEREBY GIVEN: that there will be a Second Stakeholder Meeting on the Inner Ring Road priority project proposed by Comprehensive Urban Development Plan for the City of Lusaka on Tuesday 27th January, 2009 to be held at Civic Centre, Committee Room from 09:00 hours to 12:00 hours.

Agendas:

- Briefing on the results of air and noise survey
- Briefing on the results of socio-economic survey on potential resettlers' households
- Briefing on RAP (Resettlement Action Plan) Framework
- Briefing on EMP (Environmental Mitigation Plan) and EMoP (Environmental Monitoring Plan)
- Obtaining comments/suggestions from ward representatives

Kindly attend the meeting without fail.

TIMOTHY M. HAKUYU
TOWN CLERK

cc: The Director – (PPH) - MLGH
The Principal Planner – (DC) - MLGH
The Director of Engineering Services - LCC
The Director of Housing and Social Services - LCC
The Acting Director of City Planning - LCC

The Study on Comprehensive Urban Development Plan For City of Lusaka in the Republic of Zambia

Meeting with Stakeholders

ATTENDANCE SHEET

27th January 2009

No.	NAME	WARD NAME/ ORGANISATION	POSITION	CONTACT No.	SIGN
1	MUWAIKA BILLY	CHILENJE WARD 8	CHAIRPERSON WDC	0977215960	[illegible] PAID
2	Muell chibuye	Women's group	Chairperson	0977283819	[illegible] PAID
3	QUEEN TEMBO	WARD I	ChairPerson	0977865053	[illegible] PAID
4	MUSAIWALE MWENDO	KAMWALA WARD 5	Councillor	0977-246172	[illegible]
5	GEOFFREY JUNGANA	HILMA LTD	DIRECTOR	0977854987	[illegible]

6	SICHALWE ELIAS EDMOND	HILMA LTD	ENVIRONMENTAL SPECIALIST	0977945988	
7	Derek Kwape	11 11	SENIOR SCIENTIST	0977218964	
8	MATIALWE BORNWELL	L.C.C	Ag Deputy Director	0977805093	
9	TOWERA KAZUNGULA	MLGH	PRINCIPAL PLANNER	0979379489	Kazunga PAID.
10	LUANGA L. BORNWELL	LCC	DIRECTOR - ENGINGERING SERVICES	253759	
11	BWALYA PAUL	KABWATA WARD 6	CHAIRPERSON	0955764028	PAID
12	SIMASIKU MALUMO	LCC	DEPUTY DIRECTOR - ENGINEERING SERVICES	0966752725	
13	Judith Muncangai	Chilenje HBC	Chairperson	0979645862	PAID
14	Simon Sinyangwe	WARD 11	COUNCILLOR	0977231617	
15	TIMOTHY HAKUYU	LCC	TC	0977845525	

16	WILLIAM NDHLOVU	LCC	Ag DPH	0966435223	[signature]
17	Ev, LESSON CHIBALAMUNA	WARD 11 CHAIRMAN	W.D.C	0966324716	[signature] PAID
18	TROPHIUS KUFANGA	L.C.C	ENVIRONMENTAL PLANNER	0977846553	[signature]
19	JOSEPH M. ZULU	L.C.C.	ACTING DEPUTY DIRECTOR	0977745566	[signature]
20	JOHN P. NGOMA	LIBALA WARD 7	VICE CHAIRMAN	0955855393	[signature] PAID
21	D. NSONGA	LIBALA W. 07	Cllr	0977786342	[signature]
22	Harry Kalaba	Lubwa Ward	Chairman	0977794129	[signature] 9/08 PAID.
23	CLLR MUSONDA	LUBWA WARD	CLLR	0977708227	[signature]
24	Cllr Francis Daka	NKholoma WARD01	CLLR	0979-447791	[signature]
25	ANTHONIUS MUSAFILI	Ward 6 CLLR	CLLR	0977603933	[signature]

26	MAJOR T. KABWE	CHISHIKANE-KAFUE	WDC-CHAIRPERSON	0977582530	PP-D
27					
28					
29					
30					
31					
32					
33					
34					

LUSAKA CITY COUNCIL

INDEPENDENCE AVENUE CIVIC CENTRE

2nd STAKEHOLDER MEETING ON THE INNER-RING ROAD PROJECT

Time & Date: 09:00-11:40, Tuesday 27th January 2009
Venue: Committee Room, 2nd Floor, Civic Centre

09:00 -09:10 Opening Remarks
by Timothy M. Hakuyu, Town Clerk

09:10- 09:30 Meeting Objectives
by Mr. Bornwell Matawe, Deputy Director of Housing & Social Services

09:30-10:00 Results of Environmental & Social Impact Assessment of the Project
by Mr. Jacob Chishiba & Mr. Daniel Mukonde, Environmental Management Experts, Kaizen Consulting International

10:00-10:30 Mitigation Measures for the Identified Environmental & Social Impacts
by Mr. Jacob Chishiba & Mr. Daniel Mukonde, Environmental Management Experts, Kaizen Consulting International

10:30-11:30 Discussions & Questions
Facilitated by Mr. Jacob Chishiba & Mr. Daniel Mukonde, Environmental Management Experts, Kaizen Consulting International

11:30-11:40 Closing Remarks
by Timothy M. Hakuyu, Town Clerk

2nd Stakeholder Meeting on Inner-Ring Road Project

09:00- 11:40
27th January 2009, Tuesday
Committee Room at Civic Centre (LCC)

Lusaka City Council (LCC)
Ministry of Local Government and Housing (MLGH)

1

Agendas

I. Results of Environmental & Social Impact Assessment of the Project;

II. Mitigation Measures for the Identified Environmental & Social Impacts;

III. Further Study Process; and

IV. Obtaining Comments/Suggestions from Ward Representatives

2

I. Results of Environmental & Social Impact Assessment of the Project

1. Study Scope –Review;
2. Results of Alternative Considerations;
3. Air Quality Survey Results;
4. Noise Survey Results; and
5. Socio-economic Survey Results

3

1. Study Scope - Review

Impact Type	Expected Adverse Impacts	Study Scope
Social Env.	Resettlement of 154 structures or 354 households (estimated by the sampling survey of the Socio-economic Survey)	▫ Alternative Considerations (Routes); ▫ Socio-economic Survey; ▫ RAP Framework Preparation; and ▫ Stakeholder Meeting(s) for Sensitization
	Split of Communities expected in Some Sections	▫ Alternative Considerations (Routes); and ▫ Stakeholder Meeting(s) for Sensitization
Env. Pollution	Air Pollution	▫ Air Quality Measurement Survey
	Noise	▫ Noise Level Measurement Survey

4

2. Results of Alternative Considerations

(A) Introduction

- Alternative considerations for minimising the number of the resettlers and maximising the project benefits.
- Requirements of Alternative Route Selection
  - Need to provide bypass function amongst Mumbwa - Los Angeles – Kafue – Chilimbulu Road;
  - Need to provide access to Kasama South; and
  - Need to reduce land acquisition/resettlers as much as possible.

5

2. Results of Alternative Considerations

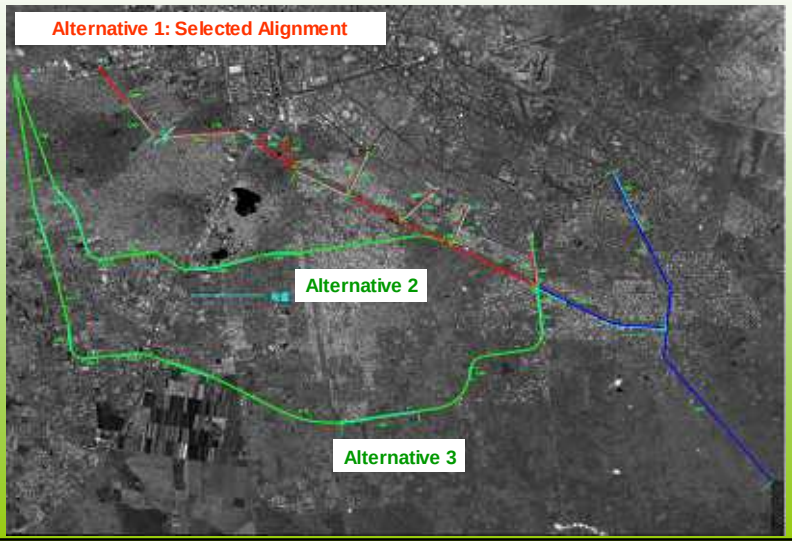
(B) Initial Consideration of Alignment

- Utilizing open space of the Zesco power transmission line to avoid unnecessary land acquisition;
- Utilizing existing roads to avoid unnecessary land acquisition; and
- Impacts on Misisi, Chibolya & Kanyama Compounds →Appropriate Resettlement Action Plan (RAP) Framework.

6

2. Results of Alternative Considerations

(C) Alternative Alignment



7

2. Results of Alternative Considerations

(D) Results

		Alt. 1	Alt.2	Alt. 3	Zero Option	
Economic	Construction Cost (Million USD)	47.0 Small	53.3 Medium	60.2 Large	0	✓ No facilitation for MFEZ development ✓ Bottleneck to industrial areas due to traffic jam
	Economic Benefit (Million USD)	24.1 Medium	23.3 Small	24.5 Large	0	
Technical	Road Length (km)	22.9 Short	25.5 Medium	30.0 Long	0	✓ None
	Construction Period (months)	24 Short	27 Medium	33 Long	0	
Env. & Social	Land Acquisition	Small	Medium	Large	0	✓ Increase in commuting time through Kafue Roundabout ✓ Increase in driving time to/from town ✓ Increase in CO2 emission
	Resettlement (No. of Structures)	160	123	138	0	

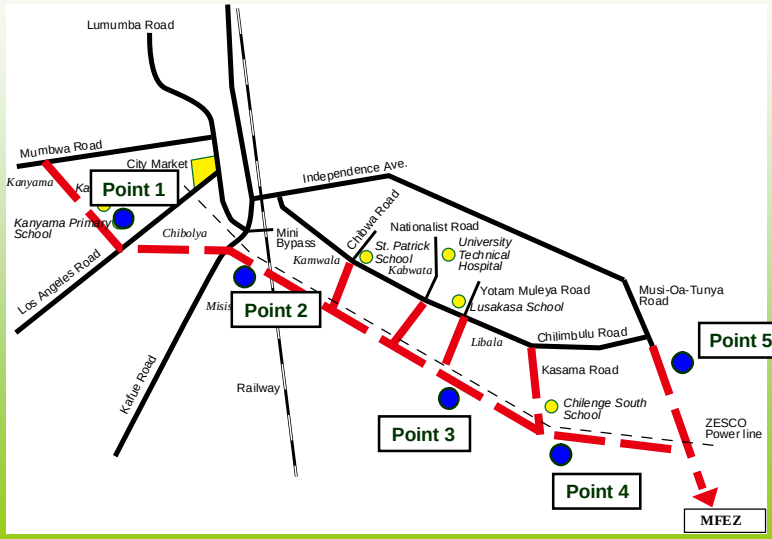
8

2. Results of Alternative Considerations
(D) Results - Continued

	Advantages	Disadvantages
Alt. 1	■ Cost Benefit ■ Short Alignment & Short Construction Period ■ Land Acquisition ■ Connections with existing roads along Chilimbulu Road ■ Better access to existing Ngwerere drainage for rain water drainage of the Inner Ring Road	■ Resettlement
Alt. 2	■ Resettlement	■ Economic benefit
Alt. 3	■ Economic benefit	■ Cost benefit

9

3. Air Quality Survey Results
(A) Sampling Location (Air Quality & Noise)



10

3. Air Quality Survey Results
(B) Sampling Points (Air Quality & Noise)

Point 1: Eliba Guest House, Chibolya

Point 2: New Misisi Police Post, Misisi

Point 3: Zesco Power Station, Libala Ward

Point 4: Green Container, Chienje South

Point 5: Victory Bible Church, Woodlands Extension

3. Air Quality Survey Results
(C) Measurement Results (Tentative)

Measurement Date: 14-18 Dec. 2008

	Point 1: Eliba Guest House	Point 2: New Misisi Police Post	Point 3: Zesco Power Station	Point 4: Green Container	Point 5: Victory Bible Church	Zambian Ambient Air Quality Standards	Reference: Japanese Standards
SO_2 (ppm)	N.D.	N.D.	N.D.	N.D.	N.D.	500 μg/m³/0.19ppm(10min) 350 μg/m³/0.13ppm(1hr)	10ppm (hour/day) ; 0.1ppm (ave.1hour/8hours)
CO (ppm)	N.D.	N.D.	N.D.	N.D.	N.D.	100mg/m³/86ppm(15min) 60mg/m³/51.6ppm(30min) 30mg/m³/25.8ppm(1hour) 10mg/m³/8.6ppm(8hours)	0.01ppm (1hour); 0.04ppm (ave.1hour/day)
NOx (ppm)	N.D.	N.D.	N.D.	N.D.	N.D.	400 μg/m³/0.21ppm(1hr) 150 μg/m³/0.08ppm(24hrs)	0.04-0.06ppm (24hours) as NO_2
PM_{10} (μg/m³)	0.050	0.095	0.030	0.636	0.476	70 μg/m³(24hrs)	0.10ppm (1hour); 0.04ppm (ave.1hour/day) as SPM
Dust (mg/m³)	2.013	1.120	3.525	1.066	7.041	7.5tonnes/km² for 30days	-
Lead (μg/m³)	N.D.	0.002	N.D.	0.003	N.D.	1.5 μg/m³ for 3months 1.0 μg/m³ for 12months	-

Note: Not Detected (N.D.) means the survey results are below the detection limits of the measurement equipments. Nighttime measurement was not conducted due to a security reason.

3. Air Quality Survey Results
(D) Predicted Air Quality Impacts (Tentative)

- During Construction:

1. Dust is expected to increase by construction work; and
2. Other air pollution from construction vehicles and equipment is caused by the project only for the short term, and the impacts are less significant.

- During Operation:

1. Overall air quality along the road is expected to be worsened to some extent by emission gases of increased vehicles in the long run;
2. However, the overall impacts would be less significant because Lusaka is not an industrial city, and its air quality is fairly good compared to the industrial city such as Copperbelt; and
3. Dust is expected to be improved by the project since road will be paved.

13

4. Noise Survey Results
(A) Measurement Results (Tentative)

Measurement Date: 9-13 Dec. 2008

Unit: dB(A)

	Point 1 Eliba Guest House	Point 2 New Misisi Police Post	Point 3 Zesco Power Station	Point 4 Green Container	Point 5 Victory Bible Church	Reference Standards	
						IFC/WB Noise Standards	Japanese Roadside Standards
Morning	71.6	45.2	58.9	59.8	67.5	Residential: 45 (day) / 55 (night); Industrial & Commercial: 70 (day/night)	65(day)
Noon	68.6	47.8	59.3	55.1	69.5		
Evening	62.8	48.0	57.8	59.3	58.9		

Note: Nighttime measurement was not conducted due to a security reason.

14

4. Noise Survey Results
(B) Predicted Noise Level Impacts (Tentative)

- During Construction:

1. Noise from construction vehicles and equipment is expected to increase but caused by the project only for the short term, and the impacts are less significant.

- During Operation:

1. Overall noise along the road is expected to increase to some extent due to increased vehicles on the planned road in the long run; and
2. Especially the noise would be higher in the central area such as Chibolya and where the other noise sources exist (e.g. noise from households, shops, residents and pedestrians)

15

5. Socio-economic Survey Results (Tentative)

- Structures to be Affected：154 Structures
- Households to be Resettled (Estimated) ：354 Households
- Surveyed Households: more than 20% of the estimated resettlers' households

i) Surveyed Households	Allocation	Kanyama 66%; Misisi 20%; and Chibolya 14%
	Head of Households	Male-headed 77%; and Female-headed 23%
	Employment	Employed in the Private Sector 36%; Self-employed 35%; Unemployed 14%; and Employed in the Pubic Sector 7%
ii) Affected Structure and Land	Ownership of Land	Certificate of title 31%; Occupancy license 7%; Tenant 20%; With Land card 9%; Applying for Land card 5%; and Uncertain & Others 27%
	Ownership of Structures	Self-owned 63%; and Private-owned for Rental 30%
iii) Perception on the Project & Resettlement	Economic Benefit	Yes 53%; No 27% and No Comment 20%
	Social Impacts by Land Acquisition	Loss of Residence 96%; Loss of Access to Public Facilities & Services 41%; Loss of Access to Workplace 32%; Loss of Crops, Trees & Fixed Assets 32%; Loss of Business/Trading Activities 16%; and Loss of Sources of Income & Livelihoods 16%
	Resettlement Issues	Find new residence 74%; Access to Public Facilities/Services (Clinic, WDC, etc) 49%; Access to Market 47%; Find New Income Source 41%; Find Suitable School for Children 41%; Access to utilities (water, toilet, electricity, etc) 36%; Security in the Resettlement Site 28%; Find New Plots/Fixed Assets for Business/Trading 27%; Commuting to Workplace 23%; and Acclimatizing in the Resettlement Site 4%.
	Preference on Resettlement Choice	Project Assisted Resettlement with Provision of Plots/Buildings 64%; and Self Relocation with payment of compensation 22%
	Preference on Resettlement Site	Resettlement location does not matter 39%; Within the Same Community Area 32%; and Within the Same Ward 7%
	Preference on Resettlement Method	Resettlement with Community Members 59%; and Resettlement without Community Members 34%

16

II. Mitigation Measures for the Identified Environmental & Social Impacts

1. Major Mitigation Measures for Air Quality;
2. Major Mitigation Measures for Noise; and
3. Summary of Resettlement Action Plan (RAP) Framework for Involuntary Resettlement

17

1. Major Mitigation Measures for Air Quality

- During Construction:

1. Sprinkling water to prevent high dusts;
2. Avoidance of construction during night; and
3. Use of low pollution/well maintained construction equipment/vehicles.

- During Operation:

1. Plantation of grass and trees where land is available to reduce impacts on air quality.

18

2. Major Mitigation Measures for Noise

- During Construction:

1. Avoidance of construction during night; and
2. Use of low noise emission/well maintained construction equipment/vehicles.

- During Operation:

1. Plantation of grass and trees where land is available to reduce noise impacts;
2. Appropriate speed limits to prevent excess noise.

19

3. Summary of RAP Framework for Involuntary Resettlement

- *What are major compensation & assistances at the World Bank Standard?*
  - Replacement costs for compensation based on the new replacement value of assets and not open market value;
  - Compensation for the loss of immovable assets (e.g. structures invested by occupants & trees) ;
  - Relocation cost for formal & informal occupants;
  - Assistance in finding a relocation site & a new residence for formal and informal resettlers;
  - Livelihood restoration assistance; and
  - Adjustment assistance in the new relocation sites.

