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THE REPUBLIC OF ZAMBIA

MINISTRY OF LOCAL GOVERNMENT AND HOUSING

LUSAKA WATER AND SEWERAGE COMPANY

ENVIRONMENT AND SOCIAL MANAGEMENT PLAN (ESMP)

FOR THE

LUSAKA SANITATION PROJECT (LSP)

MARCH 2015

INTRODUCTION

The Government of Zambia (GOZ) has agreed with the World Bank to prepare the Lusaka Sanitation Project (LSP) that will finance, (i) additional 82km of sewer lines and collectors to the existing sewage collection system, (ii) construction of three (3) pumping stations with capacities of 11 l/s, 58l/s, and 8l/s respectively, and (iii) upgrading and expansion of the Ngwerere sewage ponds from a current capacity of 8.3 ML to 16.6 ML.

The LSP strategically corresponds to the Lusaka Sanitation Program, which is an overall sanitation programme designed to implement the Lusaka Sanitation Master Plan developed by MCC in 2011. The entire sanitation program will be jointly financed by four (4) international financial institutions (IFIs) including, (i) the World Bank, (ii) the African Development Bank, (iii) European Investment Bank (EIB), and the German Development Bank.

This document provides an Environmental and Social Management Plan (ESMP) for the proposed LSP to be financed by the World Bank. The Lusaka Water and Sewerage Corporation (LWSC) is the agency responsible for implementing the LSP including the provisions of this ESMP. This report is to be used by the LWSC in order to ensure that all environmental and social safeguards are adequately addressed, and that the relevant capacity and training needs are established in order for the recommended measures to be effectively implemented, monitored and reported on.

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ACRONYMS

CBD	Central Business District
CBE	Community Based Enterprise
CBO	Community Based Organization
ESMP	Environment and Social Management Framework
ESMP	Environmental and Social Management Plan
EPPCA	Environmental Pollution Prevention Control Act
ESIA	Environmental and Social Impact Assessment
GRZ	Government of the Republic of Zambia
RDA	Road Development Agency
LCC	Lusaka City Council
LWSC	Lusaka Water and Sewerage Company Limited
MCDSS	Ministry of Community Development and Social Services
MLGH	Ministry of Local Government and Housing
MoH	Ministry of Health
MP	Member of Parliament
NOx	Oxides of Nitrogen
NWASCO	National Water and Sanitation Council of Zambia
PM	Particulate matter
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SOx	Oxides of Sulphur
STI	Sexually Transmitted Infection
ToRs	Terms of Reference
WDC	Ward Development Committee
WMU	Waste Management Unit
ZEMA	Zambia Environment Management Agency
ZESCO	Zambia Electricity Supply Corporation

1.1.

EXECUTIVE SUMMARY

Water supply and sanitation is a core development issue for Zambia's economic growth and social development. Lack of adequate water supply and sanitation results in poor public health and environmental conditions and, furthermore, constrains investment. Sixty-three percent of Zambians have access to clean drinking water supply compared to an MDG target of 75 percent by 2015 as defined by the United Nations Children's Program (UNICEF)/World Health Organization (WHO) Joint Monitoring Program (JMP). 43 percent have access to adequate sanitation, 56 percent in urban areas and 34 percent in rural areas, compared to a MDG target of 70 percent. The national long-term vision is to reach: (i) 100 percent access to clean water, (ii) 90 percent access to sanitation; (iii) rehabilitation and reconstruction of sewage facilities in all major towns and cities, and (iv) collection and treatment of 80 percent of all wastewater by 2030.

Lack of adequate sanitation in Zambia significantly impacts human development. Zambia loses 1.3 percent of GDP due to public health impacts of poor sanitation (Water and Sanitation Program, 2012), which results in child malnutrition, illness and premature death. The economic burden of inadequate sanitation falls most heavily on the poor who are most likely to have inadequate sanitation facilities.

The adverse impact of poor sanitation is most acute in Lusaka. Lusaka is suffering from a sanitation crisis that claims lives through annual outbreaks of cholera, typhoid and dysentery and causes severe environmental pollution. An estimated 70 percent of Lusaka's urban residents live in "peri-urban areas", which are relatively high-density, unplanned neighborhoods largely comprised of poor residents. Roughly 90 percent of peri-urban areas rely on pit latrines, most of which are unimproved latrines, i.e., do not comply with the JMP definition of adequate sanitation and the remaining 10 percent use sewers, septic tanks or defecate in the open (estimated at 1 percent). In addition, 57 percent of Lusaka's water supply is derived from fairly shallow groundwater abstracted within the city, which is prone to contamination through fissures in the underlying rock. The most vulnerable areas coincide with low-income neighborhoods situated to the south-west of the city center, making sewerage an attractive sanitation option in these areas, provided it is possible to ensure low leakage rates in operating the system. Poor management of solid waste and storm water drainage, and the generally flat terrain further compound these problems. Despite widespread consensus regarding the need to construct sewers, the city has been reluctant to shoulder investment costs, which may be difficult to recover.

The Lusaka Sewage Water and Sewage Company (LWSC) proposes to undertake the Lusaka Sanitation Project (LSP) with potential financial assistance from World Bank, African Development Bank, German Development Bank and European Investment Bank. The project is derived from the Lusaka Sanitation Program that was conceived from the Lusaka Sanitation Master Plan.

The Project Development Objective it to increase access to sanitation services in select areas of Lusaka and strengthen LWSC's capacity to manage sanitation services.

Project Beneficiaries
The project will have three types of direct beneficiaries:

LWSC sewerage customers. The project will upgrade existing sewers and main collectors and expand the sewerage system to new customers. The identified investments will provide 4,620 new connections (assuming 50 percent of the households in the sewered areas connect to the sewer) that will benefit 23,100 people. 82 km of sewers will be upgraded and laid, and the quality of sewerage effluent discharged from the Ngwerere Treatment Plan will be improved.

On-site sanitation customers. 180,000 people (of which 50 percent would be women) in 30,000 households are expected to benefit from 10,000 on-site sanitation facilities. It assumed that on average, three households will use one on-site facility, and that on average 18 people will benefit per facility, as per the findings of the Kanyama pilot project. Two Fecal Sludge Management (FSM) systems and service providers will be developed with the capacity to serve 20,000 on-site facilities, which in turn would benefit 360,000 people. These households will be selected in peri-urban areas in which poor people reside. Households will also benefit from improved hygiene and sanitation awareness.

LWSC water customers. All LWSC customers with water connections—currently 1.4 million people (of which 50 percent are women) using 91,342 connections—will benefit from improved protection of the groundwater and avoid further water treatment costs that would have been passed onto water supply customers by LWSC.

The Project is also likely to indirectly benefit non-LWSC customers in the intervention compounds and downstream from the WWTP effluents by reducing the contamination of surface and groundwater, which they consume. Stronger capacity to monitor effluents from WWTP, surface and groundwater quality and disease outbreaks is likely to benefit the population well beyond the geographical areas covered by the proposed project.

The LSP will be implemented within the Manchinchinchi and Ngwerere sewer sheds in the period 2015 to 2020. The project is structured into three components namely; Component 1 (Sewerage improvements for USD 42,000,000.00), Component 2 (On site sanitation for USD 13,000,000.00) and component 3 (Institutional strengthening for USD 7,000,000.00) totalling USD65, 000,000.00 with project preparation advance.

- The objective of this component 1 is to upgrade and expand sewerage systems in the Ngwerere and Manchinchi sewer sheds based on priority 1 investments as identified in the Lusaka Sanitation Master Plan.
- The objective of this component 2 is to develop a comprehensive response to the on-site sanitation challenge facing Lusaka and support on-site sanitation services and systems in priority areas.
- The objective of component 3 is to provide technical assistance (TA) to enhance LWSC's capacity to implement the project and operate and maintain the facilities.

Objective of ESMP

This ESMP is aimed at ensuring that implementing institutions in this project use it in order to ensure that the Bank's environmental safeguard policies as outlined in Operational Policy OP 4.01 (Environmental Assessment) are adequately complied with. This ESMP is expected to ensure that environmental and social management is integrated into the development and operation of investments to be financed under the LSP to ensure effective mitigation of potentially adverse impacts while enhancing accruing benefits.

The ESMP has been prepared in line with the relevant World Bank (WB) safeguard policies on social and environmental management and further taken into account the appropriate Government of Zambia (GOZ) policies, legal and institutional framework related to environmental and social assessment.

The ESMP seeks to establish a process of environmental and social screening, which will permit the institutions in charge of the implementation of the projects to identify, assess and mitigate the environmental and social impacts of sub project investments. The ESMP also determines the institutional measures to be taken during the program implementation, including capacity building activities.

Policy, Legal and Institutional Issues

The following legal instruments among others were reviewed in view of the fact that they provide guidance and regulations when implementing water related programs or projects. These are principally the government of Zambia legislations that apply to this project and a comparative analysis has been made between some certain relevant regulations of Zambia and the bank safeguards.

- *Environmental Management Act*
- *Water Supply and Sanitation Act*
- *Water Resources Management Act*
- *National Health Services Act*
- *Local Government Act*
- *The Zambia Wildlife Act*
- *The Road Traffic Act*
- *Public Roads Act*
- *The Town and Country Planning Act*
- *National Heritage Conservation Commission Act*
- *Forestry Act*
- *Petroleum Act*
- *Explosives Act*
- *Factories Act*
- *Occupational Health and Safety Act*
- *Energy Regulation Act, Chapter*

GOZ has through the LWSC prepared this ESMP as the instrument which all the LSP investments environmental and social impacts will be identified, assessed, evaluated and

appropriate mitigation, management and monitoring measures, designed and incorporated within the proposed investment itself. There is one other safeguards instruments that will compliment this ESMP and they are: Resettlement Policy Framework (RPF) already prepared and provides standards and procedures for compensation for any land acquisition, assets, or restriction of access to resources that this project and associated investment may require, in accordance with World Bank OP 4.12–Involuntary Resettlement.

Environmental and Social Requirements

In order to reduce, minimize and mitigate adverse impacts and undue harm of its development projects to the environment, all bank-financed projects are guided by environmental and social policies and procedures commonly referred to as safeguards instruments. A number of banks' policies[1] have been triggered as a result of this project and they include:

1. OP 4.01 (Environmental Assessment),
2. OP 4.12 (Involuntary Resettlement)
3. OP.7.50 (Projects on International Waterways)

All safeguards policies of the World Bank require that, before a project is appraised, an Environmental and Social Impact Assessment (EIA) containing an Environmental Management Plan (ESMP), or just an EMP, and if the project requires it, a Resettlement Action Plan (RAP), be made available for public review at a place accessible to local people (e.g. at a district council office, the project site, etc.) in a form, manner, and language they can understand. The public display of the documents should be advertised in a common local or regional newspaper. All necessary safeguard documents that will be locally disclosed will also be forwarded to the Bank for disclosure at its Public Information Center (PIC) of the country, if there is one, and at the Bank's Infoshop.

Environmental and Social Impacts

Beneficial Impacts

(i) The proposed project would contribute to the first pillar by supporting investments that would have positive effects on the health of poor residents in the beneficiary areas and the second pillar through enhanced economic development of the prioritized economic sectors through provision of improved infrastructure. In this way, the project is also well-aligned to the World Bank's twin goals of eliminating absolute poverty and promoting shared prosperity.

(ii) Construction and rehabilitation of water and sanitation facilities will have significant positive impacts on the health of the communities and populations in the targeted project areas. This will go a long way towards attaining the Millennium Development Goals (MDGs);

[1] The World Bank Safeguard Operational Policies (OPs) are OP4.01 – Environmental Assessment; OP4.04 – Natural Habitats; OP4.09 – Pest Management; OP4.10 Indigenous Peoples; OP4.11 – Physical Cultural Resources; OP4.12 – Involuntary Resettlement; OP4.36 – Forests; OP4.37 Safety of Dams; OP7.50 – Projects on International Waterways; and OP7.60 – Projects in Disputed Areas. See www.worldbank.org/safeguards for more information.

(iii) The project supports the Government's development plan by improving sanitation services of the poor in order to effect improvements in public health and raise dignity.

(iv) The project is part of the umbrella Lusaka Sanitation Program that is intended to improve public health, chronic malnutrition and reduce environmental pollution. Through the provision of adequate sanitation services, the Program is expected to improve Lusaka's poor public health outcomes, in particular, the incidence of cholera, dysentery, typhoid, diarrhea and environmental enteropathy, all of which have a strong impact on children under five stunting levels and mortality. These health outcomes predominantly impact the poor, and therefore the project is expected to primarily benefit poor households in Lusaka. In addition, investments will be focused on reducing the contamination of groundwater (Lusaka's main source of drinking water), which will impact water users in Lusaka.

Potential Adverse Impacts

The LSP proposed sub project investments may have significant negative impacts on the environment from a project specific perspective and cumulatively. This ESMP has been designed to anticipate and address potential impacts at the planning stage of existing and new investments and related activities. **Table** below summarizes the potential negative impacts that the sub project investments may have on the environment and proposed mitigation measures that should be considered during preparation of sub project ESIAs.

Summary of Potential Adverse Impacts of LSP Sub Project Investments

Environmental Concern/Impact Issue	**Mitigation Measure/Proposed Action**
Design Measures	• Take account of public consultation for environment, resettlement, gender and other areas of concern within the community. • Design to minimise resettlement, e.g. choose pipe alignment which do not directly impact dwellings or businesses and which during construction will cause minimal obstruction for access both to dwellings and businesses; allow "corridor for resettlement (RCOI) or 3.5m to move left/right flexibly to further avoid structures; and allow for 'Constrained' areas to be identified for which the contractor will use variation of construction methods, without destroying structures unnecessarily. • Design to minimise traffic disruption during construction, e.g. lay pipes within existing way-leaves and beneath verge, minimise trenches in roads, etc.

	• Take all practical measures to ensure road and public safety and accessibility, both during construction and operation, within the constraints of project budget. • Design for maximum recycling of existing construction materials to both reduce the requirement to exploit and transport new materials and also to minimise waste. • Design for use of locally available materials • Make minor adjustments to the road alignment to eliminate damage or degradation of historic and cultural sites. • Incorporate reuse of waste materials and use of designated disposal sites in the detailed design.
Flora and fauna	• Conducting special briefings and/or on-site training for the contractors and workers on the environmental requirements of the project. • Contractors to provide workers with social sensitivity training, which may be conducted at the same time as HIV awareness in which the problems and issues will be explained (elements of training may be provided by MCA-Zambia contracted third party) • Conducting other such briefing sessions as and when required.
Spoil and construction waste disposal	• Do not clear vegetation or damage vegetation outside of the worksite, do not cut trees, damage root system or lop branches without prior consent of PMC. • If identified, rare, endangered, threatened or endemic species or their habitats to be persevered or transferred as per ZEMA instructions. • Avoid stock piling of materials on vegetated areas. • Monitor stockpiling • Plant appropriate seedlings, indigenous to the area to regenerate vegetation to pre-project state. • Use of soil reinforcement where necessary to promote establishment of vegetation cover, biodegradable soil reinforcements can be used. • Works contractor responsible for vegetation until established
Quarrying and Borrow pits and temporary access roads	• Estimate the amounts and types of spoil and construction waste to be generated by the project. • Investigate whether the waste can be reused in the project or by other interested parties. • Document reuse and safe disposal of spoil and construction waste; including disposal sites and volumes for hazardous or contaminated waste. • Identify, in coordination with ZEMA as required, potential safe disposal sites close to the project. Investigate the environmental conditions of the disposal sites and prepare a recommendation for most suitable and safest site(s). • Designate disposal sites to be used in the project • Provide guidelines for proper and safe spoil and construction waste disposal. • Estimate amounts/types of materials to be used in project. • Assess whether spoil materials are suitable for construction • Identify potential borrow sites and investigate the environmental conditions and if they have the required permits and licenses.

	• Identify potential quarry sites and investigate the environmental conditions and if they have the required permits and licenses. • Opening, use of and closure of access roads in compliance with all relevant provisions for quarries and borrow pits • Temporary ditches and/or settling basins shall be dug to collect runoff water and to prevent erosion and contamination of surface water. • The undesirable ponding of water shall be prevented through temporary drains discharging to natural drainage channels. • The site is to be restored after construction activities have ceased. The site shall be left in a stable condition, without steep slopes. Stripped material shall be spread to stable contours in order to promote percolation and there shall be a regeneration programme with endemic species of natural vegetation and natural drainage. • Extraction of rocks, gravel and sand from small rivers or streams shall be discouraged. If extraction is necessary, then the extraction points shall be spread out along the length of the river and at a minimum specified distance from cross drainage structures to minimize disruption in river flow and to prevent instability to embankments. • The depth of material removal at any one location shall be limited and extraction areas shall be selected where there is little fine material to be carried downstream. • Local residents and water users shall be consulted to ensure that intakes, bunds and local fishing are not adversely impacted.
Dust, air, noise and vibration	• All heavy equipment and machinery shall be fitted with air pollution control and noise dampening devices that are operating correctly and that can operate within the Zambian statutory requirements for the areas of operation (e.g. sensitive locations besides schools or open country). • Works contractor with PMC will conduct consultation with the community to warn of potential discomforts, contractor methods of reducing pollution and discuss additional methods households may wish to further reduce discomforts. • Stockpiled materials such as sand and soil shall be lightly wetted before loading, particularly in windy conditions. • Vehicles transporting easily windblown materials such as sand and soil shall be covered with a tarpaulin. • The operation of heavy equipment shall be conducted only in daylight hours; damages to building or other property as a result of such activities are to be rectified by the works contractor at the contractor's cost. • Blasting shall not be used for excavation of rock, instead chemical expansion methods will be used to shatter rock which can then be excavated by machine. • Washing of tires and lower body of vehicles when moving out from the construction site, regular sweeping of sealed roads which must be kept free of mud from vehicle tyres and spilt materials. • Spraying of bare areas of ground with water while taking appropriate actions to negate sheet or rill erosion or sediment transportation into drains. • Strict adherence to speed limits during operation of all vehicle

	• Construction site will be kept clean and tidy, with materials optimally stored and covered. • Storing cement and other such fine-grained materials delivered in bulk in closed silos fitted with a high-level alarm indicator; weigh hoppers shall be vented to a suitable filter. • Employing fuel-efficient and well-maintained haulage trucks with proper exhaust baffles to minimize exhaust emissions. • Providing barriers in locations where strong winds are likely to blow away dust and debris.
Siltation	• Stockpile of earth fill and other material shall be kept covered at all times when not being accessed to protect against wind or water erosion. • Do not stockpile any materials over a water course or in depressions or valleys which are water paths. • Avoid stock piling of materials on the banks of watercourses or in any area prone to flooding.
Works contractor's temporary operational sites and locations	• Identify location of temporary operational sites in consultation with LCC and relevant local NGO. The location shall be subject to approval by LCC. • Water and sanitation facilities shall be provided sufficient for all users of temporary operational sites. Sanitation facilities will be located appropriately so as not to affect surface or ground water sources nearby and human health impacts • Managing solid waste and sewage according to Zambian laws and regulations. As a rule, solid waste must not be dumped, buried, or burned at or near the project site, but shall be disposed of at the nearest sanitary landfill or site having and complying with the necessary permits. • Waste segregation including transportation and collection • Ensuring that all liquid and solid hazardous and non-hazardous waste are separated, collected, and disposed of according to Zambian laws and regulations. • At conclusion of the project, removing all debris and waste, as well as all temporary structures. • At conclusion of the project, all wreckage, rubbish or temporary works that are no longer required shall be removed or given to local residents. All temporary structures, including office buildings, shelters and latrines, shall be removed. The site shall be restored to near natural and stable conditions. • Exposed areas shall be planted with indigenous vegetation as far as practical as existed prior to clearing the site. • The Engineer shall report in writing that the temporary operational site has been vacated and restored to pre-project conditions before acceptance of the works. • Contractors will keep records of labourers, including age confirmed by IDs to ensure child labour is not used. Labourers will be also be recruited in compliance with Zambian laws and FIDIC/IFC standards. This includes keeping records from sub-contractors.
Health Sanitation	• Construct male and female toilet facilities for workers to at least Zambian acceptable standards.

	• Adopt system for garbage collection and disposal/treatment. Disposal and treatment of hazardous waste and materials from demolition has to be carried out according the Zambian Laws and Regulations. Disposal sites are to be selected respecting the minimum specified distances form water protection zones, buffer zones of natural parks, settlements, abstraction facilities for water supply, while taking into consideration prevailing geological conditions.
Health and Safety of Workers	• Provide warning signs • An Emergency Management Plan shall be prepared to cope with all foreseen emergency incidents including medical, hazardous waste spill, fire and other emergencies, and will consider and consult with emergency services, community and workers and other stakeholders within the plan • Provide training and briefings for workers on safety their responsibility for their safety and the safety of others • Provide workers with and require the workers to use appropriate personal protective equipment (PPE) for the activity they are conducting including, at minimum, hard hat, fluorescent reflective vest, appropriate protective clothing and covered hard shoes and other PPE as appropriate. • Establish all relevant safety measures as required by Zambian law and good engineering practices. Appropriate rules for accident reporting are to be established. • Machinery operators will be appropriately qualified with vehicle license. The Health and Safety specialist of the contractor will monitor this on a regular basis. • Arranging for provision of first aid facilities, rapid availability of trained paramedical personnel, and emergency transport to nearest hospital with accident and emergency facilities. • Allocating responsibilities to ensure that these arrangements are in place. • Arranging for regular safety checks of vehicles and material, and allocating responsibility for checking. • Ensuring that material extraction operations are supervised and carried out by trained and experienced staff. • Establishing procedures and providing instructions about emergency evacuations and providing a list of 24 hours emergency contacts.
	• Providing HIV/AIDS and STI awareness training and encouraging voluntary and confidential HIV and STI testing. • The contractor will develop and follow an equal opportunities employment policy, allowing employment of all working age applicants who are qualified for the position, regardless of race, religion, gender. • Additional skills training for women interested in pursuing construction related employment. • Contractors will be required to record salaries of the different levels of skilled/professional/unskilled workers to be monitored. They will be required to pay at lease the minimum wage or higher depending upon the position and qualification.

	• The contractor will prepare a sexual harassment policy and appropriate, non-prejudicial grievance and investigation system.
Worker Welfare	• There is a policy of 'no child labour' on the Project. Contractors will keep records of labourers, including age confirmed by IDs to ensure child labour is not used. This includes keeping records from sub-contractors. • Where latrines and/or ablutions are supplied on worksites, and female workers are employed, gender segregated facilities will be supplied.
Employment opportunities for women during construction	• Achieve 30% minimum target employment for women (including equal remuneration for similar work) jobs are targeted for women in order to promote and increase opportunities and participation for women during construction. • Opportunities will be for skilled, semi-skilled and unskilled positions • The target will be monitored quarterly by MCA Zambia through PMC to establish whether Contractors are meeting the 30% target and this will be reported through the monitoring and evaluation sector throughout the Compact implementation period • The target will be specified and promoted through constructability reports, tender packages and works contractors' pre-bid conferences, quarterly briefing meetings with works contractors, quarterly reports and works contractors' TORs and Contracts. MCA-Zambia will assist works contractors to engage with the Road Development Agency (RDA), National Council for Construction (NCC) Zambia, Zambia Association of Women in Construction (ZAWIC) and other construction companies to identify possible linkages and engagement of women in construction. Women with experience in line with Compact sub-projects will be targeted. • MCA-Zambia will further assist works contractors by providing opportunities to engage with affected communities to promote equity in employment and assist them in reaching or exceeding the target allocation
Water Quality	• Proper construction management including, training of operators and other workers to avoid pollution of water bodies by the operation of construction machinery and equipment • Storage of lubricants, fuels, and other hydrocarbons in either double skinned tanks or bunded areas of capacity at least 110% the stored volume. • Disposal of water and waste products arising from the site via a suitably designed temporary drainage systems in a manner that will not cause pollution problems or other nuisance • Disposal of solid waste from construction activities and temporary operational sites to controlled waste disposal sites which will contain or ensure adequate bio-treatment of leachate before it can enter the water column.

	• Covering the construction material and spoil stockpiles with a suitable material to reduce material loss and sedimentation. • Locating temporary construction facilities including structures and material stockpiles at least 50 m away from water bodies and wetland areas • No disposal to surface or groundwater bodies and wetlands of wash water including that from cleaning concrete mixing plant, solid waste such as discarded packing, and excavated material. • Do not stockpile any materials over a water course or in depressions or valleys which are water paths. • Maintain vehicles and equipment in good operable condition and ensuring no leakage of oil, fuel or corruption (e.g. rust). • Performing regular checks that there is no release of potential pollutants from any equipment or plant; intervals not more than weekly and additional to servicing and routine maintenance. • Servicing of vehicles, machinery, and equipment at properly managed and equipped workshops where waste and corruption is captured and handled and disposed as hazardous waste. • Providing sanitation arrangements at work sites, offices and temporary accommodation which collect or treat all wastewater and sewage ensuring that contaminated wastewater or sewage cannot be released to water bodies.
Handling, Storage and disposal of Hazardous Materials	• Storing hydrocarbons and hazardous materials on impervious ground under cover and constructing the storage area as a spill tray to avoid spread of accidental spills. • Providing ventilation for storage of volatile chemicals • Restricting and controlling access to areas containing hazardous substances • Site all hot mix plant, crushing plant, workshops, depots, and temporary workers accommodation facilities in approved locations. • Using refrigerants and fire extinguishing agents in accordance with the 'Montreal Protocol'. • Provision of PPE for workers • Document safe disposal of hazardous or contaminated waste; including disposal sites and volumes. • Identify, in coordination with ZEMA as required, potential safe disposal sites for hazardous or contaminated waste. Investigate the environmental conditions of the disposal sites and prepare a recommendation for most suitable and safest site(s). • Designate disposal sites to be used in the project • PCBs, asbestos, lead paint residues and any other hazardous materials to be handled and disposed to ZEMA requirements, or where ZEMA has no specific requirements, to appropriate international standards.
Disposal of Hazardous Materials	• Estimate the amounts and types of hazardous construction waste to be generated by the project. • Document reuse and safe disposal of spoil and hazardous construction waste; including disposal sites and volumes.

	• Identify, in coordination with ZEMA as required, potential safe disposal sites close to the project. Investigate the environmental conditions of the disposal sites and prepare a recommendation for most suitable and safest site(s). • Designate disposal sites to be used in the project • PCBs and asbestos to be handled and disposed to international standards
Damage to Archaeology or Cultural Resources	• Ceasing work as soon as a archaeological or cultural find is encountered during earthworks or other construction activities • Providing relevant information to the NHCC of Zambia.
Traffic and Pedestrian Management During Construction	• Formulating and implementing a construction-related traffic management plan. • Installing traffic warning signs, and enforcing traffic regulations during transportation of materials, equipment, and machinery. • Conducting awareness programs on safety and proper traffic behaviour in densely populated areas near the construction sites. • Providing alternative access to pedestrians • Providing safe pedestrian access for businesses. • Arranging necessary measures for passer-by safety and all means of transportation safety (e.g., establishing protection zones, by-passing these areas during transportation of materials). • Installing relevant safety elements such as metal guardrails, road signs and delineators, pavement markings, barricades and beams, and warning lights. • Selecting quarry and borrow sites that are served by roads of adequate capacity for heavy trucks; where minor roads cannot be avoided including provisions for repair and restoration. • Controlling the loading and operating speeds of haulage vehicles • Repairing damages to roads caused by haulage of construction materials, spoil and equipment, and machinery.

The exact sub project locations and details are not yet fully known except for the Year 1 Investment subproject that will have a stand-alone Environment and Management Plan (ESMP) and Resettlement Action Plan (RAP) prepared alongside this Environment and Social Management Framework (ESMP). This ESMP sets out the process for subproject screening, resulting in appropriate safeguards management instrument being formulated.

The project areas consist of a mixture of typical urban setting and peri-urban setting. The peri-urban areas are made up of largely unplanned settlements where access for sewer installations is a major challenge. The urban areas are also heavily settled though the settlements are planned. There is also a lot of urban infrastructure including electricity network, road networks, telecommunication and billboards along the road reserve. The road reserves are also infested with vendors operating from both illegal and licensed market places. There is hardly much natural vegetation to talk about due to infrastructural development. The project area has a river network that eventually drains into Ngwerere, Chongwe and the Zambezi Rivers in that order.