20

3. Summary of RAP Framework for Involuntary Resettlement - *Proposed Entitlement Matrix*

Loss Type	Application	Definition of AP	Entitlement
Agricultural Land	Land Acquired by the Ring-road	Title holders/informal occupants who can prove ownership and/or payment for land ownership	Equivalent land or compensation at full replacement cost
Residential Land	Land Acquired by the Ring-road	Title holders/informal occupants who can prove ownership and/or payment for land ownership	Equivalent land or compensation at full replacement cost
Commercial Land	Land Acquired by the Ring-road	Title holders/informal occupants who can prove ownership and/or payment for land ownership	Equivalent land or compensation at full replacement cost
House	House on Acquired Land	Owner of houses	Replacement or compensation at full replacement cost
Other Built Structures (fence, pit latrines, depot wells & shops)	Built Structures on Acquired Land	Owners of built structures	Replacement or compensation at full replacement cost
Trees	Trees on Acquired Land	**Trees**: Owners of Trees (e.g. Landlords); **Fruits of the Trees**: Tenants (if any) or Owners of Trees (Landlords)	Compensation equivalent to value of trees and fruits based on Ministry of Agriculture & Co-operative assessment
Cost of Moving	Displaced Households	Displaced Households including tenants	Allowance to enable displaced households to move to the new sites
Loss of Business	Displaced Business Owner	Displaced business owner with an affected fixed commercial structure	Allowance to enable displaced business owner to restore his/her business

21

III. Further Study Process

Resettlement Action Plan (RAP) ***Env. Impact Assessment (EIA)***

Actions Taken by LCC/MLGH as of Jan. 2009

- Socio-economic Survey at more than 20% of Estimated Resettlers' Households
- Resettlement Action Plan Framework Preparation
- Nov. 2008: 1st Stakeholder Meeting
- Jan. 2009: 2nd Stakeholder Meeting
- Review of Current Env. & Social Status
- Additional Measurement Survey: Air Quality Survey & Noise Survey
- Env. & Social Assessment Study including Impact Prediction, Evaluation & Mitigation Measures

Future Actions by LCC/MLGH

- **Additional Inventory/Asset Survey at 100% of Estimated Resettlers' Households**
- **RAP Report to be Finalized by updating the RAP Framework**
- **Additional Stakeholder Meeting(s) With Affected Households**
- **EIA Report to be finalized and submitted by LCC/MLGH to Environmental Council of Zambia (ECZ) for approval**

22

IV. Discussions with Ward Representatives

Any comments/suggestions on mitigation measures for social/environmental impacts caused by the Project?

Your comments & suggestions are highly appreciated.

23

Contacts:
If you have any questions, please contact to:

Department of Engineering Services
Lusaka City Council

24

MINUTES OF THE 2ND STAKEHOLDERS MEETING FOR THE LUSAKA CITY COUNCIL INNER RING ROAD PROJECT HELD IN THE COMMITTEE ROOM OF THE CIVIC CENTRE ON 27th JANUARY 2008

In attendance at the meeting were the following:

No	Name	Ward Name/Organization	Position
1	Mr. Timothy Hakuyu	Lusaka City Council	Town Clerk
2	Mireill Chibwe	Chilenje Ward	Chairperson
3	Billy Muwaika	Chilenje Ward 8	Chairperson
4	Major T. Kabwe	Chisankane Ward 4 Kafue	Chairperson ADC
5	Queen Tembo	Ward 01	Chairperson
6	Matawe Bonwell	Lusaka City Council	D/ Director –Housing and Social Services
7	Simasiku Malumo	Lusaka City Council	Deputy Director-Engineering Services
8	Musaiwale Mwewa	Kamwala Ward 05	Councillor
9	Judith Munacangani	Chilenje Home Based Care Womens Group	Chairperson
10	Towera Kuzunga	MLGH	Principal Planner
11	Bwalya Paul	Kabwata Ward 06	Chairperson
12	Musonda Justin K	Lubwa Ward	Councillor
13	Pantharius Musafili	Kabwata Ward 06	Councillor
14	Jacob Chishiba	Kaizen Consulting	Environmental Mgt Expert
15	Simon Sinyangwe	Harry Mwaanga Nkumbula	Councillor
16	William Ndh;ovu	Lusaka City Council	Director of public Health
17	Daka Francisko	Nkoloma Ward 01	Councillor
18	Joseph M. Zulu	Lusaka City Council	Deputy Director
19	Donald Nsonga	Libala Ward	Councillor
20	Trophius Kufanga	Lusaka City Council City Planning	Environmental Planner
21	Geoffrey Yungana	Hilima Ltd	Director
22	Sichalwe Edmond	Hilima Ltd	Environmental Specialist
23	Dan Mukonde	Kaizen Consulting	Waste Mgt Specialist
24	Derek Mwape	Hilima Ltd	Senior Scientist
25	Luanga L. Borwell	Lusaka City Council	Director Engineering Services
26	John P. Ngoma	Libala Ward	Vice Chairman
27	Ev, Lesson Chibalamuna	Ward 11	Chairman
28	Harry Kalaba	Lubwa ward	Chairman

The Agenda of the meeting was as follows:

1. Opening Remarks
2. Meeting Objectives
3. Outline of the Inner Ring Road Project
4. Results of Environmental and Social Impacts of the Project
5. Mitigation Measures of the identified Environmental and Social Impact Assessment

6. Obtaining comments and suggestions from ward Representatives in attendance
7. Closing Remarks

The meeting was called to order at 09:35hrs by the Facilitator, Mr. Bonwell Matawe, who immediately asked for a volunteer to offer an opening prayer. After the prayer from Mr. Bwalya, the Facilitator outlined the agenda of the meeting and later called upon the Town Clerk Mr. Timothy Hakuyu to open the meeting with some few words concerning the project.

1.0 Opening Remarks

In his introductory remarks, the Town Clerk thanked the stakeholders for coming to the meeting despite having a busy schedule of work. He also stressed that the project is so broad that needed people's views due to its geographical position because it affects a lot of people. He further went on to give a historical background to the development of Lusaka province. He said according to the Town and Country Planning Act the planning of any town should be reviewed after every fiver years, he however regretted that since 1976 up to date no review of the planning has taken place and that any planning depends on the information that is not clear and correct because a number of variables have changed.

The Town Clerk went on to appreciate the timely development of this project as it was responding to the needs of the policy framework as well as the development of infrastructures in the city. He further went on to say that the project has focused on a number of social and environmental issues that have changed since the last time planning review of the city was done in 1976.He appreciated the fact that the comprehensive urban development plan has brought out the development of the ring roads which is component number one in the Lusaka master plan followed by the water and sanitation which is a major problem in Lusaka province. The Town Clerk also stressed that the inner ring roads will decongest the city and it will induce the social and economic development of the people.

In his concluding remarks he appealed to the stakeholders to fully participate and put in the best for the progress of development, he also said that the project should be taken as everyone's project and not the Lusaka City Councils neither the Ministry of Local Government and Housings project. He ended by saying that the stakeholders should participate and present the views of the 2 million people living in Lusaka.

After the opening remarks by the Town Clerk, the Facilitator called upon Kaizen Consultancy international to present the findings of the study. Mr. Jacob Chishiba represented the consultant team and went ahead to present the findings of the study.

The presentation started with the results of the social-economic survey, the presenter said that 154 structures will be affected and that the estimated households to be resettled are 354. Among the surveyed households Kanyama accounted for 47%, Chibolya 23% and Misisi 30%. out of these houses 72%were male headed households and 28% women. He further went on to say 46% of the sample were self employed and 26%were in private sector public and unemployed accounted for 7%and 12 % respectively.

Perception of the project in terms of economic impacts was rated at 58% those who thought it will bring economic development and 30% thought it will not bring economic development. Mr. Chishiba

went on to present the findings of the study on land acquision,the study reviewed that loss of residence indicated 100%, loss of access to public facilities and services was 44%,loss of access to work place 42%,loss of immovable assets was 30% and that 19% and 16% accounted for loss of income sources and livelihood respectively.

Resettlement issues was also presented were it was indicated that 74% were ready to be resettled and that the majority of them would went to have social services provided in the site to be given. Issues such as access to schools accounted for about 42%among many social services provided. Request for resettlement was also presented it was discovered that compensation and self resettlement including provision of land were some of the options given to the affected people,16% opted for compensation and self resettlement as opposed to those who opted for provision of land and residence which was accounting for 74%.

within the presentation it was presented that the study results indicated that 44% opted to settle within the same community and 5% wanted to settle within the same ward and that 30% so it not to be important were they will be settled.Mr. Chishiba also pointed out that from the study findings it was reviewed that the resettlement method was requested from the affected people, 70% accounted for those who went to be settled within other community residents and 26% opted for individual resettlement.

The presenter ended with the presentation of the mitigation measures during construction as well as the mitigation measures on resettlement action plan before the chairman requested for comments, questions and suggestions.

Question: what is the council doing about the people who illegally establish the car wash business near the roads?

Answer: The enforcement of the law for the council is not difficult and that everything is being done to prevent the situation because the establishment of illegal car wash business contributes to the deteriorating of the road and that this will be prevented on this project.

Question: Why is it that affected social institutions in the project area such as churches, police stations and others are not reflected in the presentation?

Answer: This will be considered at a latter stage within the project and discussions and agreements with the affected people will be done just as the procedure with those households affected.

Question: What will be the mode of payment for the compensation; will it involve the ward development committees when it comes to giving the money to the affected people

Answer: the project is being done by the Ministry of local government and other related government wings therefore the payment system will equally involve the ward development committees as well as the government evaluation officers and many stakeholders since it is a national project.

Question: As part of the decongesting of the city will the project include the establishment of social services such as filling stations and banks in the project area to avoid people going into town for such services?

Answer: Plans are under way to change some residential areas into commercial areas were such services will be established within the Lusaka master plan such that people don't have to go into town to have such services that they can find near them.

Question: When is the project likely to start?

Answer: The government of Zambia has applied to the government of Japan for funding of the project and that the approval will determine the start of the project otherwise the project request has been received by the Japanese government.

Question: what is the council doing to reduce or rather avoid further establishment of new structures in the project area knowing that a number of people are involved in giving land?

Answer: The enforcement of the law is being done and that the Ministry of local government and housing is trying everything possible to start avoiding other settlers in the project area however the task is not that simple and that it requires a lot of dedications from the stakeholders.

Question: Why is it that the presentation only covered three areas and that despite chibolya being highly populated it had the lowest percentage in terms of representation?

Answer: we were guided by the satellite image and then we physically marked the structures on the ground so even if chibolya is highly populated very few houses are affected the number of affected structures does not represent the population in the area. However Mr. Chishiba noted that during the survey it was discovered that a number of structures have been affected and that people have also built under the ZESCO lines.

Question: What is the government doing about the settlement site, have they acquired land were to resettle the people?

Answer: The land has not yet been fund but its part of this project to find land were to resettle the people who will be affected by this project, hence the need also for the consultant to recommend that the site should be acquired for resettlement.

Question: The project and the process of compensation looks to be expensive what security measures are being put in place to avoid the building of illegal structures in the project area for the purpose of compensation?

Answer: We need to enforce man power we can step-up the dissemination of information to the project areas even if it's not a very simple task.

During the questioning other people also submitted the suggestions which were very important; some of the suggestions that were advanced were as follows:

- Let as find an area now that we can start servicing as we wait for the government of Japan to approve the funding. This will help as to use the money within the timeframe of the project rather than waiting for money.
- If we can not find land in Lusaka we can consult our surrounding districts and see if they can help us with land.

- The Director of Planning advised the stakeholders to start focusing on the social as well as economic benefits of the project to the people rather than focusing on the negatives; he said that the project is both socially and economically viable to the nation as well as individuals.

- ZESCO should also be brought on board since it has proved that they are also the big stakeholders who can start redesigning their lines in the project area that can create space for the roads.

- Current status of the structure should be captured to avoid extension of the structures that may attract more compensation.

After exhausting all the comments, suggesions and clarifications, the facilitator thanked all that had made it to the meeting and appreciated that people contributed freely knowing that this is the most crucial part of the project.

The meeting closed with a prayer, after which the participants were invited to take some beverages. The meeting closed at 11:45hrs.

Appendix -3: Socio-economic Survey

Appendix 3: Preliminary Inventory Survey Results

Questionnaire #	Serial #	Name of Household (HH) Head	No. of Persons in HH	Total Land holding of HH in m^2	Land to be acquired in m^2 by Type	Loss as % of Total	Loss of Assets			Loss of Crops	Other Assets Loss	Other Losses	
							No. & Type of Lost Structure	Structures Permanent (m^2)	Area of Residential Land Lost (m^2)	Farm Area (m^2)	No. & Types (e.g. tombs, well, etc.)	Residence (Rented)	Business Lost
1	121	Vincent Phiri	6	300	200	66.7	All concrete 20 roomed Apartment/Row House Duplex with an iron sheet roof	200.0	200	N/A	-	10 families	-
2	-	Asnat Phiri	21	130	130	100.0	23 years old 10 roomed apartment/Row House Duplex with an Asbestos roof and natural minerals wall	No Answer	130	N/A	-	4 families	-
3	114	Zelipa Phiri	10	Respondent doesn't know	No Answer	N/A	15 years old 8 roomed residential+Commercial structure with an Asbestos roof and natural minerals wall	No Answer	No Answer	N/A	Workshop	1 family	Applicable but not quantifiable
4	120	Mpande Booter	9	221	196	88.7	27 years old 6 roomed apartment/Row House Duplex with an Asbestos roof and concrete and wood wall	70	196	N/A	-	No Answer	-
5	118	Chirwa Pual	5	308	308	100.0	All concrete 8 roomed apartment/Row House Duplex with an Asbestos roof	No Answer	308	N/A	-	6 families	-
6	119	Daka Collins	3	500	475	95.0	All concrete 3 roomed apartment/Row House Duplex with an iron sheet	375	475	N/A	-	9 families	-
7	115	Chanda Augustine	9	600	No Answer	N/A	27 years old 16 roomed all concrete Apartment/Row House Duplex with an Asbestos roof	600	No Answer	N/A	-	5 families	-
8	113/2	Nyirenda Beenwell	6	192	192	100.0	33 years old 5 roomed unspecified house	192	192	N/A	-	2 families	-
9	113	Chikandula Phiri	7	100	100	100.0	18 years old 6 roomed single detached one-storey house with an Asbestos roof and natural minerals wall	70	100	N/A	-	No Answer	-
10	116	Kamugo	6	80	72	81.8	12 years old 2 roomed	16	64	8	-	3	-

Questionnaire #	Serial #	Name of Household (HH) Head	No. of Persons in HH	Total Land holding of HH in m^2	Land to be acquired in m^2 by Type	Loss as % of Total	Loss of Assets			Loss of Crops	Other Assets Loss	Other Losses	
							No. & Type of Lost Structure	Structures Permanent (m^2)	Area of Residential Land Lost (m^2)	Farm Area (m^2)	No. & Types (e.g. tombs, well, etc.)	Residence (Rented)	Business Lost
		ma Manson					apartment/Row House Duplex with an iron sheet					families	
11	117	Mumba Mumba	4	1350	1350	100.0	40 years 6 roomed all concrete Apartment/Row House Duplex with an Asbestos roof	2250	1350	N/A	-	2 families	-
12	117/2	Chipili Clement	5	900	225	25.0	20 years old 12 roomed apartment/Row House Duplex with an iron sheet roof	900	225	N/A	-	4 families	-
13	92	Hameeda Bernard	6	40	30	75.0	4 years old 2 roomed all concrete Apartment/Row House Duplex with an Asbestos roof	20	30	N/A	-	No Answer	-
14	39/2	Bwalya Collins	5	120	56	41.2	11 years old 2 roomed all concrete Apartment/Row House Duplex with an Asbestos roof	40	40	16	Boundary wall	2 families	-
15	84	Zulu Patricia	6	480	No Answer	N/A	4 years old 3 roomed all concrete Apartment/Row House Duplex with an Asbestos roof	No Answer	No Answer	N/A	-	3 families	-
16	83	Ngonga Beatrice	3	360	No Answer	N/A	Unspecified 6 roomed Apartment/Row House Duplex	6	No Answer	N/A	-	2 families	-
17	14/2	Nkunda Charles	7	120	No Answer	N/A	6 years old all concrete Apartment/Row House Duplex with an iron sheet roof	70	No Answer	N/A	-	No Answer	-
18	90	Daud Chavuka	12	240	No Answer	N/A	10 years old 3 roomed Residential + Commercial made of concrete walls and an iron sheet roof	40	No Answer	N/A	Shop	No Answer	Applicable with potential loss of income as shown
19	59	Meliza Hajarki	5	260	260	100.0	4 years old 6 roomed Residential+ commercial made of concrete walls and an iron sheet roof	108	260	N/A	Depot	No Answer	-

Questionnaire #	Serial #	Name of Household (HH) Head	No. of Persons in HH	Total Land holding of HH in m^2	Land to be acquired in m^2 by Type	Loss as % of Total	Loss of Assets			Loss of Crops	Other Assets Loss	Other Losses	
							No. & Type of Lost Structure	Structures Permanent (m^2)	Area of Residential Land Lost (m^2)	Farm Area (m^2)	No. & Types (e.g. tombs, well, etc.)	Residence (Rented)	Business Lost
20		Moses Banda	2	289	289	100.0	3 years old 2 roomed Apartment/Row House Duplex made of concrete and wood wall with an Asbestos roof	150	289	N/A	-	6 families	-
21	82	Mwila Obius	12	115	115	100.0	6 years old 3 roomed apartment/Row House Duplex made of natural mineral wall with an iron sheet roof	115	115	N/A	-	No Answer	-
22	64/43/34	Bwalya Chisenga	No Answer	140	140	100.0	5 years old 8 roomed all concrete Apartment/Row House Duplex with an iron sheet roof	96	140	N/A	-	4 families	-
23	84	Kalambai Raymond	10	35	35	100.0	8 years old 2 roomed all concrete Apartment/Row House Duplex with an iron sheet roof	35	35	N/A	-	1 family	-
24	6	Felix Mpumpi	8	320	320	100.0	6 years old 2 roomed all concrete Apartment/Row House Duplex with an iron sheet roof	No Answer	320	N/A	-	No Answer	-
25	4	Sakala Clement	4	385.29	385.29	100.0	4 years old 3 roomed all concrete Apartment/Row House Duplex with an Asbestos roof	108	385.29	N/A	-	2 families	-
26	12	Pelina	8	936	936	100.0	5 years old 7 roomed unspecified Apartment/Row House Duplex	No Answer	936	N/A	-	No Answer	-
27	9/1	Musonda John	6	48	48	100.0	3 years old 2 roomed all concrete Apartment/Row House Duplex with an Asbestos roof	40	48	N/A	-	No Answer	-
28	25/3	Simfukwe Kennedy	10	678	678	100.0	5 years old 12 roomed apartment/Row House Duplex made of concrete and wood with an Asbestos roof	220	678	N/A	-	No Answer	-
29	24	Mwansa Patrick	6	300	300	100.0	5 years old 4 roomed all concrete Apartment/Row House Duplex with an Asbestos	No Answer	300	N/A	-	2 families	-

Questionnaire #	Serial #	Name of Household (HH) Head	No. of Persons in HH	Total Land holding of HH in m^2	Land to be acquired in m^2 by Type	Loss as % of Total	Loss of Assets			Loss of Crops	Other Assets Loss	Other Losses	
							No. & Type of Lost Structure	Structures Permanent (m^2)	Area of Residential Land Lost (m^2)	Farm Area (m^2)	No. & Types (e.g. tombs, well, etc.)	Residence (Rented)	Business Lost
							roof						
30	17	Nabiya Pual	6	180	180	100.0	I year old 6 roomed unspecified House made of natural minerals with an iron sheet roof	120	180	N/A	Well+Boundary Wall	1 family	-
31	20/3	Mostin Charity	1	360	360	100.0	6 years old 5 roomed all Concrete Apartment/Row House Duplex with an iron sheet roof	150	360	N/A	-	3 families	-
32	2	Mushitu Derick	0	148	148	100.0	8 years old 9 roomed all concrete Apartment/Row House Duplex with an Asbestos roof	No Answer	148	N/A	-	4 families	-
33	26/2213	Musonda Cathrine	3	96	96	100.0	43 years old 6 roomed all concrete Apartment/Row House Duplex with an iron sheet	88	96	N/A	-	No Answer	-
34	29/06/03	Moonga M	No Answer	No Answer	No Answer	N/A	12 years old, 12 roomed all concrete Apartment/Row House Duplex with an Asbestos roof	120	No Answer	N/A	-	No Answer	-
35	14	Hambwila E	4	81	8	9.9	5 years old 4 roomed all concrete Apartment/Row House Duplex with an Asbestos roof	60	8	N/A	-	No Answer	-
37	13	Mwansa Joseph	11	625	625	100.0	6 years old 5 roomed all concrete Apartment/Row House Duplex with an Asbestos roof	40	625	N/A	-	No Answer	-
38	29/3	Nzenga Soda	5	625	625	100.0	2 roomed all concrete Apartment/Row House Duplex with an Asbestos roof	50	625	N/A	-	5 families	-
39	38	Tembo Aaron	8	468	468	100.0	5 years old 7 roomed unspecified Residential+Commercial structure	12	468	N/A	Boundary wall, shop	3 families	Applicable with potential loss of income as

Questionnaire #	Serial #	Name of Household (HH) Head	No. of Persons in HH	Total Land holding of HH in m^2	Land to be acquired in m^2 by Type	Loss as % of Total	Loss of Assets			Loss of Crops	Other Assets Loss	Other Losses	
							No. & Type of Lost Structure	Structures Permanent (m^2)	Area of Residential Land Lost (m^2)	Farm Area (m^2)	No. & Types (e.g. tombs, well, etc.)	Residence (Rented)	Business Lost
													indicated
40	50	Swebe Peter	3	No Answer	No Answer	N/A	3 roomed unspecified structure	300	0	N/A	-	No Answer	-
41	83/2	Hamaanga Gift	8	576	576	100.0	12 years old 6 roomed all concrete Apartment/Row House Duplex with an iron sheet roof	117	576	N/A	-	1 family	-
42	31	Gondwe Watson	11	4.5	1	22.2	7 years 6 roomed all concrete unspecified house	4.5	1	N/A	Boundary wall	3 families	-
43	16/6	Chuma Delia	6	770	770	100.0	2 roomed all concrete Apartment/Row House Duplex with an iron sheet roof	88	770	N/A	-	6 families	-
44	7	Mpanga Prisca	7	48	48	100.0	5 years old 4 roomed all concrete Apartment/Row House Duplex with an iron sheet	117	48	N/A	-	1 family	-
46	29/3	freed chanda	4	390	390	100.0	Apartment/row house complex; with asbestos all concrete with 2 rooms and an office	100.0	390	-	Office	1 family	-
47	51/3	C. likayi	5	No Answer	No Answer	No answer	Single detached three-store or more with asbestos all concrete. With 2 rooms it also has a shop.	No answer	No answer	N/A	Shop	2 families	-
48	2/4	Alex Munyagwa	4	130	130	100.0	No years of the structure was given only two rooms was indicated.	130	130	N/A	-	1 family	-
49	2/3	H. Lovemore	2	130	130	-	Single detached one-storey all concrete with two rooms.	130	130	N/A	-	1 family	-
50	122	Asnart	21	130	130	100.0	Apartment/row house duplex,	130	130	N/A	-	3	-

Questionnaire #	Serial #	Name of Household (HH) Head	No. of Persons in HH	Total Land holding of HH in m^2	Land to be acquired in m^2 by Type	Loss as % of Total	Loss of Assets			Loss of Crops	Other Assets Loss	Other Losses	
							No. & Type of Lost Structure	Structures Permanent (m^2)	Area of Residential Land Lost (m^2)	Farm Area (m^2)	No. & Types (e.g. tombs, well, etc.)	Residence (Rented)	Business Lost
		Phiri					with asbestos and natural materials.10 rooms and its 23 years old.					family	
51	33/2	Gifty Himanga	9	200	No answer	No answer	Apartment/row house duplex with iron sheets all concrete with a living area of 150m.The house is 12 years old with 5 rooms	No answer	No answer	N/A	-	2 family	-
52	16/6	Joseph Mwanza	3	350	No answer	No answer	Apartment /row house duplex with iron sheets and all concrete. having two rooms	No answer	No answer	N/A	-	1 family	-
53	51/2	E.Bwalya	5	No answer	No answer	No answer	Apartment /row house duplex all concrete two years old structure.	No answer	No answer	N/A	-	2 family	-
54	32/2	Mate Mulonda	4	250	No answer	No answer	Apartment row house complex; with asbestos all concrete with two rooms. Age of the house is unknown.	No answer	No answer	N/A	-	3 family	-
55	30/14	Moses Ntalasha	8	2000	No answer	No answer	Apartment row house complex; with asbestos all concrete with two rooms. Age of the house is 10 years old.	No answer	No answer	N/A	-	2 family	-
56	29/2	Victor Shangala	4	500	No answer	No answer	Apartment row house complex; with asbestos all concrete with two rooms. Age of the house is unknown	No answer	No answer	N/A	-	1 family	-
57	22/2	Jackson Likomba	4	No answer	No answer	No answer	An iron sheet with natural materials and 2 rooms the age of the house was not captured.	No answer	No answer	N/A	-	3 family	-
58	31/2	Lilian Lubasi	5	No answer	No answer	No answer	Apartment row house complex; with asbestos all concrete with two rooms. Age of the house is unknown	No answer	No answer	N/A	-	2 family	-
59	32/2	Bernadette Kasonde	6	No answer	No answer	No answer	Natural materials and the structure is 10 years old.	No answer	No answer	N/A	-	3 family	-
60	29/1	Joyce Banda	2	No answ	40	-	No information was captured in this part of the questionnaire.	No answer	40	N/A	-	2 family	-

Questionnaire #	Serial #	Name of Household (HH) Head	No. of Persons in HH	Total Land holding of HH in m^2	Land to be acquired in m^2 by Type	Loss as % of Total	Loss of Assets			Loss of Crops	Other Assets Loss	Other Losses	
							No. & Type of Lost Structure	Structures Permanent (m^2)	Area of Residential Land Lost (m^2)	Farm Area (m^2)	No. & Types (e.g. tombs, well, etc.)	Residence (Rented)	Business Lost
				er									
61	8/2	Malate Chanda	2	370	370	100.0	Apartment /row house duplex with iron sheets all concrete with 2 rooms the age was not mentioned.	370	370	N/A	-	3 family	-
62	4/2	Christopher Musowe	7	385.29	385.29	100.0	Apartment row house complex; with asbestos all concrete with 3 rooms. Age of the structure being 4 years.	385.29	385.29	N/A	-	1 family	-
63	4/3	Luckson chenda	5	385.29	385.29	100.0	Apartment row house complex; with asbestos all concrete with two rooms. Age of the house is unknown	385.29	385.29	N/A	-	2 family	-
64	35	Joseph bisenga	4	100	No answer	no answer	Apartment row house complex; with asbestos all concrete with 4 rooms. Age of the house is 4 years old.	No answer	No answer	N/A	-	3 family	-
65	22/3	Joseph Zulu	2	180	no answer	No	Apartment row house complex; with asbestos all concrete with two rooms. Age of the house is unknown	No answer	No answer	N/A	-	2 family	-
66	8/1	Luck Namfukwe	6	72	72	100.0	Apartment row house complex; with iron sheets all concrete with two rooms. Age of the house is unknown	72	72	N/A	-	1 family	-
67	31/3	Maxwel Musonda	6	No answer	No answer	No answer	Apartment row house complex; with asbestos all concrete with 3 rooms. Age of the house is unknown	No answer	No answer	N/A	-	3 family	-
68	6	Felix Mpumpi	6	79	No answer	NOanswer	Apartment row house complex; with iron sheets all concrete with two rooms. Age of the is 7 years.	No answer	No answer	N/A	-	2 family	-
69	2/5	Sydney Mwelwa	3	130	130	100.0	Apartment row house complex; with asbestos all concrete with two rooms. Age of the house is unknown	130	130	N/A	-	1 family	-
70	7/2	Prances	3	76	76	100.0	Apartment row house complex;	76	76	N/A	-	2	-

Questionnaire #	Serial #	Name of Household (HH) Head	No. of Persons in HH	Total Land holding of HH in m^2	Land to be acquired in m^2 by Type	Loss as % of Total	Loss of Assets			Loss of Crops	Other Assets Loss	Other Losses	
							No. & Type of Lost Structure	Structures Permanent (m^2)	Area of Residential Land Lost (m^2)	Farm Area (m^2)	No. & Types (e.g. tombs, well, etc.)	Residence (Rented)	Business Lost
		Sakala					with iron sheets all concrete with two rooms. Age of the house being 8years					family	
71	51	Willliam Mtonga	5	90	90	100.0	Apartment row house complex; with asbestos all concrete with 3 rooms.12 years old.	90	90	N/A	-	1 family	-
72	2212	Likomba Malumo	4	48	20	41.7	Apartment row house complex; with iron sheets all concrete with two rooms. Age of the house is unknown	20	20	N/A	-	2 family	-
73	65	Anderson Kwibisi	5	96	96	100.0	Iron sheets all concrete with 1 room. Age of the house the tenant did not know	96	96	N/A	-	3 family	-
74	5	Byubiwo Mwanaute	6	128	120	93.8	Iron sheets all concrete with 8 rooms. Age of the house 11 years.	120	120	N/A	-	2 family	-
75	1712	Mabunde	3	112	No answer	No answer	Apartment row house complex; with iron sheets all concrete with two rooms. Age of the house is 7 years.	No answer	No answer	N/A	-	3 family	-
76	2/2	Fraderereck Mupunda	4	130	130	100.0	Apartment row house complex; with iron sheets all concrete with two rooms. Age of the house is unknown	130	130	N/A	-	1 family	-
77	26/3	Musonda	4	120	120	100.0	Apartment row house complex; with iron sheets all concrete with two rooms. Age of the house was not indicated	120	120	N/A	-	2 family	-
78	64/2	Max Sichila	No answer	No answer	No answer	-	Single detached three-storey; with Asbestos, all concrete with two rooms. Age of the house was not indicated	120	-	N/A	-	3 family	-
79	82/	Mbewe	No	No	No	No	Apartment row house complex;	65	-	N/A	-	1	-

Questionnaire #	Serial #	Name of Household (HH) Head	No. of Persons in HH	Total Land holding of HH in m^2	Land to be acquired in m^2 by Type	Loss as % of Total	Loss of Assets			Loss of Crops	Other Assets Loss	Other Losses	
							No. & Type of Lost Structure	Structures Permanent (m^2)	Area of Residential Land Lost (m^2)	Farm Area (m^2)	No. & Types (e.g. tombs, well, etc.)	Residence (Rented)	Business Lost
	2	Peter	answer	answer	answer	ansear	with iron sheets all concrete with two rooms. Age of the house was not indicated					family	
80	33/2	S Kabanda	8	300	300	100.0	Apartment row house complex; with Asbetors all concrete with two rooms. Age of the house was 9 yrs	50	-	N/A	-	2 family	-
81	90/2	Manase Fridah	6	300	50	50	Single detached three-storey; with Asbestors all concrete with two rooms. Age of the house was 10 yrs	30	-	N/A	-	3 family	-
82	92/3	Beatrice Mulenga	6	100	100	100.0	Single detached three-storey; with iron sheets all concrete with two rooms. Age of the house was 12 years	70	-	N/A	-	1 family	-
83	92/2	Chishala	10	No answer	No answer	-	Single detached three-storey; with Asbestos all concrete with two rooms. Age of the house 10 years	90	-	N/A	-	2 family	-
84	92/4	A Mwale	No answer	300	300	100.0	Apartment row house complex; with iron sheets all concrete with two rooms. Age of the house was not indicated	61	-	N/A	-	3 family	-
85	33/3	Mukosha	6	300	3000	100	Apartment row house complex; with iron sheets all concrete with two rooms. Age of the house was not indicated	No Answer	-	N/A	-	3 family	-

Appendix -3

JICA Guidelines for Environmental and Social Considerations

JAPAN INTERNATIONAL COOPERATION AGENCY
GUIDELINES FOR ENVIRONMENTAL AND SOCIAL CONSIDERATIONS

April 2004

Japan International Cooperation Agency

CONTENTS

List of Acronyms

B/D	Basic Design
D/D	Detailed Design
EIA	Environmental Impact Assessment
IEE	Initial Environmental Examination
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
MOFA	Ministry of Foreign Affairs
OECD	Organization for Economic Cooperation and Development
R/D	Record of Discussions
S/W	Scope of Work
TOR	Terms of Reference

Preface

Principle 17 of the Rio Declaration on Environment and Development proclaims that an Environmental Impact Assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority. Agenda 21 proposes that the governments should, at the national level, promote the development of appropriate methodologies for integrating energy, environmental and economic policy decisions for sustainable development, inter alia, through environmental impact assessment (9.12(b)). The Universal Declaration of Human Rights makes clear a common standard of achievement for all peoples and all nations to promote respect for human rights and freedoms, and to secure their universal and effective recognition and observance. In 1985, the OECD Council Recommendation on Environmental Assessment of Development Assistance Projects and Programs was endorsed, and since then multilateral donors including the World Bank and main bilateral donors have prepared guidelines for environmental considerations and applied them.

JICA, which is responsible for the implementation of technical cooperation and the preliminary study of grant aid projects in Japan's bilateral grants, prepared environmental guidelines for infrastructure projects in 1990, in response to a proposal made by the first JICA Working Task on Environmental Cooperation in 1988, which introduced a screening and a scoping process to the preparatory study of Development Study. After more than ten years since the former guidelines were prepared, JICA decided to revise them, in response to the need for preparing basic principles of environmental and social considerations for all of JICA's activities. The revisions extended the range to be covered by the guidelines, promoted information disclosure, and strengthened the internal organization to ensure compliance with the guidelines and to enhance environmental and social considerations for the Official Development Assistance according to the governmental policy.

In December 2002, JICA established a committee for revising JICA guidelines for environmental and social considerations. The members of this committee were from universities, NGOs, private sector and related ministries. The committee held nineteen meetings which were open to the public and submitted its proposal of new guidelines to JICA in September 2003. JICA then established a follow-up committee for the guidelines in November 2003 and a draft of guidelines prepared by JICA was reviewed by the follow-up committee. JICA requested public comments from December 2003 to February 2004 for two months and incorporated submitted comments into the guidelines. JICA completed the new guidelines for environmental and social considerations in March 2004.

These guidelines cover development studies, preliminary studies of grant aid projects and technical cooperation projects. The Business Protocol and Mid-term Plan of JICA state clearly that JICA implements cooperation activities in accordance with the guidelines. JICA encourages the recipient governments by conducting cooperation activities to implement the appropriate measures for environmental and social considerations, and at the same time JICA gives support for and examination of environmental and social considerations according to the guidelines. JICA will make a comprehensive review of the guidelines within five years of their enforcement and revise them if necessary.

I. BASIC MATTERS

1.1 Policy

Japan's Official Development Assistance (ODA) Charter states that, in formulating and implementing assistance policies, Japan will take steps to assure fairness. This should be achieved by giving considerations to the conditions of the socially vulnerable and the gap between the rich and the poor as well as the gap among various regions in developing countries. Furthermore, great attention will be paid with respect to factors such as environmental and social impacts on developing countries when implementing ODA.

JICA, which is responsible for technical cooperation in ODA, plays a key role in contributing to sustainable development in developing countries. The inclusion of environmental and social costs in development costs, and the social and institutional framework to make it possible to internalize environmental and social costs in development costs, are crucial for sustainable development. The internalization and the institutional framework are requirements for measures of environmental and social considerations, and JICA has been requested to take suitable considerations of environmental and social factors.

Democratic decision-making is indispensable for environmental and social considerations, and, in order to achieve an appropriate decision-making process, it is important to ensure stakeholder participation, information transparency, accountability and efficiency in addition to respect for human rights.

In this context, with respect to human rights and in view of the principles of democratic governance, the measures for environmental and social considerations are implemented by ensuring a wide range of meaningful stakeholder participation and transparency of decision-making as well as by working for information disclosure and by ensuring efficiency. The governments bear responsibility for accountability and at the same time stakeholders are also responsible for their comments.

Under the above views, JICA considers the environmental and social impacts when implementing cooperation projects.

1.2 Objectives

The objectives of the guidelines are to encourage the recipient governments to take appropriate considerations of environmental and social factors as well as to ensure that JICA's support for and examination of environmental and social considerations are conducted accordingly. The guidelines outline JICA's responsibility and procedures, and requirements for the recipient governments to facilitate achievement of the objectives.

1.3 Definitions

1. "environmental and social considerations" means considering environmental impacts on air, water, soil, ecosystem, fauna and flora as well as social impacts including involuntary resettlement and respect for human rights of indigenous people and so on.
2. "cooperation projects" means development studies, preliminary studies of grant aid project or technical cooperation projects that JICA undertakes.