In view of the above environment and social baseline and the nature of the project activities, the project triggered O.P 4.01 Environmental Assessment, O.P 4.36 Natural habitat, O.P 4.12 Involuntary Resettlement and O.P 7.50 International Waters. In line with the requirements of the above policies, this ESMP was formulated to cover the Environmental Assessment and the Natural habitat policies. An exemption to the notification requirements was sought in line with the International Waters policy while a Resettlement Policy Framework was formulated in line with Involuntary Resettlement Policy.

Reporting and Performance Review Requirements

The LWSCP through the LSP/Project Management Unit (PMU) that will be set up will prepare project specific quarterly environmental and social progress reports for submission to the Bank. These reports will be submitted to the World Bank's implementation support and review missions.

Capacity Building and Training

Capacity development and strengthening remains a crucial component in this ESMP and will be integrated all through the project implementation phase. Capacity building will be in the form of training seminars/ workshops and short courses for project implementing partner staff from the implementing agencies to be able to successfully implement environmental and social aspects of the LSP. The proposed training modules will cover among others:

a) *World Bank safeguards policies and ZEMA Environmental regulations, specifically covering including the ESMP/ RPF*
b) *Subproject Screening Checklist;*
c) *Environmental Monitoring*
d) *Development of Terms of Reference for ESIAs;*
e) *Environmental and Social Clauses in Contractors' contract and bidding documents.*

Public Consultations

Four different stakeholder meetings were held across the potential project areas. The first meeting was held for the Kafue Business Community at LWSC where the stakeholders welcomed the project, as it would alleviate the effluent disposal challenges for the sector. The stakeholders emphasized the need for rehabilitation of the trenched areas and liaison for the road cuttings to allow continued access to their business premises. The second stakeholder meeting was at Mulungushi Conference for more project wide businesses, NGOs, Government departments and local community leaders. Concerns from the meeting emphasized restoration of existing infrastructure that can be disturbed along the project areas. The third meeting was with vendors at the Donchi Kubeba Market. The vendors welcomed the project and requested to be given adequate notice and some form of compensation for the time they will not be working form the market since there are no alternative areas to work from. The forth meeting was with the community surrounding the

Ngwerere ponds where the community has encroached to farm within the ponds boundaries. The community consented that they have encroached and are willing to pave way for the project with adequate notice to target non-cropping seasons.

An impact projection for the project forecast the potential negative socio-economic impacts to include temporary relocation of vendors along targeted roads, temporary relocation of some billboards along targeted roads, temporary disruption of services from the already existing infrastructure along targeted roads, road cuttings, traffic congestion and disturbances to household entrances. Consultation with stakeholders showed that the impacts can be sustainably mitigated with the participation of all stakeholders, route redesign, relocation of some vendors to sites within the same vicinity and compensation in some cases. The potential negative environmental impacts most relate to potential increase in water pollution from increased effluent generation and soil erosion of the trenched and loosened soil. In all cases, the biophysical impacts can be mitigated with rehabilitation and increase in capacity for the targeted wastewater treatment facilities. Effluent reuse can also be a major intervention.

In order to effectively implement the provisions of this ESMP and other safeguards management tools, LWSC will work closely with a number of key regulatory authorities including ZEMA, RDA, LCC, MLGH, MoH and MWASCO in project implementation and monitoring. It will also work other institutions like ZESCO, ZAMTEL and Vendor organizations in impact mitigation. It is our conclusion that LWSC has the capacity to effectively implement the project, with adequate resourcing and implementation support from the World Bank.

Project Implementation

The project will be implemented by LWSC. LWSC is the commercial utility responsible for sanitation in Lusaka Province. All funds will flow through LWSC. LWSC has formed a Project Implementation Unit (PIU) that will manage the project. The structure of the PIU has been agreed by the Bank and has been judged to have sufficient capacity to implement the project. Key staff of the PIU include: Project Manager, Finance Officer, Procurement Officer, Safeguards Officer, Monitoring and Evaluation Specialist, Sanitary Engineer, On-site Sanitation Specialist, Community Development Specialist and Safeguards Specialist, and seconded staff from MLGH, MCDMCH and LCC. LWSC has recently implemented a Bank-financed project (WSPIP) and is familiar with Bank procedures, which will facilitate implementation. The PIU has retained most of the staff that were active in the implementation of WSPIP and intends to second most of these to the PIU.

LWSC will implement component 1 directly. The PIU will work closely with the Sewerage Department to implement this component 1. LWSC operates a network of 480km of sewers with seven wastewater treatment plants (WWTPs). The project will assist LWSC to strengthen the capacity of the Sewerage Department and the PIU to operate and maintain this larger network.

LWSC will implement component 2 in close collaboration with the Water Trusts. The Water Trusts were established over 10 years ago as community-based organizations contracted by LWSC to operate and maintain community-based water systems, collect revenues, and manage fecal sludge where applicable in specific areas. The decentralized local government structures in Zambia are based on ward systems. Each ward is a geographic area within the council area of jurisdiction and is represented in full Local Council by an elected ward councilor. The Ward Councilor heads a Ward Development Committee that has community representation from the different geographical sections of the ward. Ward Development Committees established Water Point Committees, which manage a communal water supply source. In the case of the peri-urban areas, these communal water management structures have been formalized into Water Trusts. There are currently 9 Water Trusts supporting over a third of Lusaka's peri-urban areas. LWSC will enter into an agreement or Memorandum of Understanding with each individual Water Trust. LWSC will procure all goods, works and services and be responsible for implementation. Water Trusts will be responsible for community mobilization, sanitation marketing, oversight of the latrine upgrading program and the operation of fecal sludge management systems and services once constructed. The ongoing institutional assessment will assist LWSC in drafting the MoUs. LWSC will contract NGOs and/or private companies to build the capacity and support the activities of the Water Trusts.

LWSC will implement component 3 in collaboration with other institutions. Sub-component 3.1 (Project management) and 3.2 (TA to LWSC) will be implemented directly by LWSC. Sub-component 3.3 (Project/Program monitoring) will be implemented in collaboration with MCDMCH and LCC. Fund will be managed by LWSC and all procurement will be the responsibility of LWSC; but technical oversight on key issues for the LCC and MCDMCH component will be done in collaboration with these institutions.

Steering Committee: The Government will form the Lusaka Sanitation Program Steering Committee to oversee preparation and implementation of the Program, as well as the Project. The Steering Committee will be chaired by MLGH and draw members from the Ministry of Health (MoH), Ministry of Community Development, Mother and Child Health (MCDMCH), LCC, NWASCO, and ZEMA, and others as seen relevant. LWSC will be the secretariat of the Steering Committee. The World Bank and the Program's other Cooperating Partners will support the Steering Committee as appropriate. The Steering Committee will be charged with providing oversight and guidance on project implementation. The Steering Committee will also facilitate inter-institutional collaboration and will resolve legal and policy bottlenecks. The Steering Committee will meet at least twice a year and shall inform government (through the MLGH) on progress and challenges confronting the project. The PIU shall provide secretariat services for the Steering Committee and shall be responsible for preparation of minutes and dissemination to key stakeholders including the World Bank.

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CHAPTER 1

1. INTRODUCTION

The Government of Zambia (GOZ) has agreed with the World Bank to prepare the Lusaka Sanitation Project (LSP) that will finance, (i) additional 82km of sewer lines and collectors to the existing sewage collection system, (ii) construction of three (3) pumping stations with capacities of 11 l/s, 58l/s, and 8l/s respectively, and (iii) upgrading and expansion of the Ngwerere sewage ponds from a current capacity of 8.3 ML to 16.6 ML.

The LSP strategically corresponds to the Lusaka Sanitation Program, which is an overall sanitation programme designed to implement the Lusaka Sanitation Master Plan developed by MCC in 2011. The entire sanitation program will be jointly financed by four (4) international financial institutions (IFIs) including, (i) the World Bank, (ii) the African Development Bank, (iii) European Investment Bank (EIB), and the German Development Bank.

This document provides an Environmental and Social Management Framework (ESMP) for the proposed LSP to be financed by the World Bank. The Lusaka Water and Sewerage Corporation (LWSC) is the agency responsible for implementing the LSP including the provisions of this ESMP. This report is to be used by the LWSC in order to ensure that all environmental and social safeguards are adequately addressed, and that the relevant capacity and training needs are established in order for the recommended measures to be effectively implemented, monitored and reported on.

1.1. LUSAKA SANITATION MASTER PLAN

The Lusaka Sanitation Master Plan (2011) provides a comprehensive strategy for full coverage of sanitation in Lusaka by 2035. Lusaka's sewer network of 480km covers about 30% of the city's area, and connects 14% of Lusaka's residents, mostly the better-off. Including on-site solutions (pit latrines and septic tanks), sanitation coverage reaches about 69%; however, many of these facilities do not meet public health requirements. Most on-site systems—septic tanks and pit latrines—are not working properly because of rocky conditions and a high water table—as such, the effluent/sewage is directly discharged into storm water drains and streams. Significant investments and reforms are required to reach the target of 100% sanitation coverage (on-site and off-site) cited in the Sanitation Master Plan by 2035. The Master Plan estimates that $1.9 billon is needed by 2035 and prioritizes investments into short term ($370 million), medium term ($635 million) and long term ($925 million). Short-term investments include collection system upgraded and expansion, treatment upgrades and expansion and on-site sanitation.

1.2. LUSAKA SANITATION PROGRAM

Lusaka Sanitation Program is the overall sanitation programme designed as the first step toward implementing the Lusaka Sanitation Master Plan with the aim of providing

adequate sanitation facilities to all urban citizens within the Lusaka Province starting with investments in Lusaka City. The Program is being implemented by the Lusaka Water and Sanitation Corporation (LWSC) and will be jointly financed by four International Financial Institutions (IFIs), (i) the European Investment Bank (EIB), (ii) Kreditanstalt fur Wiederaufbank (KfW), (iii) the African Development Bank (AfDB), and (iv) the World Bank. EIB and KfW will focus their support on sewerage and sludge treatment, whereas AfDB and the World Bank will support sewerage collection, on-site sanitation, and institutional strengthening. Of the five sewer sheds in Lusaka City, LWSC has proposed for the World Bank to finance investments in Ngwerere and Manchinchi sewersheds, whereas the AfDB will focus on Matero and Chunga. The Millennium Challenge Corporation, is already focusing on the Kaunda Square and Chelston sewersheds. While the World Bank's support is included under the Lusaka Sanitation Program, the Project Development Objectives for the World Bank's supported project can be achieved independent of other components of the overall Lusaka Sanitation Program.

1.3. OVERVIEW OF THE LUSAKA SANITATION PROJECT

The LSP project has the following three components.

- **Component 1: Sewerage improvements.** The objective of this component is to upgrade and expand sewerage systems in the Ngwerere and Manchinchi sewer sheds. Collection system upgrading and expansion will be based on priority 1 investments as identified in the Lusaka Sanitation Master Plan and complying with the agreed eligibility criteria. Year 1 investments will be in Emmasdale and Chaisa, Ngwerere interceptor, Kafue Road interceptor and Ngwerere sewerage ponds. Year 2 to 5 investments will be based on the sub-project appraisal documents prepared by LWSC and approved by the Bank.

- **Component 2: On-site sanitation.** The objective of this component is to develop a comprehensive response to the on-site sanitation challenge facing Lusaka and support on-site sanitation services and systems in priority areas. This component will focus on priority peri-urban areas that will not be sewered in the medium- to long-term due to technical and financial considerations. Investments will include partial subsidy for on-site sanitation facilities, support to the development of fecal sludge management (FSM) systems and service providers, and sanitation promotion and hygiene education. LWSC will support the Water Trusts to implement this component with the appropriate technical assistance.

- **Component 3: Institutional strengthening.** This component will provide technical assistance (TA) to enhance LWSC's capacity to implement the project and operate and maintain the facilities. This will include project management support to LWSC to implement the project, including staff, consultants, seconded staff from relevant institutions, audit costs and incremental operating costs; and TA to strengthen the capacity of LWSC to provide sanitation services, including TA to improve sanitation operations, equipment for sanitation operations and preparation

funds for future priority investments. This component will also support a performance contract between MLGH and LWSC. The component will provide support to the PMU to finance selected activities for relevant agencies such as MLGH, MoH and LCC to achieve an integrated approach to service improvements as appropriate.

1.4. JUSTIFICATION OF THE EMSF

Specific project investments have not been clearly identified at this stage, hence an ESMP provides a general impact identification framework to assist project implementers to screen the projects and institute measures to address adverse environmental and social impacts. This ESMP thus applies to all sub projects to be financed under LSP specifically for Phase 2 investments with the exception of the phase 1 investments, which are already known, and an ESMP has been prepared for these sub projects. Specific information on country- wide project locations, land requirements, bio- physical features etc. when known at a later stage will trigger the preparation of Environmental and Social Impact Assessment (ESIA) reports.

1.5. APPROACH FOR THE PREPARATION OF ESMP

The ESMP has been prepared in accordance with applicable World Bank safeguard policies (OP. 4.01), which involved the following activities, among others:

- *Literature/ Data Gathering and Review;*
- *Public consultations and discussions with relevant sector institutions;*
- *Determination of potential impacts; Identification of impact mitigation measures; Preparation of an Environmental and Social Management Plan; and Preparation of sub-project guidelines.*

The Zambian Environmental Act, Number 12 of 2011 as read with the Environment Impact Assessment Regulations, Number 28 of 1997 and the World Bank guidelines on environmental assessment provide a list of activities that require compulsory ESIA before implementation. This listing is applicable to project whose specific activities and locations are fully known such that the accompanying environment and social impacts can be identified, assessed and mitigated. Where the exact project details in terms of location and actual activities are not yet fully known, the World Bank safeguards policy provides for the formulation of the Environment and Social Management Project (ESMP).

The full details of the LSP sub projects are not yet fully known and the environmental and social impacts of the project cannot be substantially identified, assessed and mitigated in the context of the conventional ESIA process. The LSP spans through two sewer shed namely the Ngwerere and Manchinchi. While it is known that the project activities may include sewer extension and upgrade, and onsite sanitation interventions, the exact details will only be fully developed after the designs are done. Some of the locations that may be

covered by the LSP include and not limited to Kafue Road, Emmasdale, Chaisa, Kanyama, Kazanga and Mississi among others.