3. “projects” means undertakings or projects that the recipient governments conduct and JICA supports.
4. “environmental and social considerations studies” means studies including baseline surveys, predicting and evaluating adverse impacts and likely impacts that projects are to have on the environment and local society, and mitigation measures to avoid and minimize them.
5. “environmental impact assessment” means evaluating environmental and social impacts that projects are likely to have, analyzing alternative plans and preparing adequate mitigation measures and monitoring plans in accordance with laws or guidelines of the recipient governments.
6. “strategic environmental assessment” means an assessment being implemented at the policy, planning and program level rather than a project-level EIA.
7. “support for environmental and social considerations” means offering the recipient governments assistance by conducting environmental and social considerations studies, analyzing countermeasures, accumulating knowledge and experience, and developing human resources and so on.
8. “examination of environmental and social considerations” means judging whether adequate considerations for the projects are ensured. Judgement is performed by discussing the considerations with the recipient governments and doing field surveys; by confirming project description, site description, likely impacts on the environment and society, and legal frameworks concerning EIA; and by confirming the implementing of capacity, including the budget, organization, personnel and their experience, and the frameworks and operating procedures regarding information disclosure and public participation.
9. “screening” means deciding whether proposed projects are likely to have impacts that should be assessed by conducting environmental and social considerations studies according to project description and site description. JICA conducts screening by classifying proposed projects into three categories: A, B and C. Proposed projects classified as Category A are likely to have significant adverse impacts, and proposed projects classified as Category B are likely to have less adverse impacts than those of Category A projects. Category C projects are likely to have minimal or no adverse impacts.
10. “scoping” means deciding alternatives to be analyzed, a range of significant and likely significant impacts, and study methods.
11. “local stakeholders” means affected individuals or groups including squatters and local Non-governmental Organizations (NGOs), and “stakeholders” means individuals or groups who have views about cooperation projects, including local stakeholders.
12. “advisory council of environmental and social considerations review” means a council which advises on the support for and examination of environmental and social considerations about cooperation projects.
13. “international agreements” means agreements between the government of Japan and the recipient governments after the Ministry of Foreign Affairs selects cooperation projects.
14. “follow-up activities” means confirming that the recipient governments incorporate the conclusions of environmental and social considerations studies in the decision-making process to implement projects.
15. “Terms of Reference (TOR)” means a set of administrative, procedural and technical

requirements.

16. “Scope of Work (S/W)” means agreement documents between JICA and counterpart institutions in recipient countries that include the scope of the studies, the contents to be addressed, a schedule of studies, and mutual undertakings.
17. “Record of Discussions (R/D)” means agreement documents between JICA and counterpart institutions in recipient countries that include the objectives of technical cooperation projects, the activities, a schedule of the activities, and mutual undertakings.
18. “Environmental Impact Assessment (EIA) level study” means a study including analysis of alternative plans, prediction and assessment of environmental impacts, and preparation of mitigation measures and monitoring plans on the basis of detailed field surveys.
19. “Initial Environmental Examination (IEE) level study” means a study including analysis of alternative plans, prediction and assessment of environmental impacts, and preparation of mitigation measures and monitoring plans on the basis of secondary data and simple field surveys.
20. “coordinated detailed design (D/D) study with JBIC” means a detailed design study for a yen loans project where JICA works in closer cooperation with Japan Bank for International Cooperation (JBIC).
21. “basic design study” means a study to prepare basic plans, basic designs, cost estimation and operational organization plans about grant aid projects.

1.4 Basic Principles regarding Environmental and Social Considerations

JICA supports the recipient governments by offering cooperation projects into which JICA incorporates appropriate environmental and social considerations so as to avoid or minimize development projects’ adverse impacts on the environment and local communities. JICA thus promotes sustainable development in developing countries.

JICA makes clear requirements that the recipient governments must meet and that are mindful of environmental and social considerations in the guidelines, and JICA provides the recipient governments with support to facilitate the achievement of these requirements by implementing cooperation projects. JICA examines undertakings by the recipient governments in accordance with the requirements and makes adequate decisions regarding environmental and social considerations on the basis of the results of the examination.

JICA submits proposals to MOFA regarding selection of cooperation projects from a viewpoint of environmental and social considerations, so that the Government of Japan can make an appropriate decision regarding project selection. JICA recognizes the following seven principles to be very important.

1. A wide range of impacts to be addressed is covered.

   The types of impacts addressed by JICA cover a wide range of the environmental and social impacts.
2. Measures for environmental and social considerations are implemented at an early stage.

   JICA introduces the concept of Strategic Environmental Assessment (SEA) when conducting Master Plan studies, etc., and works with the recipient governments to address a wide range of environmental and social factors from an early stage. JICA makes an effort to include an analysis

of alternatives on such occasions.

3. Follow-up activities are carried out after cooperation projects are terminated.

   JICA asks the recipient governments to incorporate the outcome of environmental and social considerations in the implementation of projects after cooperation is terminated. JICA offers cooperation projects in accordance with other requests, when necessary.

4. JICA is responsible for accountability when implementing cooperation projects.

   JICA pays attention to accountability and transparency when implementing cooperation projects.

5. JICA asks stakeholders for their participation.

   JICA incorporates stakeholder opinions into decision-making processes regarding environmental and social considerations, and JICA ensures the meaningful participation of stakeholders in order to take consideration of environmental and social factors and to reach a consensus accordingly. Stakeholders participating in meetings are responsible for what they say.

6. JICA discloses information.

   JICA itself discloses information on environmental and social considerations in collaboration with the recipient governments, in order to ensure accountability and to promote participation of various stakeholders.

7. JICA enhances organizational capacity.

   JICA makes an effort to enhance the comprehensive capacity of organizations and operations to consider environmental and social factors appropriately and effectively at all times.

1.5 Responsibility of JICA

1. The recipient governments take the initiative in dealing with environmental and social considerations of their projects. However JICA supports and examines measures for environmental and social considerations that the recipient governments implement in the following ways which are responsive to the nature of such cooperation projects and are in accordance with the guidelines.
2. When requests for cooperation projects are made, JICA examines the contents with regard to environmental and social considerations and categorizes the proposed projects.
3. When JICA makes plans of projects, JICA prepares reports on environmental and social considerations studies in collaboration with host countries. JICA reviews the categorization if necessary and conducts scoping with information disclosure and stakeholder consultation.
4. JICA conducts monitoring during the implementation stage of technical cooperation projects. During this stage, it is necessary to consider environmental and social factors.
5. JICA conducts follow-up activities after cooperation projects are terminated.
6. JICA provides technical assistance to host countries through mutual collaborative work for environmental and social considerations studies.
7. JICA provides technical assistance regarding the enforcement of environmental impact assessment in host countries, in response to other requests.
8. JICA makes an effort to incorporate the concept of SEA into cooperation projects when taking part in the planning or program level rather than in the project level, or comprehensive studies like master plan studies. At the same time, JICA works with the recipient governments to take

measures to address a wide range of measures for environmental and social considerations from an early stage.

9. JICA keeps in mind accountability and transparency when supporting and examining environmental and social considerations.
10. Experts dispatched by JICA give the recipient governments advice or support, with respect to the relevant clauses of the guidelines within the experts' mandates.

1.6 Requirements of the Recipient Governments

1. The recipient governments are required to incorporate the outcome of environmental and social considerations studies into their planning and decision-making process once they receive authorization for a project's implementation.
2. When JICA considers either the selection of proposed projects or the support for and examination of environmental and social considerations, JICA examines how the recipient governments meet the requirements that JICA requires as mentioned in Appendix 1.
3. Various documents prepared through the EIA process and reports (EIA documents) must be written in official languages or in languages familiar to people within the host countries. Documents written in understandable languages and forms for local people must be prepared and explained to them.
4. It is requested that EIA documents be made open to local stakeholders including local people. In addition, EIA documents should be available for public reading at all times, and the making of copies of these for the local stakeholders should be permitted.

1.7 Covered Schemes

The guidelines cover three schemes which JICA implements: Development Studies, Preliminary Studies of Grant Aid Projects, and Technical Cooperation Projects. In the case when JICA conducts studies besides the above three schemes, JICA respects related clauses of the guidelines according to project objectives.

1.8 Measures Taken in an Emergency

An emergency is defined as a case that must be dealt with immediately – such as restoration after natural disasters or post-conflict restoration – when it is clear that there is no time to follow procedures of environmental and social considerations mentioned in the guidelines. In such an emergency, JICA consults the advisory council of environmental and social considerations' review on categorization, judgement of emergency, and procedures to follow at an early stage, and discloses results of review by the advisory council and results of cooperation projects after their completion.

1.9 Dissemination

JICA makes the guidelines available through its home page. JICA explains the guidelines to the recipient governments, ministries and related institutions, and requests that they take the guidelines into consideration.

II. Process of Environmental and Social Considerations

2.1 Information Disclosure

1. In principle, the recipient governments disclose information about environmental and social considerations of projects. JICA assists the recipient governments by implementing cooperation projects.
2. JICA itself discloses important information about environmental and social considerations at the main stages of cooperation projects in an appropriate manner in accordance with the guidelines.
3. JICA discusses frameworks to ensure information disclosure with the recipient governments and comes to an agreement with them at an early stage of cooperation projects.
4. The information to be disclosed includes that of the project itself.
5. Besides the information to be disclosed on JICA's own judgment, JICA provides information about environmental and social considerations to third parties within the extent possible in response to requests.
6. JICA encourages the recipient governments to disclose and present information about environmental and social considerations to local stakeholders.
7. JICA discloses information well in advance when JICA has meetings with local stakeholders in cooperation with the recipient governments, so that they have time to review the information.
8. JICA discloses information through its website in Japanese and English, and provides related reports for public reading at its library and at a concerned overseas office.
9. JICA prepares documents in cooperation with the recipient governments in an official or familiar language and an understandable form for local people, and is willing to provide them with documents at the same time of information disclosure on its website.

2.2 Consultation with Local Stakeholders

1. In principle, the recipient governments consult with local stakeholders through means that induce reasonably broad public participation, in order to consider environmental and social factors in the way most suitable to local situations and to reach an appropriate consensus. JICA assists the recipient governments by implementing cooperation projects.
2. With the recipient governments, JICA discusses and reaches a consensus on the frameworks for consulting with local stakeholders at an early stage of cooperation projects.
3. In order to have meaningful meetings, JICA, in collaboration with the recipient governments, publicizes in advance that JICA consults with local stakeholders, particularly the people directly affected.
4. In the case of Category A projects, JICA consults with local stakeholders in collaboration with the recipient governments about the understanding of development needs, the likely adverse impacts on the environment and society of such needs, and an analysis of alternatives at an early stage. JICA will hold at least a series of discussions at each stage of scoping, preparing an outline of measures for environmental and social considerations, and the completion of a draft of the final report.
5. In the case of Category B projects as well, JICA consults with local stakeholders in collaboration with the recipient governments when necessary.

6. JICA prepares minutes of the meeting in collaboration with the recipient governments when consulting with local stakeholders.

2.3 Impacts to be Assessed

1. The impacts to be assessed with regard to environmental and social considerations include impacts on human health and safety as well as the natural environment. Impacts on the natural environment include trans-boundary or global-scale impacts through air, water, soil, waste, accidents, water usage, climate change, ecosystems and biodiversity. The impacts to be assessed also include social impacts, which include the migration of populations and involuntary resettlement; local economy such as employment and livelihood; utilization of land and local resources; social institutions such as social infrastructure and local decision-making institutions; existing social infrastructures and services; vulnerable social groups such as the poverty level and indigenous peoples; equality of benefits and losses and equality in development process; gender; children's rights; cultural heritage; local conflict of interests and infectious diseases such as HIV/AIDS.
2. In addition to the direct and immediate impacts of projects, derivative, secondary and cumulative impacts are also to be assessed in regard to environmental and social considerations within the extent possible. The life cycle impact during a project period is considered also.
3. Various kinds of relevant information are needed to assess impacts on the environment and local communities. There are, however, uncertainties in predicting impact due to incomplete understanding of an impact mechanism and limited information available. Therefore, if the scale of uncertainty is considered to be large, JICA provides environmental and social considerations which include preventive measures as much as possible.

2.4 Inquiry to Advisory Council of Environmental and Social Considerations Review

1. In order to seek advice regarding support for and examination of environmental and social considerations about cooperation projects, JICA establishes a standing advisory council as a third party, composed of external experts with the necessary knowledge.
2. The advisory council takes part in Category A and B projects from a request review stage until a final stage and gives advice about the propriety of support in response to inquiries by JICA. The council also gives advice on each cooperation project. Ad-hoc members are requested to participate in the council when necessary, taking into account the nature of each project.
3. Discussions by the advisory council are open to the public. Minutes are prepared with the names of speakers in the order of speaking and are made available to the public.
4. A committee to be established for the purpose of giving technical advice to cooperation projects must obtain advice from the advisory council in regard to environmental and social considerations.

2.5 Categorization

1. JICA classifies projects under three categories according to the extent of environmental and social impacts. To make this classification, JICA takes into account an outline of the project, the scale, the site condition, and the environmental impact assessment scheme in host countries.

2. Category A: Projects are classified as Category A if they are likely to have significant adverse impacts on the environment and society. Projects with complicated impacts or unprecedented impacts, which are difficult to assess or which have a wide range of impacts or irreversible impacts, are also classified as Category A. Projects are also classified as Category A if they require a detailed environment impact assessment by environmental laws and the standards of the recipient governments. The impacts may affect an area broader than the sites or facilities subject to physical construction. Category A, in principle, includes projects in sensitive sectors (i.e., characteristics that are liable to cause adverse environmental impact) and projects located in or near sensitive areas. An illustrative list of sensitive sectors, characteristics and areas is given in Appendix 2.
3. Category B: Projects are classified as Category B if their potential adverse impacts on the environment and society are less adverse than those of Category A projects. Generally they are site-specific; few if any are irreversible; and in most cases normal mitigation measures can be designed more readily.
4. Category C: Projects are classified as Category C if they are likely to have minimal or little adverse impacts on the environment and society.
5. JICA flexibly reviews a categorization even after screening, to determine whether a new significant impact has come to light as a result of the cooperation project process.
6. Projects may not be clearly specified at an early stage like the Master Plan Study. In such cases, however, projects are categorized based on their likely significant impacts. At that time, derivative, secondary and cumulative impacts are also to be considered. When considering plural alternatives, projects are classified as the category of that alternative which has the most significant impact among them. JICA reviews the categorization accordingly after projects have been identified by means of a progress of studies.
7. JICA requests that the recipient governments fill in the screening form of Appendix 3 and the information in this form will be a reference for the categorization of proposed projects.

2.6 Laws and Standards of Reference

1. JICA in principle confirms whether projects meet the requirements for environmental and social considerations in the following ways.
2. JICA confirms whether projects comply with laws or standards relating to the environment and local communities within both central and local governments in host countries as well as whether projects conform to their own policies and plans.
3. JICA refers to international standards, treaties and declarations and good practices which Japan, international and regional organizations and developed countries have. When JICA recognizes that laws and regulations regarding environmental and social considerations of host countries are substantially inferior to these standards and good practices, JICA encourages the recipient governments – including local governments – to take more appropriate considerations through a series of dialogues, and confirms background and justification for that.
4. JICA takes into account the importance of good governance surrounding projects so that measures for appropriate environmental and social considerations are implemented.
5. JICA discloses information with reference to relevant laws of the recipient governments and the

government of Japan.

2.7 Concern about Social Environment and Human Rights

1. Environmental and social factors are affected by the social and institutional conditions of host countries and the actual conditions of the project location. Therefore, JICA fully takes these conditions into account when supporting and examining environmental and social conditions. In particular, special measures must be taken for cooperation projects when disclosing information and holding consultation with local stakeholders after obtaining understanding from the recipient governments, in countries and areas affected by conflict or where basic freedoms – including freedom of expression and the right to receive legal relief – are restricted.
2. JICA respects the principles of internationally established human rights standards like the International Convention on Human Rights, and gives special attention to the human rights of vulnerable social groups – including women, indigenous peoples, persons with disabilities, and minorities – when implementing cooperation projects. JICA obtains country reports and information issued by related institutions about human rights, and JICA understands local human rights situations by disclosing information about cooperation projects. Thus, JICA integrates local human rights situations into the decision-making process regarding environmental and social considerations.

2.8 Decision-making by JICA

1. JICA makes recommendations to the Ministry of Foreign Affairs of Japan (MOFA) from the viewpoint of environmental and social considerations at the review stage of requests. In addition to the categorization by screening, JICA makes these recommendations after confirming the nature of proposed projects, site description, scope of impacts on the environment and local communities, operational capacities of the recipient governments and project executing bodies, and prospect of information disclosure and public participation in addition to categorization by screening. The recommendations include changing studies to an upper level or changing preliminary studies of grant aid projects to feasibility studies when necessary.
2. JICA takes necessary measures to ensure suitable environmental and social considerations of cooperation projects, if unexpected inadequate matters come to light after MOFA concludes international agreements.
3. JICA makes a decision to stop cooperation projects and recommends MOFA to do the same when JICA concludes that it is impossible to ensure environmental and social considerations even if the above measures are taken. Cases where it is impossible to ensure environmental and social considerations are, for example, where development needs are inappropriately understood, where projects are expected to have significant impacts even if mitigation measures are taken into consideration during implementation stage, where the affected residents or social organizations concerned hardly participate in projects and are not expected to do so in the future though serious impacts are to be predicted, or where it is expected to be difficult to implement mitigation measures to avoid or minimize impacts in consideration of social and institutional conditions to the project's site, etc.

2.9 Ensuring Appropriate Implementation of and Compliance with the Guidelines

JICA appropriately implements principles and procedures mentioned in the guidelines and ensures compliance with them. JICA responds to objections regarding non-compliance with them by establishing a body for prescribing regulations separately from the guidelines. The body is independent from the project executing departments.

2.10 Implementation and Review of the Guidelines

1. The guidelines come into force on April 1, 2004 and projects proposed in and beyond FY 2004 are subject to the guidelines. Ongoing cooperation projects requested before April 1, 2004 are subject to possible items mentioned in the procedures. JICA proceeds with a system to respond to objections regarding non-compliance with the guidelines.
2. JICA verifies the status of implementation of the guidelines, and based on its findings makes a comprehensive review of them within five years of their enforcement. A revision is made as needed. When JICA revises the guidelines, JICA seeks opinions from the government of Japan and developing countries, NGOs in developing countries, as well as NGOs in Japan, the private sector and experts, etc., in a process which ensures transparency and accountability.
3. JICA studies problems to be solved and methods in applying the guidelines, and incorporates the results of studies in a review process of the guidelines.

III. Procedures of Environmental and Social Considerations

3.1 Review Stage of Proposed Projects (All Schemes)

1. JICA reviews proposed projects submitted to the Ministry of Foreign Affairs (MOFA), by confirming a project and site description, environmental impact assessment process in the recipient governments and other information, and categorizes it through first screening. After that, JICA makes decisions on proposed projects from the viewpoint of environmental and social considerations and makes recommendations to MOFA;
2. JICA discloses information of Category A projects, such as a country, an area and project description, for a certain period on its website before making its recommendation to MOFA, and collects external information and opinions to incorporate these in the recommendation;
3. If there is not sufficient information for category classification, JICA makes inquiries to the recipient governments through the Embassies of Japan, JICA overseas offices and other institutions. If information obtained through inquiries is considered insufficient, JICA dispatches teams, etc., to collect information regarding environmental and social aspects through consultations with persons concerned and field visits in recipient countries and other methods. JICA promptly discloses study reports; and
4. Soon after the conclusion of international agreements by MOFA, JICA discloses names, countries, locations, outlines and sectors of projects, and their categorization together with their reasons on its website. For Category A and B projects, JICA discloses recommendations to MOFA on its website.

3.2 Development Study (Master Plan Study)

3.2.1 Preparatory Study Stage

1. JICA conducts preparatory studies for cooperation projects based on the results of the first screening. JICA dispatches a necessary expert(s) for environmental and social considerations to conduct field surveys for Category A and B cooperation projects and also, if necessary, for Category C cooperation projects;
2. JICA examines measures for environmental and social considerations described in the requests and collected at the above-mentioned review stage. In addition, JICA conducts information gathering, field surveys and consultations with the recipient governments. On the basis of collected information and consultations, JICA categorizes projects through a second screening and reviews the categorization when necessary;
3. JICA conducts provisional scoping according to categorization and prepares drafts of the Terms of Reference (TOR) for environmental and social considerations studies. For Category A studies, JICA conducts field surveys, obtains information and opinions from local stakeholders, and incorporates results into drafts of TOR;
4. JICA consults with the recipient governments about environmental and social considerations and concludes mutual undertaking, partnership and coordination; and
5. JICA prepares drafts of the Scope of Work (S/W) after consultation with the recipient governments about the organizational structure of environmental and social considerations. JICA obtains basic agreement from the recipient governments to incorporate results of environmental

and social considerations studies into decision-making process of projects.

3.2.2 Stage of S/W Signature

1. When JICA obtains agreements with the recipient governments, JICA signs S/W that includes draft TOR for projects. If no agreement can be reached, JICA suspends studies without signing S/W. JICA judges projects not to be implemented, then JICA makes recommendations to MOFA to stop cooperations; and
2. JICA discloses promptly S/W and information regarding environmental and social considerations after signing it.

3.2.3 Full-scale Study Stage

1. JICA involves a member(s) for environmental and social considerations in study teams for Category A and B studies;
2. JICA collects relevant information and conducts field surveys covering a wider area than that of the preparatory study stage, holds consultations with the recipient governments, and prepares drafts of scoping;
3. For Category A studies, JICA consults with local stakeholders in collaboration with the recipient governments after disclosure of drafts of scoping, and incorporates results of consultation into TOR. The consultation widely covers the needs of projects and the analysis of alternatives. For Category B studies, JICA consults with local stakeholders in collaboration with the recipient governments after the disclosure of drafts of scoping when necessary;
4. The TOR includes an understanding of needs, the impacts to be assessed, study methods, an analysis of alternatives, a schedule and other matters. JICA endeavors to incorporate the concept of Strategic Environmental Assessment into such studies. JICA then obtains an agreement on the TOR with the recipient governments through consultations;
5. In accordance with the TOR and in collaboration with the recipient governments, JICA conducts IEE-level environmental and social considerations studies, and analyzes alternatives including a “without project” situation. During studies, JICA incorporates its results into related reports prepared in a process accordingly;
6. For Category A studies, when preparing a rough outline of environmental and social considerations, JICA holds a series of stakeholder consultations in collaboration with the recipient governments after information disclosure and incorporates the result of consultation into these studies. For Category B studies, JICA consults with local stakeholders after information disclosure in collaboration with the recipient governments, when necessary;
7. Based on the above-mentioned procedure, JICA prepares drafts of the final reports incorporating results of environmental and social considerations studies, and explains them to the recipient governments to obtain their comments. For Category A studies, JICA discloses the drafts to and consults with local stakeholders in collaboration with the recipient governments, and incorporates the results of that consultation into the final reports. For Category B studies, JICA consults with local stakeholders in collaboration with the recipient governments after disclosure of drafts of the final reports when necessary;
8. JICA prepares final reports incorporating results of study, and submits them to the recipient

governments after confirming that the reports meet the requirements of the guidelines; and
9. JICA discloses final reports promptly after their completion, on its website and at the JICA library and a relevant overseas office.

3.3 Development Study (Feasibility Study)

3.3.1 Preparatory Study Stage

1. JICA conducts preparatory studies based on the results of the first screening. JICA dispatches a expert(s) for environmental and social considerations to conduct field surveys for Category A and B studies and, if necessary, for Category C studies as well;
2. JICA examines measures for environmental and social considerations described in requests and collected at the review stage, and collects related information, conducts field surveys and consults with recipient governments. On the basis of collected information and consultations with the recipient governments, JICA categorizes projects through a secondary screening, and reviews categorization when necessary;
3. JICA conducts provisional scoping according to categorization, and prepares drafts of the TOR for environmental and social considerations studies based on the results of the scoping. For Category A studies, JICA conducts field surveys, obtains information and opinions from local stakeholders, and incorporates the results into drafts of the TOR;
4. JICA consults with the recipient governments on environmental and social considerations and concludes mutual undertaking, partnership, and coordination; and
5. JICA prepares a draft of the S/W based on consultation with the recipient governments about drafts of the TOR and the organizational structure of environmental and social considerations. JICA obtains a basic agreement from the recipient governments to incorporate results of environmental and social considerations studies into the decision-making process of project planning.

3.3.2 Stage of S/W Signature

1. JICA signs the S/W including the drafts of the TOR when agreements with the recipient governments are reached on the scope and implementing structure of the studies. If no agreement can be reached, JICA suspends studies without signing the S/W. When JICA decides that the studies are not to be implemented, it makes recommendations to MOFA to stop studies; and
2. JICA discloses promptly the S/W and the information regarding environmental and social considerations after signing S/W.

3.3.3 Full-scale Study Stage

3.3.3.1 Category A Study

1. JICA involves a member(s) for environmental and social considerations in study teams;
2. JICA collects relevant information, conducts field surveys in a wider area than that of preparatory studies, holds consultations with the recipient governments and prepares drafts of scoping;
3. After disclosing the drafts of scoping, JICA consults with local stakeholders in collaboration with the recipient governments and incorporates results of consultation into the TOR of environmental and social considerations studies. The consultations widely cover needs of projects and analysis of

alternatives;

4. The TOR includes understanding of development needs, impacts to be assessed, study methods, analysis of alternatives, a schedule, etc. JICA obtains an agreement on TOR with the recipient governments through consultations;
5. In line with TOR and in collaboration with the recipient governments, JICA conducts EIA-level environmental and social considerations studies including a monitoring plan, an institutional arrangement, and mitigation measures to avoid, minimize or compensate for adverse impacts. JICA analyzes alternatives including a "without project" situation. JICA incorporates the results of studies into relevant reports prepared accordingly;
6. When considering the rough outline of environment and social considerations, JICA consults with local stakeholders, after information disclosure, and incorporates results into the studies;
7. JICA prepares draft final reports, incorporating the results of environmental and social considerations studies, and explains them to the recipient governments to obtain comments. After disclosure of a draft of the final reports, JICA consults with local stakeholders in collaboration with the recipient governments and incorporates results of consultation into the final reports;
8. JICA prepares final reports and submits them to the recipient governments after confirming that they meet the requirements of the guidelines; and
9. JICA discloses final reports promptly after their completion, on its website and at the JICA library and a concerned overseas office.

3.3.3.2 Category B Study

1. JICA involves a member(s) for environmental and social considerations in study teams;
2. JICA collects relevant information and conducts field surveys in a wider area than that of preparatory studies, conducts scoping together with the recipient governments, and prepares TOR of environmental and social considerations studies;
3. The TOR includes understanding of development needs, impacts to be assessed, study methods, analysis of alternatives and a schedule, etc.;
4. In accordance with the TOR, JICA conducts IEE-level environmental and social considerations studies in which are analyzed alternatives including a "without project" situation. The results are incorporated into various reports prepared in study process, accordingly;
5. JICA reviews screening based on the results of IEE-level studies. For studies newly categorized into Category A, JICA takes procedures as noted in those of the feasibility study of Category A, mentioned in 3.3.3.1. For studies again classified into Category B, the results of environmental and social considerations studies are incorporated into drafts of the final reports. For studies newly categorized into Category C, the process of environmental and social considerations is finished;
6. JICA prepares drafts of the final reports, into which are incorporated the results of environmental and social considerations studies, and explains them to the recipient governments to obtain comments. The comments are incorporated into final reports;
7. JICA prepares final reports, and submits them to the recipient governments after confirming that they meet the requirements of the guidelines;
8. JICA holds consultations with local stakeholders after information disclosure, in collaboration with the recipient governments, if necessary; and

9. JICA discloses final reports promptly after their completion, on its website and at the JICA library and a concerned overseas office.

3.4 Detailed Design (D/D) Study

3.4.1 Coordinated D/D Study with JBIC

For coordinated detailed design studies with JBIC, JICA considers proposed studies that JBIC concludes are adequate for yen loan projects according to JBIC guidelines. Basically, JICA conducts detailed design studies in the engineering field.

3.4.1.1 Preparatory Study Stage

1. For Category A and B studies, JICA obtains from JBIC documents regarding environmental and social considerations, and examines the results of JBIC's judgment; and
2. JICA confirms mitigation measures including compensation in cases where impacts cannot be avoided or minimized, monitoring, and the requirements to meet environmental and social considerations for yen loan projects such as a concrete schedule, personnel and organization, budget, etc. When JICA's assessment differs from the review by JBIC, JICA conveys its own relevant information to JBIC and requires JBIC to undertake adequate measures. And JICA discloses the information after making inquiries to the recipient governments and related organizations.

3.4.1.2 Stage of the S/W Signature

When JICA agrees with the recipient governments on the S/W including a draft of TOR, JICA signs it. If no agreement is reached, JICA suspends studies without signing the S/W.

3.4.1.3 Full-Scale Study Stage

1. For Categories A and B studies, JICA includes a member(s) for environmental and social considerations on study teams;
2. When JICA's assessment differs from the review by JBIC, JICA conveys its own relevant information to JBIC, and requires JBIC to undertake adequate measures. JICA discloses the information after making inquiries to the recipient governments and related organizations;
3. When significant impacts become clear and JICA judges it difficult to address them, JICA makes recommendations to MOFA to stop the studies. JICA discloses recommendations after making inquiries to the recipient governments and related organizations; and
4. After making the inquiries to the recipient governments and related organizations, JICA discloses its final reports promptly after their completion on its website and at the JICA library and a concerned overseas office.

3.4.2 D/D Study except Coordinated D/D Study with JBIC

For D/D studies – except coordinated D/D studies – JICA reviews documents mentioned in 3.4.2.1, according to the JBIC guidelines. JICA considers proposed studies to which environmental and social factors are given adequate considerations. Basically, JICA conducts D/D studies in the engineering field.

3.4.2.1 Review Stage of Proposed Study

1. For Category A proposed studies, JICA requests the recipient governments or implementing agencies to submit EIA reports of projects. Appendix 4 shows the items included in the EIA report. A resettlement action plan for involuntary resettlement and a mitigation measures plan of the indigenous people for adverse impacts on them must be attached to the EIA report as the need arises;
2. For Category B proposed studies, JICA requests the recipient governments or implementing agencies to submit the EIA report in cases when an EIA has been implemented. If not available, JICA requests other information and reports regarding environmental and social considerations;
3. For Category A or B proposed studies, as soon as JICA receives the main documents on environmental and social considerations, JICA discloses them after inquiring of the recipient governments or implementing agencies. Documents include the Environmental Impact Statement (EIS), environmental permit certificates issued by the recipient governments, resettlement action plans, mitigation plans for indigenous peoples, and other available documents; and
4. When JICA judges that the proposed studies are not appropriate in accordance with JBIC guidelines, JICA recommends MOFA not to select studies, or to implement environmental and social considerations studies by different schemes such as a development study.

3.4.2.2 Preparatory Study Stage

1. JICA confirms whether the recipient governments ensure appropriate mitigation measures to avoid or minimize environmentally and socially adverse impacts. Such measures include compensation for unavoidable impacts, monitoring, a concrete schedule to prepare institutional arrangements, personnel and implementing organization, and budget. If not ensured, JICA requests the recipient governments to improve these matters. If no improvements are made, JICA recommends MOFA to stop the studies;
2. For Category A and B studies, JICA dispatches an expert(s) for environmental and social considerations, conducts field surveys and obtains information and opinions from local stakeholders;
3. JICA consults with the recipient governments about environmental and social considerations, and concludes a mutual undertaking and a way of partnership and coordination; and
4. JICA prepares a draft of the S/W based on consultation with the recipient governments about a draft of the TOR and implementing frameworks for environmental and social considerations.

3.4.2.3 Stage of the S/W Signature

1. JICA integrates mutual undertaking by the recipient governments and JICA into the S/W to prepare mitigation measures to avoid and minimize negative impacts on the environment and society. Mitigation measures include compensation for unavoidable impacts, monitoring, and institutional arrangements. JICA also integrates measures to cope with new impacts in cases when they are found during study periods;
2. JICA signs the S/W including the draft of the TOR when JICA reaches agreements with the recipient governments. If not agreed, JICA suspends studies without signing the S/W. If JICA

judges that the cooperation should not to be implemented, JICA recommends MOFA to stop it; and
3. JICA discloses promptly the S/W and information regarding environmental and social considerations as soon as JICA signs it after inquiring of the recipient governments or implementing agencies.

3.4.2.4 Full-scale Study Stage

1. Based on agreements in the S/W, JICA provides supports necessary for preparing a monitoring plan, an institutional arrangement, and detailed plans of mitigation measures for avoiding, minimizing, and compensating for environmental and social impacts;
2. When new minor environmental and social impacts become clear during studies, JICA considers appropriate countermeasures through consultations with the recipient governments and local stakeholders;
3. When significant impacts become clear and JICA judges it difficult to address them, JICA recommends MOFA to stop the studies;
4. JICA prepares final reports and submits them to the recipient governments, into which the results of environmental and social considerations studies and other support are incorporated; and
5. JICA discloses final reports promptly after their completion, on its website, and at the JICA library and a concerned overseas office after inquiring of the recipient governments or implementing agencies.

3.5 Preliminary Study of Grant Aid Project

3.5.1 Category A Study

1. Prior to Basic Design (B/D) studies, JICA confirms the state of EIA implementation and its items, and whether the EIA study meets the requirements of the guidelines, by conducting preparatory studies and other means. JICA promptly discloses the results of those studies on its website;
2. JICA conducts B/D studies in cases where EIA is carried out, or development studies are implemented in accordance with the guidelines and environmental and social considerations studies are not required again. The results of EIA, preparatory studies, and other means are incorporated into the contents of B/D studies. JICA discloses B/D study reports promptly after their completion on its website and at the JICA library and a concerned overseas office; and
3. When new environmental and social considerations studies are required again in cases where EIA is not fully implemented, JICA recommends MOFA either to take appropriate measures – such as conducting necessary environmental and social considerations studies using the development study scheme mentioned in 3.3 or other means – or to stop studies.

3.5.2 Category B Study

1. JICA confirms the state of EIA implementation and its items, and whether EIA studies meet the requirements of the guidelines, by conducting preparatory studies and other means. JICA promptly discloses results of studies on its website;
2. JICA conducts B/D studies in cases where EIA is finished, or development studies are implemented in accordance with the guidelines and environmental and social considerations

studies are not required again. The result of EIA and other means are incorporated into the contents of B/D studies. JICA discloses B/D study reports promptly after their completion, on its website and at the JICA library and a concerned overseas office;

3. When new environmental and social considerations studies are required in cases where EIA or other measures are not fully implemented, JICA dispatches a member(s) for environmental and social considerations, and conducts scoping by means of preparatory studies, etc. JICA prepares the TOR of environmental and social considerations studies, including understanding of development needs, impacts to be assessed, study methods, analysis of alternatives including a "without project" situation, a schedule, etc. JICA then discusses the TOR with the recipient governments and obtains consensus;
4. In line with the TOR, JICA conducts IEE-level environmental and social considerations studies. After completion of IEE-level studies, JICA undertakes second screening. For Category A studies newly categorized, JICA conducts environmental and social considerations studies in line with the procedures for a feasibility study of Category A mentioned in 3.3 of the guidelines, or recommends MOFA countermeasures including suspension of studies. For studies that are again categorized as Category B, JICA incorporates results of environmental and social considerations studies into contents of B/D studies, and B/D study reports are disclosed promptly after their completion. For studies newly categorized as Category C, JICA finishes work on environmental and social considerations; and
5. JICA discloses results of studies promptly after their completion, on its website and at the JICA library and a concerned overseas office.

3.6 Technical Cooperation Project

3.6.1 Category A Project

1. JICA conducts preparatory studies and dispatches a member(s) for environmental and social considerations. JICA confirms the state of EIA implementation and its items, and whether EIA meets the requirements of the guidelines as well as whether environmental and social considerations studies are required again. JICA promptly discloses preparatory study reports after their completion on its website and at the JICA library and a concerned overseas office;
2. JICA signs a Record of Discussions (R/D) which prescribes ways of monitoring and mutual undertaking on environmental and social considerations in cases where EIA is finished, or development studies are implemented in accordance with the guidelines and environmental and social considerations studies are not required again. JICA discloses R/D and information on environmental and social considerations promptly on its website and at the JICA library and a concerned overseas office;
3. When new environmental and social considerations studies are required again in cases where EIA is not fully implemented, JICA recommends MOFA to take appropriate measures, such as conducting necessary environmental and social considerations studies using a development study scheme or other means;
4. JICA confirms the results of monitoring implemented by the recipient governments during cooperation periods. JICA carries out monitoring directly when necessary. JICA discloses the results of monitoring promptly after their completion, on its website and at the JICA library and a

concerned overseas office;

5. When any environmental and social impacts are found during cooperation periods, JICA takes necessary measures in cooperation with the recipient governments; and
6. After the completion of cooperation, JICA evaluates both the impacts to the natural environment and society – whether or not they are predicted by EIA or environmental and social considerations studies – and the effects of mitigation measures taken. JICA discloses the results of evaluation promptly after their completion, on its website and at the JICA library and a concerned overseas office.