The exact package for each of the potential beneficiaries will be arrived at through sub project design and appraisal. The LSP project is categorized in B category according to the World Bank's Operational Policy OP4.01 (Environmental Assessment). This framework therefore, is designed to guide the establishment of appropriate level of environmental and social screening and management measures for implementation, in all the stages of the project activities, from the planning to implementation and decommissioning for each respective subproject.

1.6. PURPOSE OF THE ESMP

This ESMP seeks to establish a process of environmental and social screening, which will permit the institutions in charge of the implementation of the sub projects to identify, assess and mitigate the environmental and social impacts of sub project investments. The ESMP also determines the institutional measures to be taken during the program implementation, including those relating to capacity building.

1.7. OBJECTIVES OF THE ESMP

The main purpose of the ESMP is to:

- Establish clear procedures and methodologies for the environmental and social assessment, review, approval and implementation of investments to be financed under the project,
- Specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to the project investments,
- Determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMP, and provide practical information resources for implementing the ESMP, and
- Provide practical information resources for implementing the ESMP.

LSP project has been classified a category B project, exemption from the full ESIA requirement for the sub projects would have to be processed through the screening, review, approval and endorsement by the ZEMA and the World Bank.
The ESMP will outline the:

a) Steps of the screening process from identification to approval of the respective LSP sub projects. The screening process will determine the required safeguards tool for the respective subproject.
b) General environmental and social mitigation measures that can be applied and adopted at a broad perspective. More specific impacts and mitigation required will be contained in the respective subproject safeguards tool for the respective subproject.

c) Summary of the Bank's safeguards policies that are triggered by the LSP and to ensure the policy requirements are complied with during project planning, implementation and monitoring.
d) Summary of the local legislation that need to be complied with. This include ZEMA requirements, other regulatory authorities and rights of stakeholders.
e) Mechanism for consultation of key stakeholders in the project design, implementation and monitoring.

1.8. POTENTIAL USERS OF THE ESMP

This framework has been prepared as a reference manual for use by key stakeholders to be involved in the planning, implementation, management and operation of the proposed LSP. The framework would be useful to the key stakeholders in the persuasions of their varied interests in the project. Some stakeholders will use the framework for appraisal of the project while others will use it to implement the respective sub projects. Regulatory authorities will use the framework to assess compliance with the various legal requirements. The local communities and their leadership will use the framework for monitoring implementation of the various mitigation measures for the identified impacts. Local NGOs will use the framework to pressure the implementing agencies to adhere to the given mitigation measures. The following organizations are part of the key users of the framework;

- LWSC
- Ministry of Health
- Ministry of Local Government and National Housing
- ZEMA.
- Provincial Officers.
- Lusaka City Council (LCC)
- Government Extension Officers
- Local Communities.
- Local leaders.
- Local NGOs
- Water Trusts.
- Interested Parties.
- World Bank.
- African Development Bank
- Europian Investment Bank

1.9. METHODOLOGY USED IN PREPARING THE ESMP

Review on the existing baseline information and literature material was undertaken and helped in gaining a further and deeper understanding of the proposed project. A desk review of the Zambia's legal framework and policies was also conducted in order to the relevant legislations and policy documents that should be considered during project

implementation. Among the documents that were reviewed in order to familiarize and further understand the project included:

World Bank Related Documents

- *Aide Memoire for the LSP*
- *World Bank LSP Project Appraisal Document (PAD)*
- *World Bank Safeguards Policies*

Zambia's Legislative Documents

- *Environmental Act*
- *Water Act*
- *Energy Act*
- *Land Act*
- *Public Health Act*
- *Wildlife Act*
- *Forest Act*

1.9.1. Stakeholder Discussions

Stakeholder consultation formed part of the methodology in preparing this ESMP where the project interested and affected stakeholders who could be identified at this early stage were consulted. The issues raised and concerns expressed including possible mechanisms of addressing these issues and concerns are highlighted in the stakeholder consultation section and annex of this document. The stakeholder consultation was significant to the preparation of this ESMP and formed the basis for the determination of potential project impacts and design of viable mitigation measures.

1.9.2. Preparation of ESMP

Preparation of the ESMP included the following stages:

- *Collation of baseline data on the environmental conditions of the country in general;*
- *Identification of positive and negative environmental and social impacts of sub projects investments;*
- *Identification of environmental and social mitigation measures;*
- *Preparation of screening procedures to be for sub project proposals;*
- *Formulation of environmental and social monitoring plans.*

CHAPTER 2

2. PROJECT DESCRIPTION

Water supply and sanitation is a core development issue for Zambia's economic growth and social development. Lack of adequate water supply and sanitation results in poor public health and environmental conditions and, furthermore, constrains investment. Sixty-three percent of Zambians have access to clean drinking water supply compared to an MDG target of 75 percent by 2015 as defined by the United Nations Children's Program (UNICEF)/World Health Organization (WHO) Joint Monitoring Program (JMP). 43 percent have access to adequate sanitation, 56 percent in urban areas and 34 percent in rural areas, compared to a MDG target of 70 percent. The national long-term vision is to reach: (i) 100 percent access to clean water, (ii) 90 percent access to sanitation; (iii) rehabilitation and reconstruction of sewage facilities in all major towns and cities, and (iv) collection and treatment of 80 percent of all wastewater by 2030.

Lack of adequate sanitation in Zambia significantly impacts human development. Zambia loses 1.3 percent of GDP due to public health impacts of poor sanitation (Water and Sanitation Program, 2012), which results in child malnutrition, illness and premature death. The economic burden of inadequate sanitation falls most heavily on the poor who are most likely to have inadequate sanitation facilities.

The adverse impact of poor sanitation is most acute in Lusaka. Lusaka is suffering from a sanitation crisis that claims lives through annual outbreaks of cholera, typhoid and dysentery and causes severe environmental pollution. An estimated 70 percent of Lusaka's urban residents live in "peri-urban areas", which are relatively high-density, unplanned neighborhoods largely comprised of poor residents. Roughly 90 percent of peri-urban areas rely on pit latrines, most of which are unimproved latrines, i.e., do not comply with the JMP definition of adequate sanitation and the remaining 10 percent use sewers, septic tanks or defecate in the open (estimated at 1 percent). In addition, 57 percent of Lusaka's water supply is derived from fairly shallow groundwater abstracted within the city, which is prone to contamination through fissures in the underlying rock. The most vulnerable areas coincide with low-income neighborhoods situated to the south-west of the city center, making sewerage an attractive sanitation option in these areas, provided it is possible to ensure low leakage rates in operating the system. Poor management of solid waste and storm water drainage, and the generally flat terrain further compound these problems. Despite widespread consensus regarding the need to construct sewers, the city has been reluctant to shoulder investment costs, which may be difficult to recover.

The water sector reforms started in the 1990s need to be completed to increase both the financial viability of commercial utilities and the focus on sanitation. In 1994, the Government of Zambia (GRZ) launched a comprehensive water sector reform program aimed at ensuring quality provision of water supply and sanitation, at affordable costs and on a sustainable basis. The seven principles of this reform program laid out in the1994 National Water Policy called for: (i) separation of water resources functions from water supply and sanitation; (ii) the separation of regulatory and executive functions; (iii) the

devolution of responsibilities to local authorities and private enterprises; (iv) achievement of full cost recovery for water supply and sanitation (WSS) services through user charges in the long run; (v) human resources development for effective institutions; (vi) the adoption of technology in line with local conditions (and ability to pay); and (vii) increased GRZ priority and budget spending for the sector.

Good headway has been made to date particularly on the institutional and regulatory fronts. In terms of the separation of functions, while the Ministry of Energy and Water has overall responsibility for the water sector, water supply and sanitation falls under the auspices of the Ministry of Local Government and Housing (MLGH). Separation of the regulatory and executive functions was achieved through the passage of the Water Supply and Sanitation Act of 1997, which established the independent regulator, the National Water and Sanitation Council (NWASCO). Responsibility for service provision has been devolved to the Local Authorities who have established 11 municipally-owned regional Commercial Utilities to manage water and sanitation throughout the country. These utilities are regulated by NWASCO, and environmental pollution is regulated by the Zambian Environmental Management Agency (ZEMA). Significant progress has been made in terms of the separation of water resources management from water supply and sanitation, the separation of regulatory and executive functions and the devolution of authorities from the central to local governments. However, a second round of reforms is needed to improve the financial viability of these utilities and to build capacity for sanitation services throughout the country, and in Lusaka in particular.

The proposed project is aligned with the World Bank Country Partnership Strategy (CPS) (FY13-16) for Zambia. The CPS focuses on three pillars: (i) reducing poverty and vulnerability of the poor; (ii) improving competitiveness and infrastructure for growth and employment; and (iii) improving governance and economic management. The proposed project would contribute to the first pillar by supporting investments that would have positive effects on the health of poor residents in the beneficiary areas and the second pillar through enhanced economic development of the prioritized economic sectors through provision of improved infrastructure. In this way, the project is also well-aligned to the World Bank's twin goals of eliminating absolute poverty and promoting shared prosperity. The project was not included in the indicative financing program of the CPS, but is being explicitly included in the program for the CPS Performance and Learning Review (PLR) currently under preparation

The project is part of the umbrella Lusaka Sanitation Program which is intended to improve public health, chronic malnutrition and reduce environmental pollution. Through the provision of adequate sanitation services, the Program is expected to improve Lusaka's poor public health outcomes, in particular, the incidence of cholera, dysentery, typhoid, diarrhea and environmental enteropathy, all of which have a strong impact on children under five stunting levels and mortality. These health outcomes predominantly impact the poor, and therefore the project is expected to primarily benefit poor households in Lusaka. In addition, investments will be focused on reducing the contamination of groundwater (Lusaka's main source of drinking water), which will impact water users in Lusaka.

The Project Development Objective of the Lusaka Sanitation Project is to increase access to sanitation services in Lusaka and strengthen LWSC's capacity to manage sanitation services. The project has three components: sewerage improvements, on-site sanitation and institutional strengthening.

2.1. PROJECT BENEFICIARIES

The project will have three types of direct beneficiaries:

- **LWSC sewerage customers.** The project will upgrade existing sewers and main collectors and expand the sewerage system to new customers. The identified investments will provide 4,620 new connections (assuming 50 percent of the households in the sewered areas connect to the sewer) that will benefit 23,100 people. 82 km of sewers will be upgraded and laid, and the quality of sewerage effluent discharged from the Ngwerere Treatment Plan will be improved.

- **On-site sanitation customers.** 180,000 people (of which 50 percent would be women) in 30,000 households are expected to benefit from 10,000 on-site sanitation facilities. It assumed that on average, three households will use one on-site facility, and that on average 18 people will benefit per facility, as per the findings of the Kanyama pilot project. Two Fecal Sludge Management (FSM) systems and service providers will be developed with the capacity to serve 20,000 on-site facilities, which in turn would benefit 360,000 people. These households will be selected in peri-urban areas in which poor people reside. Households will also benefit from improved hygiene and sanitation awareness.

- **LWSC water customers.** All LWSC customers with water connections—currently 1.4 million people (of which 50 percent are women) using 91,342 connections—will benefit from improved protection of the groundwater and avoid further water treatment costs that would have been passed onto water supply customers by LWSC.

- The Project is also likely to indirectly benefit non-LWSC customers in the intervention compounds and downstream from the WWTP effluents by reducing the contamination of surface and groundwater, which they consume. Stronger capacity to monitor effluents from WWTP, surface and groundwater quality and disease outbreaks is likely to benefit the population well beyond the geographical areas covered by the proposed project.

The project will have the following three components.

2.1.1. Component 1: Sewerage Improvements

Sewerage improvements: The objective of this component is to upgrade and expand sewerage systems in the Ngwerere and Manchinchi sewersheds. Collection system upgrading and expansion will be based on priority 1 investments as identified in the Lusaka Sanitation Master Plan and complying with the agreed eligibility criteria. Year 1 investments will include sewer network expansion in Emmasdale and Chaisa neighborhoods and Kafue Road Interceptor and sewer network upgrade of Ngwerere Western Interceptor. Year 2 to 5 investments will be network expansion in Chawama-Kuomboko and Garden, upgrade of Ngwerere Downstream Collector and upgrade and extension of Ngwerere Sewage Ponds.

14% of Lusaka's population is connected to piped sewerage and the remainder relies on on-site solutions (pit latrines and septic tanks) or open defecation. Map 2 (annex 7) provides details on the predominant forms of sanitation throughout Lusaka City: sewered areas are those areas service by LWSC with conventional water-borne sewers; private sewered areas are areas in which private developers have provided their own sewers (and sometime their own treatment facilities), septic tank areas on those areas in which the majority of households use some form of closed, underground tank to contain sewerage and drain into a soak away, and pit latrine areas have some form of basic latrine. Most of the septic tanks and pit latrines do not comply with the WHO/UNICEF Joint Monitoring Program standards for "adequate sanitation".

The sewerage system comprises of 480km of sewers, 8 pumping stations and seven wastewater treatment plants (WWTP). The majority of the collection system is more than 40 years old and hardly any investments have been made in the sanitation sector since then. The recently completed hydraulic model shows that more than half of the existing interceptors are likely under capacity, even under today's flows. The WWTPs have combined design capacity of 67,000 m3/day. Two WWTPs, Manchinchi and Chunga are "conventional" biological treatment plants (using trickling filters) and five are waste stabilization ponds. The WWTPs discharge is not compliant with health and environmental standards, representing a health hazard to the nearby and downstream populations. LWSC pays annual fines to ZEMA for non-compliance.

Fifty-seven percent of Lusaka's water supply is abstracted from the groundwater aquifer running through the city. A total of 107 boreholes are located across Lusaka, though the majority and those with the largest capacity are located to the south and south-west (Lusaka's industrial area). Lusaka has an unusually high ground water table which is prone to contamination, particularly in high density neighborhoods without adequate sanitation. Some of the wells already show increasing concentrations of nitrogen and have actually been shut down due to quality issues.