3.6.2 Category B Project

1. JICA conducts preparatory studies and dispatches a member(s) for environmental and social considerations. JICA confirms the state of EIA implementation and its items, and whether EIA study meets requirements of the guidelines as well as whether environmental and social considerations studies are required again. JICA discloses preparatory study reports promptly after their completion, on its website and at the JICA library and a concerned overseas office;
2. JICA signs a Record of Discussions (R/D) which prescribes ways of monitoring and mutual undertaking on environmental and social considerations in cases where the EIA is finished, or development studies are implemented in accordance with the guidelines, so that environmental and social considerations studies are not required again. JICA integrates the results of the EIA, etc., into project plans and implements cooperation. JICA discloses the R/D and information on environmental and social considerations promptly on its website and at the JICA library and a concerned overseas office;
3. JICA confirms the results of monitoring implemented by the recipient governments during cooperation periods. JICA conducts monitoring directly when necessary. JICA discloses the results of monitoring promptly after their completion, on its website and at the JICA library and a concerned overseas office;
4. When any environmental and social impacts are found during cooperation periods, JICA takes necessary measures in cooperation with the recipient governments;
5. After the completion of technical cooperation projects, JICA evaluates the impacts to the natural environment and society – whether or not they were predicted by environmental and social considerations studies – and the effects of mitigation measures taken. JICA discloses the results of evaluation promptly after their completion, on its website and at the JICA library and a concerned overseas office;
6. When new environmental and social considerations studies are required again in cases where EIA is not fully implemented, JICA prepares a TOR of environmental and social considerations studies including impact items, study methods, analysis of alternatives including a “without project” situation, a schedule, etc., by conducting scoping. JICA then discusses the TOR with the recipient governments and obtains consensus;
7. In line with the TOR, JICA conducts IEE-level environmental and social considerations studies in collaboration with the recipient governments. After the completion of IEE-level studies, JICA undertakes a second screening. For Category A projects newly categorized, JICA recommends MOFA to take adequate measures to conduct environmental and social considerations studies in

line with procedures of a feasibility study or other means, including suspension of projects. For projects newly categorized as Category C, JICA finishes work on environmental and social considerations. JICA discloses the results of studies on its website and at the JICA library and a concerned overseas office; and

8. For projects again categorized as Category B, JICA incorporates the results of the study into the items of the R/D, and JICA signs the R/D which prescribes mutual undertakings on monitoring and environmental and social considerations. JICA discloses the R/D and information on environmental and social considerations promptly, on its website and at the JICA library and a concerned overseas office.

3.6.3 Monitoring

1. JICA examines the results of monitoring about significant environmental and social impacts of technical cooperation projects classified as Category A and B by implementing agencies of the recipient governments to ascertain whether adequate actions are taken. When necessary, JICA conducts monitoring directly after JICA consults with the recipient governments;
2. When third parties, etc., point out in concrete terms that environmental and social considerations are not fully undertaken, JICA conveys such comments to the recipient governments and encourages them to take appropriate actions. JICA confirms that implementing bodies cope with the full considerations of comments, analysis of countermeasures, and integration into work plans by a transparent and accountable process; and
3. When implementing bodies do not have sufficient capacity for monitoring, JICA provides cooperation regarding monitoring by means of human resource development including training in certain skills, etc.

3.7 Follow-up Activity

1. Financial aid institutions take charge of reviewing the EIA assisted by the development study scheme, and MOFA takes charge of reviewing the grant aid project. However JICA conducts follow-up activities to confirm the integration of the results of environmental and social considerations studies into the EIA prior to the review process;
2. JICA confirms proper integration of the results and recommendations of environmental and social considerations studies into the EIA, a resettlement action plan, and mitigation measures, etc., and discloses the results of confirmation, on its website and at the JICA library and a concerned overseas office; and
3. When third parties, etc., indicate that unexpected environmental and social impacts appear after the completion of cooperation, JICA comes to an understanding of problems by conducting field surveys and making recommendations to relevant organizations, when necessary.

Appendix 1. Requirements of the Recipient Governments

1. Underlying Principles

1. Environmental impact that may be caused by projects must be assessed and examined from the earliest possible planning stage. Alternatives or mitigation measures to avoid or minimize adverse impact must be examined and incorporated into the project plan.
2. Such examinations must include analysis of environmental and social costs and benefits in the most quantitative terms possible as well as qualitative analysis, and they must be conducted in close harmony with economic, financial, institutional, social and technical analysis of projects.
3. The findings of the examination of environmental and social considerations must include alternatives and mitigation measures, and be recorded as separate documents or as a part of other documents. Environmental Impact Assessment (EIA) reports must be produced for projects in which there is a reasonable expectation of a particularly large adverse environmental impact.
4. For projects that have particularly high potential for adverse impact or that are highly contentious, a committee of experts may be formed to seek their opinions, in order to increase accountability.

2. Examination of Measures

1. Multiple alternatives must be examined to avoid or minimize adverse impacts and to choose a better project option in terms of environmental and social considerations. In the examination of measures, priority is to be given to avoidance of environmental impact, and when this is not possible, minimization and reduction of impact must be considered next. Compensation measures must be examined only when impact cannot be avoided by any of the aforementioned measures.
2. Appropriate follow-up plans and systems, such as monitoring plans and environmental management plans, must be prepared; and the costs of implementing such plans and systems, and financial methods to fund such costs, must be determined. Plans for projects with particularly large potential adverse impact must be accompanied by detailed environmental management plans.

3. Scope of Impacts to Be Assessed

1. Impacts to be assessed and examined in terms of environmental and social considerations include impacts on human health and safety as well as the natural environment (including environmental impacts on a trans-boundary or global scale) through air, water, soil, waste, accidents, water usage, ecosystems, and biota. Such impacts also include social considerations as follows: migration of people including involuntary resettlement; local economy such as employment and livelihood; land use and utilization of local resources; social institutions such as social infrastructure and local decision-making institutions; existing social infrastructures and services; vulnerable social groups such as the poor and indigenous peoples; distribution of benefits and losses and equality in the development process; gender; children's rights; cultural heritage; local conflict of interests; and infectious diseases such as HIV/AIDS.
2. In addition to the direct and immediate impacts of projects, derivative, secondary and cumulative impacts are also to be examined and assessed to a reasonable extent. It is also desirable that the possibility that an impact can occur at any time during the duration of a project be continuously

considered throughout the life cycle of the project.

4. Compliance with Laws, Standards and Plans

1. Projects must comply with laws, ordinances and standards relating to environmental and social considerations established by the governments that have jurisdiction over the project site (including both national and local governments). They are also to conform to environmental and social consideration policies and plans of the governments that have jurisdiction over the project site.
2. Projects must, in principle, be undertaken outside protected areas that are specifically designated by laws or ordinances of the governments for conservation of nature or cultural heritage (excluding projects whose primary objectives are to promote protection or restoration of such designated areas). Projects are also not to impose significant adverse impact on designated conservation areas.

5. Social Acceptability

1. Projects must be adequately coordinated so that they are accepted in a manner that is socially appropriate to the country and locality in which they are planned. For projects with a potentially large environmental impact, sufficient consultations with local stakeholders, such as local residents, must be conducted via the disclosure of information from an early stage where alternatives for project plans may be examined. The outcome of such consultations must be incorporated into the contents of project plans.
2. Appropriate consideration must be given to vulnerable social groups, such as women, children, the elderly, the poor, and ethnic minorities, all members of which are susceptible to environmental and social impacts and may have little access to the decision-making processes within society.

6. Involuntary Resettlement

1. Involuntary resettlement and loss of means of livelihood are to be avoided where feasible, exploring all viable alternatives. When, after such examination, it is proved unfeasible, effective measures to minimize impact and to compensate for losses must be agreed upon with the people who will be affected.
2. People to be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported by project proponents, etc., in a timely manner. Project proponents must make efforts to enable people affected by projects to improve their standard of living, income opportunities and production levels, or at least to restore them to pre-project levels. Measures to achieve this may include: providing land and monetary compensation for losses (to cover land and property losses), supporting means for an alternative sustainable livelihood, and providing expenses necessary for relocation and the re-establishment of communities at resettlement sites.
3. Appropriate participation by affected people and their communities must be promoted in the planning, implementation, and monitoring of involuntary resettlement plans and measures against the loss of their means of livelihood.

7. Indigenous Peoples

When projects may have adverse impact on indigenous peoples, all of their rights in relation to land and resources must be respected in accordance with the spirit of relevant international declarations and treaties. Efforts must be made to obtain the consent of indigenous peoples after they have been fully informed.

8. Monitoring

1. It is desirable that, after projects begin, project proponents monitor the following: whether any unforeseeable situations occur and whether the performance and the effectiveness of mitigation measures are consistent with the assessment's prediction. It is also desirable that they then take appropriate measures based on the results of monitoring.
2. In cases where sufficient monitoring is deemed essential for appropriate environmental and social considerations, such as projects for which mitigation measures should be implemented while monitoring their effectiveness, project proponents must ensure that project plans include feasible monitoring plans.
3. It is desirable that project proponents make the results of the monitoring process available to project local stakeholders.
4. When third parties point out, in concrete terms, that environmental and social considerations are not being fully undertaken, it is desirable that forums for discussion and examination of countermeasures are established based on sufficient information disclosure and include the stakeholders participation in relevant projects. It is also desirable that an agreement be reached on procedures to be adopted with a view to resolving problems.

Appendix 2. Illustrative List of Sensitive Sectors, Characteristics, and Areas

The projects that are in sensitive sectors, have sensitive characteristics, and/or are in sensitive areas shown in this illustrative list are ones likely to have significant adverse impact on the environment and society. Each individual project is categorized in accordance with the standards for "Category A" indicated in section 2.1 of the guidelines, entitled "Categorization." Categorization depends on the impact of projects. Consequently, projects likely to have a significant adverse impact on the environment and society are categorized as "Category A" even if they are not included in the sectors, characteristics or areas on this list.

1. Illustrative list of large-scale projects in sensitive sectors are in the following sectors:

(1) Mining development;
(2) Industrial development;
(3) Thermal power (including geothermal power);
(4) Hydropower, dams and reservoirs;
(5) River/erosion control;
(6) Power transmission and distribution lines;
(7) Roads, railways and bridges;
(8) Airports;
(9) Ports and harbors;
(10) Water supply, sewage and wastewater treatment;
(11) Waste management and disposal;
(12) Agriculture involving large-scale land-clearing or irrigation;
(13) Forestry;
(14) Fisheries; and
(15) Tourism.

2. Illustrative list of sensitive characteristics are:

(1) Large-scale involuntary resettlement;
(2) Large-scale groundwater pumping;
(3) Large-scale land reclamation, land development and land-clearing; and
(4) Large-scale logging.

3. Illustrative list of sensitive areas are in the following areas or their vicinity:

(1) National parks, nationally-designated protected areas (coastal areas, wetlands, areas for ethnic minorities or indigenous peoples and cultural heritage, etc., designated by national governments) and areas being considered for natural parks or protected areas; and
(2) Areas the national or local governments believe to require careful considerations.

<Natural Environment>

・Primary forests or natural forests in tropical areas;
・Habitats with important ecological value (coral reefs, mangrove wetlands and tidal flats, etc.);
・Habitats of rare species requiring protection under domestic legislation, international treaties, etc.;

・Areas in danger of large-scale salt accumulation or soil erosion; and
Areas with a remarkable tendency towards desertification.

<Social Environment>

・Areas with unique archeological, historical or cultural value; and

・Areas inhabited by ethnic minorities, indigenous peoples or nomadic peoples with traditional ways of life and other areas with special social value.

Appendix 3. Screening Format

Name of a Proposed Project:
Project Executing Organization
Name, Post, Organization and Contact Point of a Responsible Officer

Name:
Post:
Organization:
Tel:
Fax:
E-Mail:
Date:
Signature:

Check Items

Question 1 Address of a project site:

Question 2 Outline of the project

2-1 Does the project come under following sectors?

□Yes □No

If yes, please mark the corresponding items.

□Mining development
□Industrial development
□Thermal power (including geothermal power)
□Hydropower, dams and reservoirs
□River/erosion control
□Power transmission and distribution lines
□Roads, railways and bridges
□Airports
□Ports and harbors
□Water supply, sewage and waste treatment
□Waste management and disposal
□Agriculture involving large-scale land-clearing or irrigation
□Forestry
□Fishery
□Tourism

2-2 Does the project include any of the following items?

□Yes □No

If yes, please mark following items that the project includes.

□Involuntary resettlement (scale: households persons)
□Groundwater pumping (scale: m3/year)
□Land reclamation, land development and land-clearing (scale: hectors)
□Logging (scale: hectors)

2-3 Description of the Project:
(Scale and/or Basic Information)

2-4 Is the project consistent with the higher program/policy?

□Yes: Please describe the higher program/policy.

（ ）

□No

2-5 Did the proponent consider alternatives before this request?

□Yes: Please describe outline of the alternatives

（ ）

□No

2-6 Did the proponent have meetings with related stakeholders before this request?

□Yes □No

If yes, please mark the corresponding stakeholders.

□Administrative body

□Local residents

□NGO

□Others（ ）

Question 3

Is the project a new one or an on-going one? In case of an on-going one, have you received strong complaints, etc., from local residents?

□New □On-going(there are complaints) □On-going (there are no complaints)

□Others (　　)

Question 4 Name(s) of laws or guidelines:

Is Environmental Impact Assessment (EIA) including Initial Environmental Examination (IEE) required for the project according to the laws or guidelines in the host country?

☐Yes ☐No

If yes, please mark corresponding items.

□Required only IEE (□Implemented, □on going, □planning)

□Required both IEE and EIA (□Implemented, □on going, □planning)

□Required only EIA (□Implemented, □on going, □planning)

□Others: (　　)

Question 5

In the case when EIA steps were taken, was the EIA approved by the relevant laws in the host country? If yes, please mark date of approval and the competent authority.

□Approved: without a supplementary condition	□Approved: with a supplementary condition	□Under appraisal

(Date of approval: Competent authority:)

□Not yet started an appraisal process

□Others:( )

Question 6

If the project requires a certificate pertaining to the environment and society other than the EIA, please indicate the title of that certificate.

□Already certified □Required a certificate but not yet done

Title of the certificate :( )

□Not required

□Others

Question 7

Are any of the following areas located inside or around the project site?

□Yes □No □Not identified

If yes, please mark corresponding items.

□National park, protected area designated by the government (coast line, wetlands, reserved area for ethnic or indigenous people, cultural heritage), and areas being considered for national parks or protected areas

□Virgin forests, tropical forests

□Ecological important habitat areas (coral reef, mangrove wetland, tidal flats)

□Habitat of valuable species protected by domestic laws or international treaties

□Likely salts cumulus or soil erosion areas on a massive scale

□Remarkable desertification trend areas

□Archaeological, historical or cultural valuable areas

□Living areas of ethnic, indigenous people or nomads who have a traditional lifestyle or special socially valuable areas

Question 8

Does the project have adverse impacts on the environment and local communities?

☐Yes ☐No ☐Not identified

Reason:

Question 9

Please mark related environmental and social impacts, and describe their outlines.

☐Air pollution
☐Water pollution
☐Soil pollution
☐Waste
☐Noise and vibration
☐Ground subsidence
☐Offensive odors
☐Geographical features
☐Bottom sediment
☐Biota and ecosystem
☐Water usage
☐Accidents
☐Global warming

☐Involuntary resettlement
☐Local economy such as employment and livelihood etc.
☐Land use and utilization of local resources
☐Social institutions such as social infrastructure and local decision-making institutions
☐Existing social infrastructures and services
☐The poor, indigenous of ethnic people
☐Misdistribution of benefit and damage
☐Local conflict of interests
☐Gender
☐Children's rights
☐Cultural heritage
☐Infectious diseases such as HIV/AIDS etc.
☐Others (　　)

Outline of related impacts:

Question 10

Information disclosure and meetings with stakeholders

10-1 If environmental and social considerations are required, does the proponent agree on information disclosure and meetings with stakeholders in accordance with JICA Guidelines for Environmental and Social Considerations?

☐Yes ☐No

10-2 If no, please describe reasons below.

Appendix 4. Environmental Impact Assessment Report for Category A Project regarding Detailed Design (D/D) Study except for Coordinated D/D Study with JBIC

The scope of EIA and the level of detail should be decided in accordance with the project's likely impacts. The EIA report should include the following items (not necessarily in the order shown).

1. Executive Summary
Discussing concisely the significant findings and recommended actions.

2. Policy, Legal and Administrative Framework
Discussing the policy and the legal and administrative framework within which the EIA report is to be carried out.

3. Project Description
Describing the proposed project and its geographic, ecological, social, and temporal context, including any off-site investments that may be required (e.g., pipelines, access roads, power plants, water supply, housing, and raw material and product storage facilities). Indicates the need for any resettlement or social development plan. Normally includes a map showing the project site and the area affected by the project.

4. Baseline Data
Assessing the dimensions of the study area and describing relevant physical, biological, and socioeconomic conditions, including all changes anticipated before the project commences. Additionally, takes into account current and proposed development activities within the project area but not directly connected to the project. Data should be relevant to decisions about the project site, design, operation and mitigation measures; the section indicates the accuracy, reliability and sources of the data.

5. Environmental Impacts
Predicting and assessing the project's likely positive and negative impacts, in the most quantitative terms possible. Identifies mitigation measures and any negative environmental impacts that cannot be mitigated. Explores opportunities for environmental improvement. Identifies and estimates the extent and quality of available data, essential data gaps, and uncertainties associated with predictions; and specifies topics that do not require further attention.

6. Analysis of Alternatives
Systematically comparing feasible alternatives to the proposed project site, technology, design and operation, including the "without project" situation, in terms of their potential environmental impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training and monitoring requirements. For each of the alternatives, the analysis quantifies the environmental impacts to the extent possible, and attaches economic values where feasible. States the basis for selecting the particular project design proposed and justifies recommended emission levels and approaches to pollution prevention and abatement.

7. Environmental Management Plan (EMP)
Describing mitigation measures, monitoring and institutional strengthening to be taken during construction and operation to minimize adverse impacts, offset them, or reduce them to acceptable levels.

8. Consultation

Record of consultation meetings, including consultations for obtaining the informed views of the affected people, local Non-governmental Organizations (NGOs) and competent authorities.

Note: This attachment is based on the World Bank Operational Policy - OP 4.01, Annex B.

Appendix -4

World Bank's Operational Policy 4.12 on Involuntary Resettlement

Search in Manual

Table of Contents

OPs

BPs
GPs
ODs
OpMemos
By Series

Definitions

Archived Statements

Selected Translations
Disclosure
Contact Us

OP 4.12 - Involuntary Resettlement

These policies were prepared for use by World Bank staff and are not necessarily a complete treatment of the subject.

OP 4.12
December, 2001

This Operational Policy statement was updated in March 2007 consequent to the issuance of OP/BP 8.00, ***Rapid Response to Crises and Emergencies***. **Previously revised in April 2004 to ensure consistency with the requirements of OP/BP 6.00, *Bank Financing,* issued in April 2004 which changes may be viewed here.**

Note: OP and BP 4.12 together replace OD 4.30, *Involuntary Resettlement*. These OP and BP apply to all projects for which a Project Concept Review takes place on or after January 1, 2002. Questions may be addressed to the Director, Social Development Department (SDV).

1. Bank[1] experience indicates that involuntary resettlement under development projects, if unmitigated, often gives rise to severe economic, social, and environmental risks: production systems are dismantled; people face impoverishment when their productive assets or income sources are lost; people are relocated to environments where their productive skills may be less applicable and the competition for resources greater; community institutions and social networks are weakened; kin groups are dispersed; and cultural identity, traditional authority, and the potential for mutual help are diminished or lost. This policy includes safeguards to address and mitigate these impoverishment risks.

Policy Objectives

2. Involuntary resettlement may cause severe long-term hardship, impoverishment, and environmental damage unless appropriate measures are carefully planned and carried out. For these reasons, the overall objectives of the Bank's policy on involuntary resettlement are the following:

(a) Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs.[2]

(b) Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons[3] should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.

(c) Displaced persons should 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 levels prevailing prior to he beginning of project implementation, whichever is higher.[4]

Impacts Covered

3 . This policy covers direct economic and social impacts[5] that both result from Bank-assisted investment projects,[6] and are caused by

(a) the involuntary[7] taking of land[8] resulting in

(i) relocation or loss of shelter;

(ii) lost of assets or access to assets; or

(iii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or

(b) the involuntary restriction of access[9] to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.

4. This policy applies to all components of the project that result in involuntary resettlement, regardless of the source of financing. It also applies to other activities resulting in involuntary resettlement, that in the judgment of the Bank, are

(a) directly and significantly related to the Bank-assisted project,

(b) necessary to achieve its objectives as set forth in the project documents; and

(c) carried out, or planned to be carried out, contemporaneously with the project.

5. Requests for guidance on the application and scope of this policy should be addressed to the Resettlement Committee (see BP 4.12, para. 7).[10]

Required Measures

6. To address the impacts covered under para. 3 (a) of this policy, the borrower prepares a resettlement plan or a resettlement policy framework (see paras. 25-30) that covers the following:

(a) The resettlement plan or resettlement policy framework includes measures to ensure that the displaced persons are

(i) informed about their options and rights pertaining to resettlement;

(ii) consulted on, offered choices among, and provided with technically and economically feasible resettlement alternatives; and

(iii) provided prompt and effective compensation at full replacement cost[11] for losses of assets[12] attributable directly to the project.

(b) If the impacts include physical relocation, the resettlement plan or resettlement policy framework includes measures to ensure that the displaced persons are

(i) provided assistance (such as moving allowances) during relocation; and

(ii) provided with residential housing, or housing sites, or, as required, agricultural sites for which a combination of productive potential, locational advantages, and other factors is at least equivalent to the advantages of the old site.[13]

(c) Where necessary to achieve the objectives of the policy, the resettlement plan or resettlement policy framework also include measures to ensure that displaced persons are

(i) offered support after displacement, for a transition period, based on a reasonable estimate of the time likely to be needed to restore their livelihood and standards of living;[14] and

(ii) provided with development assistance in addition to compensation measures described in paragraph 6(a);

(iii) such as land preparation, credit facilities, training, or job opportunities.

7. In projects involving involuntary restriction of access to legally designated parks and protected areas (see para. 3(b)), the nature of restrictions, as well as the type of measures necessary to mitigate adverse impacts, is determined with the participation of the displaced persons during the design and implementation of the project. In such cases, the borrower prepares a process framework acceptable to the Bank, describing the participatory process by which

(a) specific components of the project will be prepared and implemented;

(b) the criteria for eligibility of displaced persons will be determined;

(c) measures to assist the displaced persons in their efforts to improve their livelihoods, or at least to restore them, in real terms, while maintaining the sustainability of the park or protected area, will be identified; and

(d) potential conflicts involving displaced persons will be resolved.

The process framework also includes a description of the arrangements for implementing and monitoring the process.

8. To achieve the objectives of this policy, particular attention is paid to the needs of vulnerable groups among those displaced, especially those below the poverty line, the landless, the elderly, women and children, indigenous peoples,[15] ethnic minorities, or other displaced persons who may not be protected through national land compensation legislation.

9. Bank experience has shown that resettlement of indigenous peoples with traditional land-based modes of production is particularly complex and may have significant adverse impacts on their identity and cultural survival. For this reason, the Bank satisfies itself that the borrower has explored all viable alternative project designs to avoid physical displacement of these groups. When it is not feasible to

avoid such displacement, preference is given to land-based resettlement strategies for these groups (see para. 11) that are compatible with their cultural preferences and are prepared in consultation with them (see Annex A, para. 11).

10. The implementation of resettlement activities is linked to the implementation of the investment component of the project to ensure that displacement or restriction of access does not occur before necessary measures for resettlement are in place. For impacts covered in para. 3(a) of this policy, these measures include provision of compensation and of other assistance required for relocation, prior to displacement, and preparation and provision of resettlement sites with adequate facilities, where required. In particular, taking of land and related assets may take place only after compensation has been paid and, where applicable, resettlement sites and moving allowances have been provided to the displaced persons. For impacts covered in para. 3(b) of this policy, the measures to assist the displaced persons are implemented in accordance with the plan of action as part of the project (see para. 30).

11. Preference should be given to land-based resettlement strategies for displaced persons whose livelihoods are land-based. These strategies may include resettlement on public land (see footnote 1 above), or on private land acquired or purchased for resettlement. Whenever replacement land is offered, resettlers are provided with land for which a combination of productive potential, locational advantages, and other factors is at least equivalent to the advantages of the land taken. If land is not the preferred option of the displaced persons, the provision of land would adversely affect the sustainability of a park or protected area,[16] or sufficient land is not available at a reasonable price, non-land-based options built around opportunities for employment or self-employment should be provided in addition to cash compensation for land and other assets lost. The lack of adequate land must be demonstrated and documented to the satisfaction of the Bank.

12. Payment of cash compensation for lost assets may be appropriate where (a) livelihoods are land-based but the land taken for the project is a small fraction[17] of the affected asset and the residual is economically viable; (b) active markets for land, housing, and labor exist, displaced persons use such markets, and there is sufficient supply of land and housing; or (c) livelihoods are not land-based. Cash compensation levels should be sufficient to replace the lost land and other assets at full replacement cost in local markets.

13. For impacts covered under para. 3(a) of this policy, the Bank also requires the following:

(a) Displaced persons and their communities, and any host communities receiving them, are provided timely and relevant information, consulted on resettlement options, and offered opportunities to participate in planning, implementing, and monitoring resettlement. Appropriate and accessible grievance mechanisms are established for these groups.

(b) In new resettlement sites or host communities, infrastructure and public services are provided as necessary to improve, restore, or maintain accessibility and levels of service for the displaced persons and host communities. Alternative or similar resources are provided to compensate for the loss of access to community resources (such as fishing areas, grazing areas, fuel, or fodder).

(c) Patterns of community organization appropriate to the new circumstances are based on choices made by the displaced persons. To the extent possible, the existing social and cultural institutions of resettlers and any host communities are preserved and resettlers' preferences with respect to relocating in preexisting communities and groups are honored.

Eligibility for Benefits[18]

14. Upon identification of the need for involuntary resettlement in a project, the borrower carries out a census to identify the persons who will be affected by the project (see the Annex A, para. 6(a)), to determine who will be eligible for assistance, and to discourage inflow of people ineligible for assistance. The borrower also develops a procedure, satisfactory to the Bank, for establishing the criteria by which displaced persons will be deemed eligible for compensation and other resettlement assistance. The procedure includes provisions for meaningful consultations with affected persons and communities, local authorities, and, as appropriate, nongovernmental organizations (NGOs), and it specifies grievance mechanisms.

15. *Criteria for Eligibility*. Displaced persons may be classified in one of the following three groups:

(a) those who have formal legal rights to land (including customary and traditional rights recognized under the laws of the country);

(b) those who do not have formal legal rights to land at the time the census begins but have a claim to such land or assets--provided that such claims are recognized under the laws of the country or become recognized through a process identified in the resettlement plan (see Annex A, para. 7(f)); and[19]

(c) those who have no recognizable legal right or claim to the land they are occupying.

16. Persons covered under para. 15(a) and (b) are provided compensation for the land they lose, and other assistance in accordance with para. 6. Persons covered under para. 15(c) are provided resettlement assistance[20] in lieu of compensation for the land they occupy, and other assistance, as necessary, to achieve the objectives set out in this policy, if they occupy the project area prior to a cut-off

date established by the borrower and acceptable to the Bank.[21] Persons who encroach on the area after the cut-off date are not entitled to compensation or any other form of resettlement assistance. All persons included in para. 15(a), (b), or (c) are provided compensation for loss of assets other than land.

Resettlement Planning, Implementation, and Monitoring

17. To achieve the objectives of this policy, different planning instruments are used, depending on the type of project:

(a) a resettlement plan or abbreviated resettlement plan is required for all operations that entail involuntary resettlement unless otherwise specified (see para. 25 and Annex A);

(b) a resettlement policy framework is required for operations referred to in paras. 26-30 that may entail involuntary resettlement, unless otherwise specified (see Annex A; and

(c) a process framework is prepared for projects involving restriction of access in accordance with para. 3(b) (see para. 31).

18. The borrower is responsible for preparing, implementing, and monitoring a resettlement plan, a resettlement policy framework, or a process framework (the "resettlement instruments"), as appropriate, that conform to this policy. The resettlement instrument presents a strategy for achieving the objectives of the policy and covers all aspects of the proposed resettlement. Borrower commitment to, and capacity for, undertaking successful resettlement is a key determinant of Bank involvement in a project.

19. Resettlement planning includes early screening, scoping of key issues, the choice of resettlement instrument, and the information required to prepare the resettlement component or subcomponent. The scope and level of detail of the resettlement instruments vary with the magnitude and complexity of resettlement. In preparing the resettlement component, the borrower draws on appropriate social, technical, and legal expertise and on relevant community-based organizations and NGOs.[22] The borrower informs potentially displaced persons at an early stage about the resettlement aspects of the project and takes their views into account in project design.

20. The full costs of resettlement activities necessary to achieve the objectives of the project are included in the total costs of the project. The costs of resettlement, like the costs of other project activities, are treated as a charge against the economic benefits of the project; and any net benefits to resettlers (as compared to the "without-project" circumstances) are added to the benefits stream of the project. Resettlement components or free-standing resettlement projects need not be economically viable on their own, but they should be cost-effective.

21. The borrower ensures that the Project Implementation Plan is fully consistent with the resettlement instrument.

22. As a condition of appraisal of projects involving resettlement, the borrower provides the Bank with the relevant draft resettlement instrument which conforms to this policy, and makes it available at a place accessible to displaced persons and local NGOs, in a form, manner, and language that are understandable to them. Once the Bank accepts this instrument as providing an adequate basis for project appraisal, the Bank makes it available to the public through its InfoShop. After the Bank has approved the final resettlement instrument, the Bank and the borrower disclose it again in the same manner.[23]

23. The borrower's obligations to carry out the resettlement instrument and to keep the Bank informed of implementation progress are provided for in the legal agreements for the project.

24. The borrower is responsible for adequate monitoring and evaluation of the activities set forth in the resettlement instrument. The Bank regularly supervises resettlement implementation to determine compliance with the resettlement instrument. Upon completion of the project, the borrower undertakes an assessment to determine whether the objectives of the resettlement instrument have been achieved. The assessment takes into account the baseline conditions and the results of resettlement monitoring. If the assessment reveals that these objectives may not be realized, the borrower should propose follow-up measures that may serve as the basis for continued Bank supervision, as the Bank deems appropriate (see also BP 4.12, para. 16).

Resettlement Instruments

Resettlement Plan

25. A draft resettlement plan that conforms to this policy is a condition of appraisal (see Annex A, paras. 2-21) for projects referred to in para. 17(a) above.[24] However, where impacts on the entire displaced population are minor,[25] or fewer than 200 people are displaced, an abbreviated resettlement plan may be agreed with the borrower (see Annex A, para. 22). The information disclosure procedures set forth in para. 22 apply.

Resettlement Policy Framework

26. For sector investment operations that may involve involuntary resettlement, the Bank requires that the project implementing agency screen subprojects to be financed by the Bank to ensure their consistency with this OP. For these operations, the borrower submits, prior to appraisal, a resettlement policy framework that conforms to this policy (see Annex A, paras. 23-25). The framework also estimates, to the extent feasible, the total population to be displaced and the overall resettlement costs.

27. For financial intermediary operations that may involve involuntary resettlement, the Bank requires that the financial intermediary (FI) screen subprojects to be financed by the Bank to ensure their consistency with this OP. For these operations, the Bank requires that before appraisal the borrower or the FI submit to the Bank a resettlement policy framework conforming to this policy (see Annex A, paras. 23-25). In addition, the framework includes an assessment of the institutional capacity and procedures of each of the FIs that will be responsible for subproject financing. When, in the assessment of the Bank, no resettlement is envisaged in the subprojects to be financed by the FI, a resettlement policy framework is not required. Instead, the legal agreements specify the obligation of the FIs to obtain from the potential subborrowers a resettlement plan consistent with this policy if a subproject gives rise to resettlement. For all subprojects involving resettlement, the resettlement plan is provided to the Bank for approval before the subproject is accepted for Bank financing.

28. For other Bank-assisted project with multiple subprojects[26] that may involve involuntary resettlement, the Bank requires that a draft resettlement plan conforming to this policy be submitted to the Bank before appraisal of the project unless, because of the nature and design of the project or of a specific subproject or subprojects (a) the zone of impact of subprojects cannot be determined, or (b) the zone of impact is known but precise sitting alignments cannot be determined. In such cases, the borrower submits a resettlement policy framework consistent with this policy prior to appraisal (see Annex A, paras. 23-25). For other subprojects that do not fall within the above criteria, a resettlement plan conforming to this policy is required prior to appraisal.

29. For each subproject included in a project described in para. 26, 27, or 28 that may involve resettlement, the Bank requires that a satisfactory resettlement plan or an abbreviated resettlement plan that is consistent with the provisions of the policy framework be submitted to the Bank for approval before the subproject is accepted for Bank financing.

30. For projects described in paras. 26-28 above, the Bank may agree, in writing, that subproject resettlement plans may be approved by the project implementing agency or a responsible government agency or financial intermediary without prior Bank review, if that agency has demonstrated adequate institutional capacity to review resettlement plans and ensure their consistency with this policy. Any such delegation, and appropriate remedies for the entity's approval of resettlement plans found not to be in compliance with Bank policy, are provided for in the legal agreements for the project. In all such cases, implementation of the resettlement plans is subject to ex post review by the Bank.

Process Framework

31. For projects involving restriction of access in accordance with para. 3(b) above, the borrower provides the Bank with a draft process framework that conforms to the relevant provisions of this policy as a condition of appraisal. In addition, during project implementation and before to enforcing of the restriction, the borrower prepares a plan of action, acceptable to the Bank, describing the specific measures to be undertaken to assist the displaced persons and the arrangements for their implementation. The plan of action could take the form of a natural resources management plan prepared for the project.

Assistance to the Borrower

32. In furtherance of the objectives of this policy, the Bank may at a borrower's request support the borrower and other concerned entities by providing

(a) assistance to assess and strengthen resettlement policies, strategies, legal frameworks, and specific plans at a country, regional, or sectoral level;

(b) financing of technical assistance to strengthen the capacities of agencies responsible for resettlement, or of affected people to participate more effectively in resettlement operations;

(c) financing of technical assistance for developing resettlement policies, strategies, and specific plans, and for implementation, monitoring, and evaluation of resettlement activities; and

(d) financing of the investment costs of resettlement.

33. The Bank may finance either a component of the main investment causing displacement and requiring resettlement, or a free-standing resettlement project with appropriate cross-conditionalities, processed and implemented in parallel with the investment that causes the displacement. The Bank may finance resettlement even though it is not financing the main investment that makes resettlement necessary.

---

1. "Bank" includes IBRD and IDA; "loans" includes IDA credits and IDA grants, guarantees, Project Preparation Facility

(PPF) advances and grants; and "projects" includes projects under (a) adaptable program lending; (b) learning and innovation loans; (c) PPFs and Institutional Development Funds (IDFs), if they include investment activities; (d) grants under the Global Environment Facility and Montreal Protocol, for which the Bank is the implementing/executing agency; and (e) grants or loans provided by other donors that are administered by the Bank. The term "project" does not include programs under development policy lending operations. "Borrower" also includes, wherever the context requires, the guarantor or the project implementing agency.