The Lusaka Sanitation Master Plan aims for 100% sanitation coverage for Lusaka Province by 2035 through a combination of off-site and on-site systems. Investment needs in the amount of $ 1.9 billion have been identified, including $ 1.3 billion (67%) for sewer collection and treatment facilities and $ 640 million for improved on-site sanitation

systems. The 94 sub-projects identified for sewerage and wastewater treatment are grouped into three categories: (1) $370 million (20%) for priority 1 short term investments (until 2015), (2) $635 million (30%) for medium term investments (until 2020) and (3) $925 million (50%) long-term investments (until 2035). After their implementation, 57% of Lusaka's households would have a household sewer connection, with the rest relying on on-site sanitation. The ranking criteria applied were (i) infrastructure needs for the respective planning period; and (ii) maximum benefits from a technical and public health viewpoint. Existing networks being already overloaded and in need of rehabilitation were classified as most critical.

Feasibility studies and preliminary designs were prepared in 2012 for a number of priority 1 sub-projects identified in the Master Plan. The MCC agreed to finance and implement projects in two of the five sewersheds: Kaunda Square and Chelston. Feasibility studies and conceptual designs are available for priority sub-projects in the amount approximately $60 million (including VAT) for the Manchinchi and Ngwerere sewersheds. These sub-projects include expanding and upgrading sewers and the Ngwerere and Garden Sewage Ponds. As part of project preparation, additional feasibility studies have been commissioned for more priority projects. Detailed design and preparation of tender documents for a selection of these sub-projects is ongoing as part of the recently commissioned consultancy for preparation of additional feasibility studies. This permits their implementation to commence in year one of project effectiveness.

The project will use innovative sanitation technologies where appropriate. The project will use condominial sewers, decentralized wastewater systems (dewats) and other innovate technologies as appropriate, and as recommended in the feasibility studies. The project will draw lessons for the ongoing Kalingalinga condominial sewerage pilot project. "Condominial sewerage" is the application of simplified sewerage (small bore, low cost) coupled with consultations between users and agencies during planning and implementation, popularized in Brazil. LWSC—with technical assistance from the Water and Sanitation Program (WSP) —has been piloting the use of condominial sewerage in Kalingalinga, a peri-urban area of Lusaka with 45,000 people.

2.1.2. Year 1 investments

i. CSE – 23 Sewer Network Expansion along Kafue Road (Manchinchi Sewershed)

The targeted 112 ha area is located in the south-west of Lusaka and extends from the roundabout at the southern end of Cairo Road to the junction of Kafue Road with Chifundo Road. It is a growing commercial area including a large shopping center in the north, having currently on-site sanitation systems. The geology of the area is unfavorable for on-site solutions with a shallow rock layer, a high groundwater table and the area being prone to flooding. The proposed sewer system will not only serve this industrial area but in future receive also the sewerage from the Kuomboka sewer service area (SCE-25), being another priority sub-project. Additional individual water supply connections will be provided in

parallel to sewerage. The sub-project includes construction of 7.6 km of sewers of dia. 300 to 600 mm and provides 132 commercial enterprises access to sanitation. One collector on each side of the road is planned with the eastern one being able to take up the future flows from Kuomboka. Two pump stations will be constructed with capacities of 11 l/s at 7 m head and 58 l/s at 6m head. These will simply lift the sewage without the need of force mains. The collected wastewater will discharge into the existing Manchinchi main collector ending at the Manchinchi wastewater treatment plant, both facilities being upgraded under the EIB project.

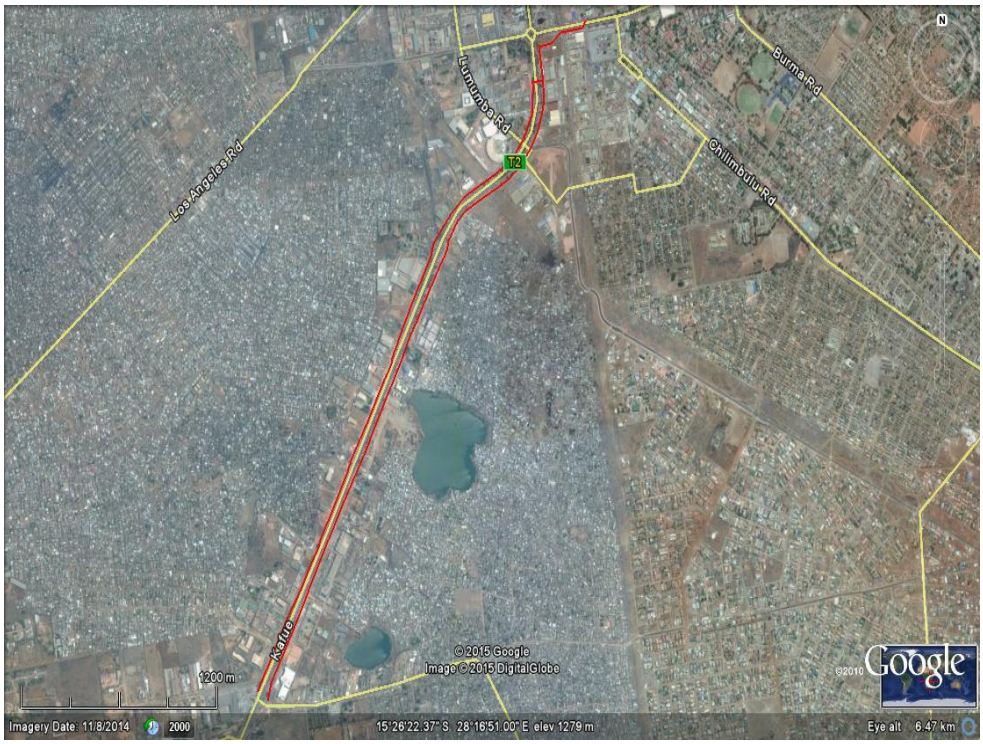


Fig 2.2 Kafue Road Project area.

ii. CSE – 08 Sewer Network Expansion Emmasdale & Chaisa (Ngwerere Sewershed).

Part of Emmasdale is already sewered and the project will connect the remaining area of 124 ha. The residential and commercial facilities existing in the area are currently served by septic tanks. The area is moderately flood prone and swampy in some portions. The population density is medium. The number of people served will be 12,917 with 1,496 domestic connections and 23 commercial connections. The sub-project includes construction of 9.82 Km gravity sewers of dia. 200 to 400, as well as a pumping station for 8 l/s and 10 m head plus a 350 m long force main of dia. 200 mm. Out of 15,1 Km reported in MCC feasibility report, 5.28 Km has be constructed by the community. The collected sewage will be discharged into the Ngwerere West Interceptor which is also going to be upgraded under this same project. . The wastewater is discharged into the Ngwerere ponds where it undergoes for treatment.

Sewer expansion in Chipata compound is approximately 26.55Km, which is 107 ha. It is primarily a highly populated residential area currently being served by pit latrines. Like Emmasdale area, it is moderately flood prone. The number of people served will be 23,190 with 3,464 domestic connections and 64 commercial connections. The sub-project includes construction of gravity sewers of dia. 200 to 600mm. Flow from Chipata service area will flow into Ngwerere interceptor just south of Kabanana.

iii. CSU-05 Upgrade of Ngwerere West Interceptor (Ngwerere Sewershed).

This existing interceptor starts 700 m west of the Great North Road and runs east till it discharges into the Ngwerere East interceptor. It follows a natural stream which is part of the Bombay Drain system and actually runs within the stream in Chaisa and Mutambe (Marapodi) locations. The collector made of AC, 40 years old and has inadequate capacity. During rainy season, the interceptor surcharges and spills into the stream which further runs down stream and pollutes a water supply source in Chongwe town. The project proposes realigning and upgrading of 2.8 km of the collector of dia. 600 and 700 mm.

The stretch from the starting manhole to some manhole near Grace Ministry, the capacity is not adequate. The pipe which drains into the starting manhole of the interceptor is bigger than the receiving pipe. This causes sewer spillage at the manhole especially during peak hours. The draining pipe dia. Is about 300mm while the receiving dia. Is 200mm. Therefore an upgrade is required. On the west of the Great North Road along Lumumba road, the interceptor crosses a small stream and goes under few structures and buildings under construction. This part is reported to have adequate capacity and does not require any upgrade.

East of the Great north Road, the alignment of the existing interceptor follows a surfaced road which is lined by small kiosks and this poses challenges to realign to fall within the existing road reserve. Further, the existing interceptor continues eastwards through Chipata/ marapodi along the stream and crosses the rail line. The interceptor is hemmed by houses and other structures on both sides, thus reducing accessibility and construction space. Despite reduced construction space, it was proposed to be the best option as it provides a natural slope along the drain and it will not require pumping.

To the east of the railway crossing, the existing alignment runs between the stream and unsurfaced roadway. However an upgrade interceptor will follow the existing road reserve to avoid resettlement impacts.

After Kasangula Road up to the connection point with Ngwerere East interceptor, the alignment will follow the existing road reserve to minimize stream crossing. A section of the existing interceptor will be retained as it has adequate capacity and it minimizes resettlement impacts. The existing interceptor ranges between 200 mm and 700 mm in diameter. It is proposed to upgrade it between 600 mm and 700 mm in diameter.

2.2. PROJECT ACTIVITIES

2.2.1. Planning Phase

The planning phase for this project will have the following activities;

- Conclusion of the designs by the consultant
- Preparation of the tender documents
- Appointment of the contractors
- Induction of contractor and consultants on ESMP and other applicable safeguards instruments.
- Implementation of the RAP.

It is very important that the resettlement issues of this project be attended to before the construction phase.

2.2.2. Construction Phase

The above year one investments has the following project activities;

i. Mobilisation

The contractors will be expected to mobilise to sites upon signing of the contracts. It is expected that site establishments will be in place in readiness for commencement of works. The contractors will also perform general ground clearance of the proposed routes to allow for excavation works. The contractor is expected to ensure the following provisions at site;

- Security of property of material and employees.
- Adequate water and sanitation facility.
- Appropriate personal protective equipment (PPE).
- Waste management system.
- Appointment of Safety, Health and Environment personnel for liaison will LWSC and regulatory authorities including ZEMA, LCC and Ministry Health.

It is anticipated that the Contractor's camp will have minimum people staying in the camp since the labor supply is within working distances. With this approach, the camp occupational safety, health and environment requirements are expected to be minimum. The following usually applicable camp establishment impacts are therefore negligible.

- HIV and AIDS related issues.
- Cultural dilution.
- Overloading existing social support services like police, medical facilities and water supply to mention a few.

ii. Excavation

The sewer network and sewer interceptor installation will involve trenching to different depths depending on the design levels. It is expected that the trenching will vary from as shallow as one meter to four meters. The trenching will also vary from mechanized trenching to manual depending on the work area constraints and the depth of the trenches. During this activity, there will be need for adequate room for the excavator to operate. It is estimated that the excavator may require up to two meters of work area either side of the line, making the total footprint of five meters along the road reserve. The work area requirement may be much less especially in the collection network that can be trenched manually. This activity is the most critical in terms of environmental and social impacts.

Along the Kafue Road, excavations will affect pedestrian footpaths, vendors, billboards, other infrastructure like electricity lines, telecommunication lines and water supply pipes just to mention a few. The respective institutions that have infrastructure along this road have been identified, consulted and engaged for cooperation during the project implementation. Institutions that have been engaged include ZAMTEL, ZESCO, LCC, RDA and Vendor clusters.

For Emmasdale area the excavation works will involve cutting across tarred roads, paved areas, gate entrances and other household related infrastructure. It is also anticipated that service cables for utility companies like ZESCO and ZAMTEL may be encountered in the process. The other limitation may be the narrow working space in some areas especially along the Great North Road. This may cause the excavation works to be done along the drainages for the roads. Nevertheless, the community and its local leaders have been notified about the project and have concerted to the project.

iii. No rock blasting

Some of the project areas along the Kafue Road have some rock outcrops and will require some form of blasting or chemical rock shuttering. Considering the density of vehicles, vendors, construction, pedestrians and other infrastructure, it will not be permissible to undertake open blasting. This leaves LWSC with options of drilling or chemical rock shattering. The geology of Emmasdale is not likely to generate some need for blasting.

Fig 2.3 Some underlying rocks along the Kafue Road

iv. Pipe jacking (no-dig pipe laying).

The Kafue Road is a busy highway that connects Lusaka City with the southern towns and Zimbabwe. The pipeline will cross this busy road near the down town shopping mall. In the Ngwerere Western interceptor upgraded, the pipeline will also cross the great North road to join the Ngwerere Eastern interceptor. The most appropriate alternative will be established upon completion of designs.

v. Dewatering as necessary.

Emmasdale is a former damboo area that was converted into residential area and the potential for waterlogging is still very high. In such areas, the trenches are likely to be waterlogged and there will be dewatering where required. A mobile pumping system run on diesel will be used. The pumping equipment will be a low noise one and will be serviced regularly to improve on combustion efficiency and minimize air pollution.

- Pipe installation
- The major activities under pipe installation will include
- Pipe laying and backfilling.
- Construction of manhole chambers and ancillary concreting.
- Reinstatement of paved and gravel roads.
- Building works including electrics and plumbing; and

vi. Line testing.

Rehabilitation. As indicated in the RAP, the project will have some disturbances to existing infrastructure including household entrances and driveways. Rehabilitation is one of the

key project activities. During this period, road crossing, gate entrances and road reserve excavations will be restored.

2.2.3. Operation and Maintenance Phase

Upon completion of the works, the contractors will hand over the sewer network to LWSC. However, the contractors will still be responsible for maintenance works till the defects liability period expires. The later will then take full responsibility for operation and maintenance upon the expiration of the defects liability period.

2.3. PROJECT INSTITUTIONAL AND IMPLEMENTTAION ARRANGEMENTS

The project will be implemented by LWSC: LWSC is the commercial utility responsible for sanitation in Lusaka Province. All funds will flow through LWSC. Implementation will be coordinated by a Project Implementation Unit. LWSC has to date focused more on sewerage than on-site sanitation. However, under the project, LWSC are committed to expanding their services into on-site sanitation to fulfill their mandate. LWSC will also utilize the Sanitation Fund to support on-site sanitation. The Sanitation Fund is a fund managed by LWSC that was created to improve sanitation services for the poor. A water levy, which is a percentage of the water bill, is included in the tariff agreed with NWASCO. LWSC collects this levy as part of the water bill and sets aside this money for improving sanitation services for the poor. LWSC only spends the funds on projects that have been approved by the regulator. LWSC has used the Sanitation Fund to support condominial sewerage improvements in Kalingalinga peri-urban area.

Project Implementation Unit: LWSC has formed a Project Implementation Unit (PIU) that will manage the project. The structure of the PIU has been agreed by the Bank and has been judged to have sufficient capacity to implement the project. Key staff of the PIU include: Project Manager, Finance Officer, Procurement Officer, Safeguards Officer, Monitoring and Evaluation Specialist, Sanitary Engineer, On-site Sanitation Specialist, Community Development Specialist and Safeguards Specialist, and seconded staff from MLGH, MCDMCH and LCC. LWSC has recently implemented a Bank-financed project (WSPIP) and is familiar with Bank procedures, which will facilitate implementation. The PIU has retained most of the staff that were active in the implementation of WSPIP and intends to second most of these to the PIU.

LWSC will implement component 1 directly: The PIU will work closely with the Sewerage Department to implement this component 1. LWSC operates a network of 480km of sewers with seven wastewater treatment plants (WWTPs). Under the Project and additional 82 km will be constructed, and up to 500km under the Lusaka Sanitation Program. The project will assist LWSC to strengthen the capacity of the Sewerage Department and the PIU to operate and maintain this larger network.

LWSC will implement component 2 in close collaboration with the Water Trusts. The Water Trusts were established over 10 years ago as community-based organizations contracted by LWSC to operate and maintain community-based water systems, collect revenues, and manage fecal sludge where applicable in specific areas. The decentralized local government structures in Zambia are based on ward systems. Each ward is a geographic area within the council area of jurisdiction and is represented in full Local Council by an elected ward councilor.

The Ward Councilor heads a Ward Development Committee that has community representation from the different geographical sections of the ward. Ward Development Committees established Water Point Committees, which manage a communal water supply source. In the case of the peri-urban areas, these communal water management structures have been formalized into Water Trusts. There are currently 9 Water Trusts supporting over a third of Lusaka's peri-urban areas. LWSC will enter into an agreement or Memorandum of Understanding with each individual Water Trust. LWSC will procure all goods, works and services and be responsible for implementation. Water Trusts will be responsible for community mobilization, sanitation marketing, oversight of the latrine upgrading program and the operation of fecal sludge management systems and services once constructed. The ongoing institutional assessment will assist LWSC in drafting the MoUs. LWSC will contract NGOs and/or private companies to build the capacity and support the activities of the Water Trusts.

LWSC will implement component 3 in collaboration with other institutions: Sub-component 3.1 (Project management) and 3.2 (TA to LWSC) will be implemented directly by LWSC. Sub-component 3.3 (Project/Program monitoring) will be implemented in collaboration with MCDMCH and LCC. Fund will be managed by LWSC and all procurement will be the responsibility of LWSC; but technical oversight on key issues for the LCC and MCDMCH component will be done in collaboration with these institutions.

Steering Committee: The Government will form the Lusaka Sanitation Program Steering Committee to oversee preparation and implementation of the Program, as well as the Project. The Steering Committee will be chaired by MLGH and draw members from the Ministry of Health (MoH), Ministry of Community Development, Mother and Child Health (MCDMCH), LCC, NWASCO, and ZEMA, and others as seen relevant. LWSC will be the secretariat of the Steering Committee. The World Bank and the Program's other Cooperating Partners will support the Steering Committee as appropriate. The Steering Committee will be charged with providing oversight and guidance on project implementation. The Steering Committee will also facilitate inter-institutional collaboration and will resolve legal and policy bottlenecks. The Steering Committee will meet at least twice a year and shall inform government (through the MLGH) on progress and challenges confronting the project. The PIU shall provide secretariat services for the Steering Committee and shall be responsible for preparation of minutes and dissemination to key stakeholders including the World Bank.

CHAPTER 3

3. POLICY AND LEGAL FRAMEWORK

3.1. LOCAL LEGISLATION

In this chapter a review and analysis of the various applicable local legislation and World Bank Environment and Social Safeguards Policies is made. The objective of this chapter is to ensure that the LSP is implemented in consistency with both the local applicable legislation and World Bank safeguards policies. As a result a clear environmental objective of complying with local legislation and World Bank safeguards policies is included in the EMMP of the ESMP. At the same time, a gap between the local environmental legislation and the World Bank Safeguards Policy is established and mechanisms to bridge the gap for the sustainable implementation of the project are suggested.

3.2. NATIONAL POLICIES AND STRATEGIES

3.2.1. National Policy on Environment

The National Policy on Environment (NPE) is the principal policy that coordinates environmental management in Zambia. The NPE is designed to create a comprehensive framework for effective natural resource utilization and environmental conservation which will be sensitive to the demands of sustainable development. The specific objectives of the NPE are to:

- promote the sound protection and management of Zambia's environment and natural resources in their entirety, balancing the needs for social and economic development and environmental integrity to the maximum extent possible, while keeping adverse activities to the minimum;
- manage the environment by linking together the activities, interests and perspectives of all groups, including the people, nongovernmental organizations (NGOs) and government at both the central and decentralized local levels;
- accelerate environmentally and economically sustainable growth in order to improve the health, sustainable livelihoods, income and living conditions of the poor majority with greater equity and self-reliance;
- ensure broadly-based environmental awareness and commitment to enforce environmental laws and to the promotion of environmental accountability;
- build individual and institutional capacity to sustain the environment;
- regulate and enforce environmental laws; and
- promote the development of sustainable industrial and commercial processes having full regard for environmental integrity.

The LSP is quite consistent with the aspirations of the NPE in that the project is premised on environment protection and building capacity within LWSC to effectively manage sanitation.

3.2.2. National Water Policy

The National Water Policy is the overarching policy framework for the water and sanitation sector in Zambia. The Policy was developed and adopted by the GRZ in 1994, and subsequently updated in 2010. The National Water Policy envisions "to optimally harness water resources for the efficient and sustainable utilization of this natural resource to enhance economic productivity and reduce poverty".

In order to achieve the national goal of increasing accessibility to reliable safe water by all sectors of the economy the policy addresses two broad categories of water resources management and development. The major outcome of the policy is to improve the management of water resources, institutional coordination and defined roles and responsibilities. The policy encourages the use of water resources in an efficient and equitable manner consistent with the social, economic and environmental needs of present and future generations.

Following the adoption of the National Water Sector Policy in 1994, the government implemented several strategies, including:

- *Strategy and Institutional Framework for the Water and Sanitation Sector (1995)*: identifies the framework and arrangements for providing water and sanitation services by local authorities;
- *Environmental Sanitation Strategy (1998)*: increases the awareness of sanitation in basic social services and outlines the strategy to provide sanitation services;
- *Peri-Urban Water Supply and Sanitation Strategy (2000)*: targets water supply and sanitation services to urban low income communities, and;
- *Community Water Supply and Sanitation Strategy (2000)*: primarily targets rural areas, but also peri-urban areas.

3.2.3. National Conservation Strategy

The National Conservation Strategy (NCS) formulated in 1985 has been the main policy document on the Environment and Natural Resources in Zambia. The NCS was prepared by the Government to manage natural resources and the environment in the context of a centrally planned and controlled economy. The Strategy's main goal is to: "…satisfy the basic needs of all the people of Zambia, both present and the future generations, through the wise management of natural resources".

The strategy establishes policies and devises plans and to fully integrate conservation into Zambia's social and economic development. It also aims to analyse trends and current issues to better anticipate problems and needs. The main objectives of the NCS are to:

- Ensure the sustainable use of Zambia's renewable natural resources such as forests;

- Maintain Zambia’s biological diversity; and
- Maintain essential ecological processes and life support systems in Zambia.

The NCS triggered the enactment in 1990 of the Environmental Protection and Pollution Control Act, which is essential in the effluent discharge compliances for the subprojects.

3.2.4. National Environmental Action Plan

The focus of the National Environmental Action Plan (NEAP) of 1994 is to identify environmental problems and issues, analyse their causes, and recommend necessary interventions. The NEAP was prepared as a comprehensive plan to contain the ever increasing environmental degradation in Zambia. The preparation of NEAP was as a result of Government's desire to update the NCS for the following reasons;

- the economy was undergoing a period of liberalization;
- the main NCS recommendations had been implemented;
- the technical information in the NCS needed updating; and
- there was a requirement by World Bank for a NEAP as a prerequisite for International Development Association (IDA) loan funding.

The NEAP is founded on three fundamental principles:

- the right of citizens to a clean and healthy environment;
- local community and private sector participation in natural resources management; and
- obligatory EIA of major development projects in all sectors.

3.2.5. National Biological Diversity Strategy and Action Plan

In May 1993 Zambia ratified the Convention on Biological Diversity and as part of the commitment to fulfil its objectives Zambia developed the National Biological Diversity Strategy and Action Plan (NBSAP), which was finalized in 1998. The main goals of the NBSAP are to:

- ensure the conservation of the full range of Zambia's natural ecosystems through a network of protected areas;
- conserve the genetic diversity of Zambia's crops and livestock;
- improve the legal and institutional framework and human resources to implement the strategies for conservation, sustainable use and equitable sharing of benefits from biodiversity management;
- sustainable management and use of Zambia's biological resources; and
- develop an appropriate legal framework and the needed human resources to minimize the risks of the use of genetically modified organisms.

The subproject safeguards documents will ensure that the objectives of this policy are mainstreamed into the subproject environment management processes.

3.2.6. National Forestry Policy

The mission statement of the forestry sector is to ensure sustainable flow of wood and non-wood forest products and services while at the same time ensuring protection and maintenance of biodiversity for the benefit of the present and future generations. The Policy is based on the following principles:

- Ensure sustainable forest resources management;
- develop capacity of stakeholders in sustainable forest resources management and utilization;
- Promote a participatory approach to forest development by developing close partnership among stakeholders;
- Facilitate private sector involvement in forestry development;
- Promote equitable participation by women, men and children in forestry development;
- Adopt an integrated approach, through intra and inter-sectoral coordination in forestry sector development.

While there are no forests within the project areas, the implementation of the subprojects will ensure maximum conservation of vegetation within the project areas.

3.2.7. National Decentralisation Policy

The National Decentralization Policy (developed in 2002, launched in 2004) aimed at decentralizing government responsibilities and functions to lower levels of government through 'devolution'. It reaffirms the local authorities as the institutions responsible for water supply and sanitation.

3.2.8. National HIV and AIDS Strategic Framework

The National HIV and AIDS Strategic Framework (NASF) 2006-2010 was built on the process of joint annual reviews and a broad consultative process with the cooperating partners. The management intent of the NASF is to:

- Support coordinated, prioritized and knowledge-based scale up of the response;
- Facilitate broad ownership of the response by all partners and practical partnerships for the implementation of the response;
- Represent joint strategic direction of all Partners;
- enable the involvement of key sectors and decentralized levels in all stages of the process;
- Guide resource management at the strategic level.

The six themes of the NASF represent the cooperating partners' priority action areas and include:

- Intensifying efforts for prevention of HIV;
- expanding treatment, care and support for people affected by HIV and AIDS;
- Mitigating the socioeconomic impact of HIV and AIDS;
- Strengthening the decentralized response and mainstreaming HIV and AIDS;

- Improving the monitoring of the multi-sectoral response; and
- Integrating advocacy and coordination of the multi-sectoral response.

LWSC will ensure that the contractors who will be implementing the various subprojects have plans for raising awareness especially among their employees as they interact with the community.

3.2.9. National Gender Policy

From time to time, the GRZ has been making attempts to mainstream gender in the different sectors of the country. In the 1980s, government adopted the Women in Development (WID) approach as a framework to incorporate gender issues into its development activities. For example, there was a WID desk at the then National Commission for Development Planning. In 1996, this approach was changed to the Gender in Development Division (GIDD). In the year 2000, the government launched the National Gender Policy which serves as a gender mainstreaming institutional framework for government ministries. In the year 2006, the government established the Ministry of Women's Affairs which was later changed to the Ministry of Gender and Development to oversee the gender mainstreaming activities in the country.

In order to resolve the problems pertaining to the provision of safe and clean water, and good sanitation which affects women more than men, government has put the following measures in the National Gender Policy: The Government will:

- promote and encourage the involvement of women in the decision making processes in the provision of safe and clean water and improvement of sanitation facilities;
- encourage partnerships between women and men in the provision of water and sanitation;
- ensure use of gender friendly technology in water supply and sanitation to all members of the community especially persons with disabilities;
- devise a mechanism to ensure that water and sanitation facilities companies provide affordable, clean, and safe water through a regulator; and
- establish investment mechanisms to ensure that water reticulation systems take into account issues of hygiene to prevent water borne diseases.

The above measures are the guidelines in the water and sanitation sector. It is expected that all government projects on water, sanitation and drainage will adhere to the requirements of the National Gender Policy of 2000 particularly in the incorporation of gender issues. However, there is no Act of Parliament to back the National Gender Policy and this is its major weakness as there is no legal recourse for not following its requirements.

The composition of water committees is 50% women as a way of promoting participation of women in development activities in peri-urban areas. To ensure that there is equal representation of men and women during the implementation of any project, be it water, sanitation or drainage, the GIDD can be consulted at the project design level to design ways of equitably representing the interests of men and women in peri-urban areas.

Examples of sectors that have taken gender equity measures are the Education and Lands Sectors. In government schools, during recruitment of pupils to grade one, the policy is that 50% should be female while at the university level, 25% of bursaries are reserved for female applicants. When land is advertised, 30% of all advertised land in the Ministry of Lands is reserved for female applicants (National Gender Policy 2000, Lands Policy 2005). These examples could be adopted during the implementation of the LWSSD Project.

Implementation of the sanitation project will be in accordance with the requirements of the Gender policy. There are no specific measures to promote gender equality in the National Gender Policy. However, the Policy indicates that government will "promote and encourage involvement of women in decision making processes in the provision of safe water and improvement of sanitation facilities". In the Ward Development Committees (WDCs), it is a standard requirement that the committee should have 50% women members. This applies to the zones within wards. These are gender inclusive initiatives from the wards and community based NGOs that are gender sensitive and are working with community projects. These have helped to build and institutionalize gender equality messages at the community level. During project implementation, the entry points for gender issues will be the WDCs.