2. In devising approaches to resettlement in Bank-assisted projects, other Bank policies should be taken into account, as relevant. These policies include OP 4.01, *Environmental Assessment,* OP 4.04*, Natural Habitats*, OP 4.10, *Indigenous Peoples*, and OP 4.11, *Physical Cultural Resources*.
3. The term "displaced persons" refers to persons who are affected in any of the ways described in para. 3 of this OP.
4. Displaced persons under para. 3(b) should be assisted in their efforts to improve or restore their livelihoods in a manner that maintains the sustainability of the parks and protected areas.
5. Where there are adverse indirect social or economic impacts, it is good practice for the borrower to undertake a social assessment and implement measures to minimize and mitigate adverse economic and social impacts, particularly upon poor and vulnerable groups. Other environmental, social, and economic impacts that do not result from land taking may be identified and addressed through environmental assessments and other project reports and instruments.
6. This policy does not apply to restrictions of access to natural resources under community-based projects, i.e. where the community using the resources decides to restrict access to these resources, provided that an assessment satisfactory to the Bank establishes that the community decision-making process is adequate, and that it provides for identification of appropriate measures to mitigate adverse impacts, if any, on the vulnerable members of the community. This policy also does not cover refugees from natural disasters, war, or civil strife (see OP/BP 8.00, *Rapid Response to Crises and Emergencies*).
7. For the purposes of this policy, "involuntary" means actions that may be taken without the displaced person's informed consent or power of choice.
8. "Land" includes anything growing on or permanently affixed to land, such as buildings and crops. This policy does not apply to regulations of natural resources on a national or regional level to promote their sustainability, such as watershed management, groundwater management, fisheries management, etc. The policy also does not apply to disputes between private parties in land titling projects, although it is good practice for the borrower to undertake a social assessment and implement measures to minimize and mitigate adverse social impacts, especially those affecting poor and vulnerable groups.
9. For the purposes of this policy, involuntary restriction of access covers restrictions on the use of resources imposed on people living outside the park or protected area, or on those who continue living inside the park or protected area during and after project implementation. In cases where new parks and protected areas are created as part of the project, persons who lose shelter, land, or other assets are covered under para. 3(a). Persons who lose shelter in existing parks and protected areas are also covered under para. 3(a).
10. The *Involuntary Resettlement Sourcebook* provides good practice guidance to staff on the policy.
11. "Replacement cost" is the method of valuation of assets that helps determine the amount sufficient to replace lost assets and cover transaction costs. In applying this method of valuation, depreciation of structures and assets should not be taken into account (for a detailed definition of replacement cost, see Annex A, footnote 1). For losses that cannot easily be valued or compensated for in monetary terms (e.g., access to public services, customers, and suppliers; or to fishing, grazing, or forest areas), attempts are made to establish access to equivalent and culturally acceptable resources and earning opportunities. Where domestic law does not meet the standard of compensation at full replacement cost, compensation under domestic law is supplemented by additional measures necessary to meet the replacement cost standard. Such additional assistance is distinct from resettlement assistance to be provided under other clauses of para. 6.
12. If the residual of the asset being taken is not economically viable, compensation and other resettlement assistance are provided as if the entire asset had been taken.
13. The alternative assets are provided with adequate tenure arrangements. The cost of alternative residential housing, housing sites, business premises, and agricultural sites to be provided can be set off against all or part of the compensation payable for the corresponding asset lost.
14. Such support could take the form of short-term jobs, subsistence support, salary maintenance or similar arrangements
15. See OP 4.10, *Indigenous Peoples.*
16. See OP 4.04, *Natural Habitats.*
17. As a general principle, this applies if the land taken constitutes less than 20% of the total productive area.
18. Paras. 13-15 do not apply to impacts covered under para. 3(b) of this policy. The eligibility criteria for displaced persons under 3 (b) are covered under the process framework (see paras. 7 and 30).
19. Such claims could be derived from adverse possession, from continued possession of public lands without government action for eviction (that is, with the implicit leave of the government), or from customary and traditional law and usage, and so on.
20. Resettlement assistance may consist of land, other assets, cash, employment, and so on, as appropriate.
21. Normally, this cut-off date is the date the census begins. The cut-off date could also be the date the project area was delineated, prior to the census, provided that there has been an effective public dissemination of information on the area delineated, and systematic and continuous dissemination subsequent to the delineation to prevent further population influx.
22. For projects that are highly risky or contentious, or that involve significant and complex resettlement activities, the borrower should normally engage an advisory panel of independent, internationally recognized resettlement specialists to advise on all aspects of the project relevant to the resettlement activities. The size, role, and frequency of meeting depend on the complexity of the resettlement. If independent technical advisory panels are established under OP 4.01, *Environmental Assessment,* the resettlement panel may form part of the environmental panel of experts.
23. See *The World Bank Policy on Disclosure of Information*, para. 34 (Washington, D.C.: World Bank, 2002).
24. An exception to this requirement may be made in highly unusual circumstances (such as emergency operations) with the approval of Bank Management (see BP 4.12, para. 8). In such cases, the Management's approval stipulates a timetable and budget for developing the resettlement plan.
25. Impacts are considered "minor" if the affected people are not physically displaced and less than 10 percent of their productive assets are lost.
26. For the purpose of this paragraph, the term "subprojects" includes components and subcomponents.

Annex A - Involuntary Resettlement Instruments

Permanent URL for this page: http://go.worldbank.org/96LQB2JT50

OP 4.12, Annex A - Involuntary Resettlement Instruments

These policies were prepared for use by World Bank staff and are not necessarily a complete treatment of the subject.

OP 4.12 - Annex A
December, 2001

1. This annex describes the elements of a resettlement plan, an abbreviated resettlement plan, a resettlement policy framework, and a resettlement process framework, as discussed in OP 4.12, paras. 17-31.

Resettlement Plan

2. The scope and level of detail of the resettlement plan vary with the magnitude and complexity of resettlement. The plan is based on up-to-date and reliable information about (a) the proposed resettlement and its impacts on the displaced persons and other adversely affected groups, and (b) the legal issues involved in resettlement. The resettlement plan covers the elements below, as relevant. When any element is not relevant to project circumstances, it should be noted in the resettlement plan.

3. *Description of the project*. General description of the project and identification of the project area.

4. *Potential impacts*. Identification of

(a) the project component or activities that give rise to resettlement;

(b) the zone of impact of such component or activities;

(c) the alternatives considered to avoid or minimize resettlement; and

(d) the mechanisms established to minimize resettlement, to the extent possible, during project implementation.

5. *Objectives*. The main objectives of the resettlement program.

6. *Socioeconomic studies*. The findings of socioeconomic studies to be conducted in the early stages of project preparation and with the involvement of potentially displaced people, including

(a) the results of a census survey covering

(i) current occupants of the affected area to establish a basis for the design of the resettlement program and to exclude subsequent inflows of people from eligibility for compensation and resettlement assistance;

(ii) standard characteristics of displaced households, including a description of production systems, labor, and household organization; and baseline information on livelihoods (including, as relevant, production levels and income derived from both formal and informal economic activities) and standards of living (including health status) of the displaced population;

(iii) the magnitude of the expected loss--total or partial--of assets, and the extent of displacement, physical or economic;

(iv) information on vulnerable groups or persons as provided for in OP 4.12, para. 8, for whom special provisions may have to be made; and

(v) provisions to update information on the displaced people's livelihoods and standards of living at regular intervals so that the latest information is available at the time of their displacement.

(b) Other studies describing the following

(i) land tenure and transfer systems, including an inventory of common property natural resources from which people derive their livelihoods and sustenance, non-title-based usufruct systems (including fishing, grazing, or use of forest areas) governed by local

recognized land allocation mechanisms, and any issues raised by different tenure systems in the project area;

(ii) the patterns of social interaction in the affected communities, including social networks and social support systems, and how they will be affected by the project;

(iii) public infrastructure and social services that will be affected; and

(iv) social and cultural characteristics of displaced communities, including a description of formal and informal institutions (e.g., community organizations, ritual groups, nongovernmental organizations (NGOs)) that may be relevant to the consultation strategy and to designing and implementing the resettlement activities.

7. *Legal framework*. The findings of an analysis of the legal framework, covering

(a) the scope of the power of eminent domain and the nature of compensation associated with it, in terms of both the valuation methodology and the timing of payment;

(b) the applicable legal and administrative procedures, including a description of the remedies available to displaced persons in the judicial process and the normal timeframe for such procedures, and any available alternative dispute resolution mechanisms that may be relevant to resettlement under the project;

(c) relevant law (including customary and traditional law) governing land tenure, valuation of assets and losses, compensation, and natural resource usage rights; customary personal law related to displacement; and environmental laws and social welfare legislation;

(d) laws and regulations relating to the agencies responsible for implementing resettlement activities;

(e) gaps, if any, between local laws covering eminent domain and resettlement and the Bank's resettlement policy, and the mechanisms to bridge such gaps; and

(f) any legal steps necessary to ensure the effective implementation of resettlement activities under the project, including, as appropriate, a process for recognizing claims to legal rights to land--including claims that derive from customary law and traditional usage (see OP 4.12, para.15 b).

8. *Institutional Framework.* The findings of an analysis of the institutional framework covering

(a) the identification of agencies responsible for resettlement activities and NGOs that may have a role in project implementation;

(b) an assessment of the institutional capacity of such agencies and NGOs; and

(c) any steps that are proposed to enhance the institutional capacity of agencies and NGOs responsible for resettlement implementation.

9. *Eligibility*. Definition of displaced persons and criteria for determining their eligibility for compensation and other resettlement assistance, including relevant cut-off dates.

10. *Valuation of and compensation for losses*. The methodology to be used in valuing losses to determine their replacement cost; and a description of the proposed types and levels of compensation under local law and such supplementary measures as are necessary to achieve replacement cost for lost assets.[1]

11. *Resettlement measures.* A description of the packages of compensation and other resettlement measures that will assist each category of eligible displaced persons to achieve the objectives of the policy (see OP 4.12, para. 6). In addition to being technically and economically feasible, the resettlement packages should be compatible with the cultural preferences of the displaced persons, and prepared in consultation with them.

12. *Site selection, site preparation, and relocation*. Alternative relocation sites considered and explanation of those selected, covering

(a) institutional and technical arrangements for identifying and preparing relocation sites, whether rural or urban, for which a combination of productive potential, locational advantages, and other factors is at least comparable to the advantages of the old sites, with an estimate of the time needed to acquire and transfer land and ancillary resources;

(b) any measures necessary to prevent land speculation or influx of ineligible persons at the selected sites;

(c) procedures for physical relocation under the project, including timetables for site preparation and transfer; and

(d) legal arrangements for regularizing tenure and transferring titles to resettlers.

13. *Housing, infrastructure, and social services*. Plans to provide (or to finance resettlers' provision of) housing, infrastructure (e.g., water supply, feeder roads), and social services (e.g., schools, health services);[2] plans to ensure comparable services to host populations; any necessary site development, engineering, and architectural designs for these facilities.

14. *Environmental protection and management*. A description of the boundaries of the relocation area; and an assessment of the environmental impacts of the proposed resettlement[3] and measures to mitigate and manage these impacts (coordinated as appropriate with the environmental assessment of the main investment requiring the resettlement).

15. *Community participation*. Involvement of resettlers and host communities,[4]

(a) a description of the strategy for consultation with and participation of resettlers andhosts in the design and implementation of the resettlement activities;

(b) a summary of the views expressed and how these views were taken into account in preparing the resettlement plan;

(c) a review of the resettlement alternatives presented and the choices made by displaced persons regarding options available to them, including choices related to forms of compensation and resettlement assistance, to relocating as individuals families or as parts of preexisting communities or kinship groups, to sustaining existing patterns of group organization, and to retaining access to cultural property (e.g. places of worship, pilgrimage centers, cemeteries);[5] and

(d) institutionalized arrangements by which displaced people can communicate their concerns to project authorities throughout planning and implementation, and measures to ensure that such vulnerable groups as indigenous people, ethnic minorities, the landless, and women are adequately represented.

16. *Integration with host populations*. Measures to mitigate the impact of resettlement on any host communities, including

(a) consultations with host communities and local governments;

(b) arrangements for prompt tendering of any payment due the hosts for land or other assets provided to resettlers;

(c) arrangements for addressing any conflict that may arise between resettlers and host communities; and

(d) any measures necessary to augment services (e.g., education, water, health, and production services) in host communities to make them at least comparable to services available to resettlers.

17. *Grievance procedures.* Affordable and accessible procedures for third-party settlement of disputes arising from resettlement; such grievance mechanisms should take into account the availability of judicial recourse and community and traditional dispute settlement mechanisms.

18. *Organizational responsibilities*. The organizational framework for implementing resettlement, including identification of agencies responsible for delivery of resettlement measures and provision of services; arrangements to ensure appropriate coordination between agencies and jurisdictions involved in implementation; and any measures (including technical assistance) needed to strengthen the implementing agencies' capacity to design and carry out resettlement activities; provisions for the transfer to local authorities or resettlers themselves of responsibility for managing facilities and services provided under the project and for transferring other such responsibilities from the resettlement implementing agencies, when appropriate.

19. *Implementation schedule*. An implementation schedule covering all resettlement activities from preparation through implementation, including target dates for the achievement of expected benefits to resettlers and hosts and terminating the various forms of assistance. The schedule should indicate how the resettlement activities are linked to the implementation of the overall project.

20. *Costs and budget*. Tables showing itemized cost estimates for all resettlement activities, including allowances for inflation, population growth, and other contingencies; timetables for expenditures; sources of funds; and arrangements for timely flow of funds, and funding for resettlement, if any, in areas outside the jurisdiction of the implementing agencies.

21. *Monitoring and evaluation*. Arrangements for monitoring of resettlement activities by the implementing agency, supplemented by independent monitors as considered appropriate by the Bank, to ensure complete and objective information; performance monitoring indicators to measure inputs, outputs, and outcomes for resettlement activities; involvement of the displaced persons in the monitoring process; evaluation of the impact of resettlement for a reasonable period after all resettlement and related development activities have been completed; using the results of resettlement monitoring to guide subsequent implementation.

Abbreviated Resettlement Plan

22. An abbreviated plan covers the following minimum elements:[6]

(a) a census survey of displaced persons and valuation of assets;

(b) description of compensation and other resettlement assistance to be provided;

(c) consultations with displaced people about acceptable alternatives;

(d) institutional responsibility for implementation and procedures for grievance redress;

(e) arrangements for monitoring and implementation; and

(f) a timetable and budget.

Resettlement Policy Framework

23. The purpose of the policy framework is to clarify resettlement principles, organizational arrangements, and design criteria to be applied to subprojects to be prepared during project implementation (see OP 4.12, paras. 26-28). Subproject resettlement plans consistent with the policy framework subsequently are submitted to the Bank for approval after specific planning information becomes available (see OP 4.12, para. 29).

24. The resettlement policy framework covers the following elements, consistent with the provisions described in OP 4.12, paras. 2 and 4:

(a) a brief description of the project and components for which land acquisition and resettlement are required, and an explanation of why a resettlement plan as described in paras. 2-21 or an abbreviated plan as described in para. 22 cannot be prepared by project appraisal;

(b) principles and objectives governing resettlement preparation and implementation;

(c) a description of the process for preparing and approving resettlement plans;

(d) estimated population displacement and likely categories of displaced persons, to the extent feasible;

(e) eligibility criteria for defining various categories of displaced persons;

(f) a legal framework reviewing the fit between borrower laws and regulations and Bank policy requirements and measures proposed to bridge any gaps between them;

(g) methods of valuing affected assets;

(h) organizational procedures for delivery of entitlements, including, for projects involving private sector intermediaries, the responsibilities of the financial intermediary, the government, and the private developer;

(i) a description of the implementation process, linking resettlement implementation to civil works;

(j) a description of grievance redress mechanisms;

(k) a description of the arrangements for funding resettlement, including the preparation and review of cost estimates, the flow of funds, and contingency arrangements;

(l) a description of mechanisms for consultations with, and participation of, displaced persons in planning, implementation, and monitoring; and

(m) arrangements for monitoring by the implementing agency and, if required, by independent monitors.

25. When a resettlement policy framework is the only document that needs to be submitted as a

condition of the loan, the resettlement plan to be submitted as a condition of subproject financing need not include the policy principles, entitlements, and eligibility criteria, organizational arrangements, arrangements for monitoring and evaluation, the framework for participation, and mechanisms for grievance redress set forth in the resettlement policy framework. The subproject-specific resettlement plan needs to include baseline census and socioeconomic survey information; specific compensation rates and standards; policy entitlements related to any additional impacts identified through the census or survey; description of resettlement sites and programs for improvement or restoration of livelihoods and standards of living; implementation schedule for resettlement activities; and detailed cost estimate.

Process Framework

26. A process framework is prepared when Bank-supported projects may cause restrictions in access to natural resources in legally designated parks and protected areas. The purpose of the process framework is to establish a process by which members of potentially affected communities participate in design of project components, determination of measures necessary to achieve resettlement policy objectives, and implementation and monitoring of relevant project activities (see OP 4.12, paras. 7 and 31).

27. Specifically, the process framework describes participatory processes by which the following activities will be accomplished

(a) *Project components will be prepared and implemented.* The document should briefly describe the project and components or activities that may involve new or more stringent restrictions on natural resource use. It should also describe the process by which potentially displaced persons participate in project design.

(b) *Criteria for eligibility of affected persons will be determined.* The document should establish that potentially affected communities will be involved in identifying any adverse impacts, assessing of the significance of impacts, and establishing of the criteria for eligibility for any mitigating or compensating measures necessary.

(c) *Measures to assist affected persons in their efforts to improve their livelihoods or restore them, in real terms, to pre-displacement levels, while maintaining the sustainability of the park or protected area will be identified.* The document should describe methods and procedures by which communities will identify and choose potential mitigating or compensating measures to be provided to those adversely affected, and procedures by which adversely affected community members will decide among the options available to them.

(d) *Potential conflicts or grievances within or between affected communities will be resolved.* The document should describe the process for resolving disputes relating to resource use restrictions that may arise between or among affected communities, and grievances that may arise from members of communities who are dissatisfied with the eligibility criteria, community planning measures, or actual implementation.

Additionally, the process framework should describe arrangements relating to the following

(e) *Administrative and legal procedures.* The document should review agreements reached regarding the process approach with relevant administrative jurisdictions and line ministries (including clear delineation for administrative and financial responsibilities under the project).

(f) *Monitoring arrangements.* The document should review arrangements for participatory monitoring of project activities as they relate to (beneficial and adverse) impacts on persons within the project impact area, and for monitoring the effectiveness of measures taken to improve (or at minimum restore) incomes and living standards.

---

1. With regard to land and structures, "replacement cost" is defined as follows: For agricultural land, it is the pre-project or pre-displacement, whichever is higher, market value of land of equal productive potential or use located in the vicinity of the affected land, plus the cost of preparing the land to levels similar to those of the affected land, plus the cost of any registration and transfer taxes. For land in urban areas, it is the pre-displacement market value of land of equal size and use, with similar or improved public infrastructure facilities and services and located in the vicinity of the affected land, plus the cost of any registration and transfer taxes. For houses and other structures, it is the market cost of the materials to build a replacement structure with an area and quality similar to or better than those of the affected structure, or to repair a partially affected structure, plus the cost of transporting building materials to the construction site, plus the cost of any labor and contractors' fees, plus the cost of any registration and transfer taxes. In determining the replacement cost, depreciation of the asset and the value of salvage materials are not taken into account, nor is the value of benefits to be derived from the project deducted from the valuation of an affected asset. Where domestic law does not meet the standard of compensation at full replacement cost, compensation under domestic law is supplemented by additional measures so as to meet the replacement cost standard. Such additional assistance is distinct from resettlement measures to be provided under other clauses in OP 4.12, para. 6.
2. Provision of health care services, particularly for pregnant women, infants, and the elderly, may be important during and after relocation to prevent increases in morbidity and mortality due to malnutrition, the psychological stress of being uprooted, and the increased risk of disease.
3. Negative impacts that should be anticipated and mitigated include, for rural resettlement, deforestation, overgrazing, soil erosion, sanitation, and pollution; for urban resettlement, projects should address such density-related issues as transportation capacity and access to potable water, sanitation systems, and health facilities.

4. Experience has shown that local NGOs often provide valuable assistance and ensure viable community participation.
5. OP 4.11, *Physical Cultural Resources.*
6. In case some of the displaced persons lose more than 10% of their productive assets or require physical relocation, the plan also covers a socioeconomic survey and income restoration measures.

OP 4.12 - Involuntary Resettlement

Permanent URL for this page: http://go.worldbank.org/JG37U0DYC0

Appendix -5

List of References

APPENDIX 5: LIST OF REFERENCES

1. Lusaka City, Lusaka Environmental Outlook Report

2. JICA, Guidelines for Environmental and Social Considerations

3. World Bank, Operational Policy 4.12 on Involuntary Resettlement

4. World Bank, Involuntary Resettlement Sourcebook

5. Asia Development Bank, Resettlement Handbook-Good Practice Guide