It is expected that they will suggest ways of promoting equal participation of men and women. It should be borne in mind that gender issues are not new in peri-urban areas and most structures there are gender sensitive and have their own policies on how gender equity is achieved in community projects. The implementation of the LSP will ensure that the gender policy has been complied with through soliciting for women and girl child views in the design of some key subproject, especially in the onsite component of the project.

3.3. Sixth National Development Plan

The Ministry of Finance and National Planning (MFNP) developed the Sixth National Development Plan (SNDP) which contains a chapter on water and sanitation. According to the SNDP, all sectors such as agriculture, mining, industry, housing and energy require access to adequate water and sanitation services for their development. The water and sanitation sector vision is "a Zambia where all users have access to water and sanitation and utilise them in an efficient and sustainable manner for wealth creation and improved livelihood by 2030". The sector goal is "to achieve 75% accessibility to reliable safe water and 60% adequate sanitation by 2015 in order to enhance economic growth and improve the quality of life". In order to achieve the SNDP objective of promoting sustainable water resources development and sanitation, the strategic focus of the sector will be to provide water and sanitation infrastructure and develop skills to ensure effective water resource management and the efficient provision of reliable and safe water and sanitation services.

3.4. NATIONAL ENVIRONMENTAL LAWS AND REGULATIONS

3.4.1. The Environmental Management Act

The Environmental Management Act, 2011:

- Continues the existence of the ECZ and re-name it as the ZEMA;
- Provides for integrated environmental management and the protection and conservation of the environment and the sustainable management and use of natural resources;
- Provides for the preparation of the State of the Environment Report, environmental management strategies and other plans for environmental management and sustainable development;
- Provides for the conduct of strategic environmental assessments of proposed policies, plans and programmes likely to have an impact on environmental management;
- Provides for the prevention and control of pollution and environmental degradation; provides for public participation in environmental decision making and access to environmental information;
- Establishes the Environment Fund;
- Provides for environmental audit and monitoring;
- Facilitates the implementation of international environmental agreements and conventions to which Zambia is a party;
- Repeals and replaces the Environmental Protection and Pollution Control Act, 1990; and
- Provides for matters connected with, or incidental to, the foregoing.

Sections 29 and 30 of Part II of the Act set out the requirements for EIAs and the regulations relating to environmental assessments respectively. A person shall not undertake any project that may have an effect on the environment without the written approval of the ZEMA, and except in accordance with any conditions imposed in that approval. The ZEMA shall not grant an approval in respect of a project if it considers that the implementation of the project would bring about adverse effects or that the mitigation measures may be inadequate to satisfactorily mitigate the adverse effects of the proposed project.

Part IV of the Act makes provision for control of pollution (land, air and water, ozone depletion), the control of general and hazardous waste and the conduct of EIA. The ZEMA has the powers of arrest and prosecution under the Act.

The Act states that a developer shall not implement a project for which a project brief or an environmental impact statement is required, unless the project brief or an EIA has been concluded in accordance with the Act and the ZEMA has issued a decision letter. The Act also provides for undertaking of an environmental audit of the project.

The Act prohibits any person from polluting the water by discharging effluent or wastewater. It states that no person may discharge or apply any poisonous, toxic, obnoxious or obstructing matter, radiation or other pollutant or permit any person to dump or discharge such matter or pollutant into the aquatic environment in contravention of water pollution control standards established or prescribed by the Agency. Effluent from backwashing of filters and sludge from clarifiers at the LWSC water treatment plant will have to conform to the Act.

The Act prohibits any person from polluting the air. It states that no person may emit any pollutants which cause air pollution in contravention of emission standards established or prescribed by the Agency. The Act also states that the Inspectorate may request an owner or operator of an operation of which the Inspectorate has reasonable grounds to believe results in the emission into the ambient air of any air contaminant, to submit all information relating to those emissions as the Inspectorate may require. Indiscriminate disposal of waste is prohibited by the Act. It states that no person shall discharge waste so as to cause pollution in the environment. It further states that no person shall transport waste to any site other than in accordance with a license and to a disposal site established in accordance with a license. It also states that a person shall not operate a waste disposal site or plant or generate or store hazardous waste without a permit or license. Solid waste will be generated in the project and will have to be handled and disposed of in accordance with this Act.

The Act prohibits noise emission in excess of established standards unless the ZEMA inspectorate grants permission. The Act states that no person shall emit noise in excess of the noise emission standards. The Inspectorate may grant a permit in writing allowing excessive emission of noise under such terms and conditions as it may determine. Noise will result from construction activities and operation of the sanitation systems. Therefore, the project activities have to be done in conformity with the Act. In terms of this Act, all subprojects will require screening to ensure that an appropriate instrument in accordance with ZEMA has been developed, implemented and monitored accordingly.

3.4.2. Statutory Instrument No. 28

Statutory Instrument (SI) No.28 under the Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, 1997 amongst other requirements sets down the detailed procedures for the preparation of ESIAs, consultations, approvals and monitoring. This ESIA is prepared under SI No. 28.

3.4.3. Water Supply and Sanitation Act

The Water Supply and Sanitation Act, 1997, consolidates legislative actions under The Water Act, 1948; the National Water Policy, 1994; and the Water Pollution Control (Effluent and Waste Water Regulations), 1993. The responsible agency for these environmental policies is the Department of Water Affairs – Ministry of Energy and Water Development (MEWD). The purpose of these policies is to provide for ownership, control and use of water. The aim is to promote sustainable water resources development with a

view to facilitating an equitable provision and adequate and quality water for all users and to ensure security of supply under varying conditions.

The Act provides for the establishment of the National Water Supply and Sanitation Council (NWASCO) which acts as a regulator in the provision of water supply and sanitation services. It mandates NWASCO to regulate the sector in a manner leading to improved delivery, efficiency and sustainability. The Act requires NWASCO to disseminate information to the public on matters relating to water supply and sanitation services.

The Act regulates water supply and sewerage utilities for the purpose of protecting consumers from unjustified tariffs. As specified under the Act, there are four options for local authorities to provide services. The local authority may:

- provide services through a section within the Lusaka City Council (LCC);
- establish a commercial utility as a company licensed and regulated by NAWASCO;
- entrust the management to a private operator while the assets are management by the local authorities or holding company; or
- sell off up to 49% of its equity to a private company and then together form a commercial entity.

Any service provider supplying water to more than 500 persons has to be regulated by NWASCO. If the service provider operates on a commercial basis, NWASCO is concerned with the service level and water quality. A utility or service provider may construct any facility within or outside its area for the provision of water supply and sanitation services.

Water services in Lusaka should therefore be provided by the LWSC. The company also provides a licence to water trusts for provision of water services in peri-urban areas. The utility is also regulated by NWASCO in terms of performance and tariffs among others.

3.4.4. Water Resources Management Act

The Water Resources Management Act, 2011, establishes the Water Resources Management Authority and defines its functions and powers. It also repeals and replaces the Water Act, 1949. The ownership of all water is vested in the President. The use, diversion and apportionment of all water shall be made in terms of this Act. Any person may make an application to the Secretary of the Water Resources Management Authority for permission to impound and store or divert water from a public stream for primary, secondary or tertiary use, and the Water Board may grant such application on such terms and conditions as it may think fit provided that any such grant is made with reasonable regard to the primary use of water and any existing rights lawfully granted for any other purpose.

Whenever a local authority desires to appropriate any public water for primary or tertiary purposes necessary to the community under its jurisdiction, such local authority shall, in the absence of any special law authorizing such appropriation, make application to the Secretary, setting out such particulars of the proposed appropriation as may be required by

the Secretary or as may be prescribed. If the public water applied for is being beneficially used for secondary or tertiary purposes by any other person by virtue of any right granted under this Act or any other written law or by agreement with the Government, the use required by the local authority may be authorized by the Water Board to the extent it may deem fit on payment of compensation to such other person after full inquiry as hereinafter provided.

Every water right which has been granted for a period of time shall be renewable in accordance with the provisions of the Act. In case the owner of any right registered fails to make full beneficial use of the same for a consecutive period of three years or fails to comply with any condition imposed under the Act requiring any works to be constructed and maintained, he may risk forfeiture of the water rights.

Under this Act, any person who wilfully or through negligence pollutes or fouls any public water so as to render it harmful to man, beast, fish or vegetation shall be guilty of an offence and liable to a fine or imprisonment. It also empowers the Water Officers to call upon the person responsible therefore to take adequate measures to prevent such fouling or pollution within a specified period. The water pollution potential for the respective subproject will need to comply with the requirements of this Act.

3.4.5. Public Health Act

The Public Health Act, 1995 (CAP 295) provides for the prevention and suppression of diseases in the general public environment and has provisions for management of sanitation and prevention of pollution of water bodies by local authorities.

The Local Authority of any area is empowered by the Act to do and provide all such acts, matters and things as may be necessary for mitigating any disease, or aiding in the execution of regulations, or for executing the same, as the case may require. The duties of Local Authorities include maintenance of cleanliness and prevention of nuisances including those arising from unsuitable dwellings. Some nuisances are foul, overcrowded, dilapidated, poorly lit, poorly ventilated and poorly constructed houses or premises, street, ditch, gutter, water tank, soil-pipe, waste-pipe, drain, sewer, garbage receptacle, and dustbin. Other nuisances are water sources and reservoirs whose water is polluted but is used for drinking, domestic purposes and preparation of food, and any noxious matter, or wastewater, flowing or discharged from any premises into any public street, gutter, drainage channel, or water-course not approved for the reception of such discharge. The last nuisances under the Act are accumulation or deposit of refuse, offal, manure or other matter and any premises or accumulation of stones, timber, or other building material which is likely to harbour rats or other vermin and a chimney sending forth smoke in such quantity or in such a manner as to be offensive, injurious or dangerous to health. Another provision deals with infected persons who care for children or handle food utensils or food intended for consumption.

This is an important Act to ride on for the required high level of cooperation between LWSC and LCC in order to enforce the sustainable sanitation standards at household level, especially in the new residential developments.

3.4.6. National Health Services Act

The National Health Services Act (CAP 315) establishes the Central Board of Health and provides for the procedures for establishing management boards for hospitals and health services. The Act defines functions and powers of such boards and their relationship and to provide for matters connected to or incidental to the foregoing. Where any Local Authority fails to deal with any outbreak or prevalence of any infectious, communicable or preventable diseases, the Board shall takeover the function of the Local Authority in relation to public health and shall have all the powers of such Local Authority as provided for under the Public Health Act.

3.4.7. Local Government Act

The Local Government Act (CAP 281) is the enabling legislation governing the establishment, powers and operations of local administration and defines the functions of Local Authorities. Section 61 of the Act provides legal authority for the functions of Councils to be discharged directly, by contract or by separate undertaking. These functions are detailed in the Second Schedule, of which the following are particularly relevant to the project:

- to establish and maintain sanitary services for the removal and destruction of, or otherwise dealing with, all kinds of refuse and effluent, and compel the use of such services;
- to establish and maintain drains, sewers and works for the disposal of sewage and refuse; and
- to require and control the provision of drains and sewers and to compel the connection of any drains and sewers established by the council.

Other functions relate to control of the development, use of land and buildings, erection of buildings, conservation of natural resources, prevention of soil erosion, protection of life, property and natural resources from damage by fire, control of grass weeds and wild vegetation, and maintenance of environmental health services. Also included are control of the storage, sale and use of petroleum, extermination of insects, rodents and snakes, dealing with all kinds of refuse and effluent, controlling the provision of drains and sewers, and conservation and the prevention of the pollution of supplies of water.

The Schedule under the Act lays down the functions of local council administration, including Town Clerk or Secretary (chief executive); Director of Administration or Deputy Secretary; Director of Finance or Treasurer; Director of Engineering Services or Director of Works; Director of Housing and Social services; Director of Legal Services; and Director of Public Health.

The Council's instruments include by-laws, standing orders and regulations by the Minister through Statutory Instrument. By SI 57 of 1992, the Local Government (Street Vending and Nuisances (Application) Order, street vending controls and prohibitions were applied by the Minister to all areas of all local councils. They have, however, proved difficult to enforce and have been widely disregarded throughout most urban areas of the country.

The developer has to ensure that the water supply system does not pollute the water resources such as the Kafue River. The developer has to ensure that construction is approved by the Local Authority. Operation of the water supply system will also have to meet the National and Local Authority's standards in terms of use of facilities, protection of life and property, control of grasses, weeds and wild vegetation, and refuse and effluent management.

3.4.8. The Zambia Wildlife Act

The Zambia Wildlife Act (1998) establishes the Zambia Wildlife Authority (ZAWA) and defines its functions. The Act provides for the establishment, control and management of National Parks and Game Management Areas and for the conservation and enhancement of wildlife ecosystems, biodiversity, and of objects of aesthetic, pre-historic, historical, geological, archaeological and scientific interest to National Parks. The Act also provides for the implementation of the Convention on International Trade in Endangered Species of Wildlife and Fauna, the Convention on Wetlands of International Importance Especially as Water Fowl Habitat and the Convention on Biological Diversity. Construction and operations of the project will have to be carried out in such a manner that it does not adversely affect wildlife resources.

3.4.9. The Road Traffic Act

The Road Traffic Act (2002) establishes the Road Transport and Safety Agency (RTSA) and defines its functions which include providing for a system of road safety and traffic management, licensing of drivers and motor vehicles, registration of motor vehicles and trailers, licensing and control of public service vehicles, promotion of road safety, and regulation of road transport between Zambia and other countries with which Zambia has concluded cross-border road transport agreements. The Act will be used to manage traffic and provide for and promote safety of road users (i.e. motorists and pedestrians).

3.4.10. Public Roads Act

The Public Roads Act (CAP 12) of 2002 established the Road Development Agency and defines its functions; to provide for the care, maintenance and construction of public roads in Zambia. Section 5 of the Act lists the powers of the Agency which include setting road reserves and drains. Sections 22, 33 and 35 define powers for control of structures, road signs and advertisement in the road reserve respectively. Section 56 regulates the works of utility companies (undertakers) which includes works for buried pipelines and apparatus. Therefore, works for the water supply sub-projects along roads and in reserves require

consent of the Road Development Agency whose powers in this case are exercised through LCC.

3.4.11. The Town and Country Planning Act

The Town and Country Planning Act (CAP 283) provides for: the appointment of planning authorities; the establishment of a Town and Country Planning Tribunal; the preparation, approval and revocation of development plans; the control of development and subdivision of land; the assessment and payment of compensation in respect of planning decisions; the preparation, approval and revocation or modification of regional plans; and incidental matters.

Part III deals with development plans. Section 16 (2) provides for development plan mapping to illustrate the proposals, and in particular to designate as land subject to compulsory acquisition by the President or by a local or township authority:

(a) land reserved for government or local authority purposes;
(b) areas designated for comprehensive development, and adjacent areas; and
(c) other land in order to secure its vocation for plan purposes.

The same section also provides for designation for compulsory acquisition areas that are not properly laid out that need future treatment, or are obsolete for development needs. It may require the relocation of population or industry or the replacement of open space or any other purpose needed for comprehensive development and development or redevelopment as a whole.

Part VI deals with compensation for refusal of planning permission, including subdivision, if it can be shown that there was material prejudice resulting; and with the circumstances and details of what may and may not be allowable. Part VII on Land Acquisition (Sections 40 to 44) applies to the provisions of the Land Acquisition Act (Chapter 189), making such adjustments as are necessary to permit the acquisition of land by a local authority.

3.4.12. National Heritage Conservation Commission Act

The National Heritage and Conservation Act of 1989 (CAP 173) is administered by the National Heritage Conservation Commission (NHCC). The Act provides regulatory guidelines for the conservation of ancient, cultural and natural heritage, relics and other objects of aesthetic, historical, prehistoric, archaeological or scientific interest. The Act is used in concert with several other environmental policies to control the development of land areas, specifically the Town and Country Planning Act, 1962, as amended, which is under the administration of the MLGH to provide for the appointment of planning authorities, to prepare and approve and revoke development plans.

The project sites will have to be investigated for any historical, natural and cultural heritage. According to the Act, if anything is found relating to any heritage during construction, it has to be reported to the Commission. The project will, in such a case, give

access to the Commission who are empowered by the Act to enter upon and inspect any heritage excavation for the purposes of investigation, preservation, repair, or restoration of any heritage.

3.4.13. Forestry Act

The Forestry Act provides for promotion of methods for sustainability, conservation and preservation of ecosystems and biological diversity in national forests, local forests and open areas. This Act will be applicable during the construction and operation phases of the project so that trees are preserved during the clearing of vegetation.

3.4.14. Petroleum Act

The Petroleum Act (CAP 435) regulates the importation, conveyance and storage of petroleum and other inflammable oils and liquids. Transport, storage and dispensing of petroleum products will have to be done according to the regulations of this Act.

3.4.15. Explosives Act

The Explosives Act (CAP 115) makes provision for regulatory control over the manufacture, use, possession, storage, importation, exportation, transportation and destruction of explosives, and for related matters. The Act requires that when being transported in any road vehicle or convoy of road vehicles, explosives shall be in the direct charge of a blasting license holder who shall take all due care of the operation and not be transported during the hours of darkness except with the prior permission of an Inspector of Explosives and under such conditions as he may prescribe.

No person shall use any explosives otherwise than in accordance with these Regulations, or except for the purposes and at the places specified in a permit. The Act also states that no person shall conduct any blasting operation on the surface at any mine, explosives factory or works between the hours of sunset and sunrise except for the purpose of blasting a hang-up at any ore or waste bin, grizzly or crusher. An Inspector of Mines may, after examination and at his discretion, issue a blasting license, to a person experienced in the use and handling of explosives, and such license may be endorsed by the Inspector with any special restriction as to the purpose, place or period of use, and a copy of every such license shall be retained in the office of the Chief Inspector.

Significant volumes of rock excavation are not anticipated for the sanitation sub-projects and the Specification does not permit the use of explosives for rock excavation for the Works; rather chemical or mechanical rock breaking methods will be used. However, if circumstances arise where a works contractor is permitted to use explosives (e.g. quarrying), this use will have to comply with the Act when transporting, handling and using explosives for blasting.

3.4.16. Factories Act

The Factories Act (CAP 441) makes further and better provision for the regulation of the conditions of employment in factories and other places as regards the safety, health and welfare of persons employed therein and provides for the safety, examination and inspection of certain plant and machinery. The Act gives powers to an inspector to enter, inspect and examine, by day and night, any factory, when he has reasonable cause to believe that any person is employed therein or that explosive or highly inflammable materials are stored or used. The Act gives general provisions of health which include cleanliness, overcrowding, general ventilation, lighting and sanitary conveniences.

The Act also has general provisions of safety which include unfenced machinery, construction and maintenance of fencing, floors, steps, stairs, passages and gangways, precautions in places where dangerous fumes are liable to be present and precautions with respect to explosive or inflammable dust, gas, vapour or substance. Other items are prevention and fighting of fire and means of escape and warning in case of fire. Provisions for safety of lifting machinery, welfare of workers and demolitions are also included. Suppliers of materials for construction and operation of the project will have to be carried out in accordance with the provisions of this Act.

3.4.17. Occupational Health and Safety Act

The Occupational Health and Safety Act, 2010 establishes the Occupational Health and Safety Institute as a body corporate with perpetual succession and defines its composition, powers, and functions. The Act provides for the establishment of health and safety committees at workplaces and aims to provide for the health, safety, and welfare of persons at work and persons who may face risks to health or safety arising from said work, and to establish the duties of manufacturers, importers, and suppliers of items for use at work.

Part II of the Act sets down the Institute's functions, the following of which are particularly relevant to the LWSSD Project:

- develop and implement programmes to provide incentives for employers to implement measures to eliminate or reduce risks to health or safety or to improve occupational hygiene, occupational health and safety;
- investigate and detect occupational diseases and injuries at workplaces; and
- set and maintain standards for the protection of the health and safety of employees at workplaces.

Part III prescribes the establishment and composition, of health and safety committees for employers of ten or more employees and describes the committees' functions, which include but are not limited to:

- promotion of cooperation between the employer and the employees in achieving and maintaining healthy and safe working conditions;
- investigation and resolution of any matter that may be a risk to the health and safety of employees at a workplace; and
- formulation, review, and dissemination to the employees of the standards, rules, and procedures relating to health and safety to be carried out at the workplace.

Part IV of the Act contains guidelines for the determination of what is "reasonably practicable" at a workplace, as well as the duties of:

- employers to employees and to persons other than employees;
- employees at workplaces;
- persons in control of workplaces or plants;
- designers, manufacturers, suppliers, and importers; and
- architects and engineers.

Additionally, this Part protects employees from dismissal or victimization under several conditions in which he/she may express concern, exercise power, or divulge information regarding health and safety matters.

The remainder of the Act describes the enforcement provisions of key entities under the Act, describes the services incumbent upon the Occupational Health and Safety Institute, and includes general provisions (exemptions, penalties, offences, regulations, etc.) and schedules of institutional proceedings and financial activities.
The Act states that an engineer shall carry out his duties in such a manner as to ensure the occupational health and safety of persons at, or near, a workplace. Construction and operation of the project will have to be carried out in accordance with the provisions of this Act.

3.4.18. Employment of Children and Young Persons Act

The Employment of Young Persons and Children Act (CAP 274) is the major legal instrument for the protection and regulation of child labour. This Act prohibits the employment of a child under the age of 15 in an industrial undertaking as defined under the Act. The prohibition applies to industrial undertakings that are hazardous or those which may be detrimental to health, safety and morals. The Act also classifies the ages of eligibility to perform various types of employment and generally provides for regulations governing the conditions of employment such as restrictions relating to work at night and hours of work.

Children are defined as those under the age of 15 and a young person is defined as someone between the ages of 15 and 18. Under the Act, both children and young people are prohibited from working on construction sites.

3.4.19. Energy Regulation Act, Chapter

The Energy Regulation Act (CAP 436) allows for the establishment of procedures for the transportation, handling and storage of fuels to minimize negative environmental impacts.

3.5. WORLD BANK ENVIRONMENT AND SOCIAL SAFEGUARDS POLICIES

Table below shows the Banks safeguards policies in general and table highlights the specific safeguards that are triggered as a result of the proposed LSP investments.

SUMMARY OF WORLD BANK'S SAFEGUARDS POLICIES OBJECTIVES INCLUDING WHEN THEY ARE TRIGGERED

Policy	Objective	Trigger for the Policy
OP/BP 4.01 Environmental Assessment	The objective of this policy is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts on its area of influence. OP 4.01 covers impacts on the natural environment (air, water and land); human health and safety; physical cultural resources; and transboundary and global environment concerns.	Depending on the project, and nature of impacts a range of instruments can be used: EIA, environmental audit, hazard or risk assessment and environmental management plan (EMP). When a project is likely to have sectoral or regional impacts, sectoral or regional EA is required. The Borrower is responsible for carrying out the ESIA.
OP/BP 4.04 Natural Habitats	This policy recognizes that the conservation of natural habitats is essential to safeguard their unique biodiversity and to maintain environmental services and products for human society and for long-term sustainable development. The Bank therefore supports the protection, management, and restoration of natural habitats in its project financing, as well as policy dialogue and economic and sector work. The Bank supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. Natural habitats are land and water areas where most of the original native plant and animal species are still present. Natural habitats comprise many types of terrestrial, freshwater, coastal, and marine ecosystems. They include areas lightly modified by human activities, but retaining their ecological functions and most native species. This bank policy prohibits financing for developments that would significantly convert or degrade critical natural habitats, and preference is on siting projects on already converted land.	This policy is triggered by any project (including any sub-project under a sector investment or financial intermediary) with the potential to cause significant conversion (loss) or degradation of natural habitats, whether directly (through construction) or indirectly (through human activities induced by the project).
OP/BP 4.36 Forests	The objective of this policy is to assist borrowers to harness the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development and protect the vital local and global environmental services and values of forests. Where forest restoration and plantation development are necessary to meet these objectives, the Bank assists borrowers with forest restoration activities that maintain or enhance biodiversity and ecosystem functionality. The Bank assists borrowers with the establishment of environmentally appropriate, socially beneficial and economically viable forest plantations to	This policy is triggered whenever any Bank-financed investment project (i) has the potential to have impacts on the health and quality of forests or the rights and welfare of people and their level of dependence upon or interaction with forests; or (ii) aims to bring about changes in the management, protection or utilization of natural forests or plantations.

Policy	Objective	Trigger for the Policy
	help meet growing demands for forest goods and services.	
OP 4.09 Pest Management	The objective of this policy is to (i) promote the use of biological or environmental control and reduce reliance on synthetic chemical pesticides; and (ii) strengthen the capacity of the country's regulatory framework and institutions to promote and support safe, effective and environmentally sound pest management. More specifically, the policy aims to (a) Ascertain that pest management activities in Bank-financed operations are based on integrated approaches and seek to reduce reliance on synthetic chemical pesticides (Integrated Pest Management (IPM) in agricultural projects and Integrated Vector Management (IVM) in public health projects. (b) Ensure that health and environmental hazards associated with pest management, especially the use of pesticides are minimized and can be properly managed by the user. (c) As necessary, support policy reform and institutional capacity development to (i) enhance implementation of IPM-based pest management and (ii) regulate and monitor the distribution and use of pesticides. Pesticides in WHO Classes IA and IB may not be procured for Bank supported projects.	The policy is triggered if: (i) procurement of pesticides or pesticide application equipment is envisaged (either directly through the project, or indirectly through on-lending, co-financing, or government counterpart funding); (ii) the project may affect pest management in a way that harm could be done, even though the project is not envisaged to procure pesticides. This includes projects that may (i) lead to substantially increased pesticide use and subsequent increase in health and environmental risk; (ii) maintain or expand present pest management practices that are unsustainable, not based on an IPM approach, and/or pose significant health or environmental risks.
OP/BP 4.11 Physical Cultural Resources	The objective of this policy is to assist countries to avoid or mitigate adverse impacts of development projects on physical cultural resources. For purposes of this policy, "physical cultural resources" are defined as movable or immovable objects, sites, structures, groups of structures, natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above ground, underground, or underwater. The cultural interest may be at the local, provincial or national level, or within the international community.	This policy applies to all projects requiring a Category A or B Environmental Assessment under OP 4.01, project located in, or in the vicinity of, recognized cultural heritage sites, and projects designed to support the management or conservation of physical cultural resources.
OP/BP 4.10 Indigenous Peoples	The objective of this policy is to (i) ensure that the development process fosters full respect for the dignity, human rights, and cultural uniqueness of indigenous peoples; (ii) ensure that adverse effects during the development process are avoided, or if not feasible, ensure that these are minimized, mitigated or compensated; and (iii) ensure that indigenous peoples receive culturally appropriate and gender and inter-generationally inclusive social and economic benefits. The policy requires free, prior and informed consultation with indigenous peoples.	The policy is triggered when the project affects the indigenous peoples (with characteristics described in OP 4.10 para 4) in the project area.
OP/BP 4.12 Involuntary Resettlement	The objective of this policy is to (i) avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs; (ii) assist displaced persons in improving their former living standards, income earning capacity, and production levels, or at least in restoring them; (iii) encourage community participation in planning and implementing resettlement; and (iv) provide assistance to affected people regardless of the legality of land tenure.	This policy covers not only physical relocation, but any loss of land or other assets resulting in: (i) relocation or loss of shelter; (ii) loss of assets or access to assets; (iii) loss of income sources or means of livelihood, whether or not the affected people must move to another location.

Policy	Objective	Trigger for the Policy
		This policy also applies to the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.
OP/BP 4.37 Safety of Dams	The objectives of this policy are as follows: For new dams, to ensure that experienced and competent professionals design and supervise construction; the borrower adopts and implements dam safety measures for the dam and associated works. For existing dams, to ensure that any dam that can influence the performance of the project is identified, a dam safety assessment is carried out, and necessary additional dam safety measures and remedial work are implemented.	This policy is triggered when the Bank finances: (i) a project involving construction of a large dam (15 m or higher) or a high hazard dam; and (ii) a project which is dependent on an existing dam. For small dams, generic dam safety measures designed by qualified engineers are usually adequate. Dams with ≥15m in height review by an independent dam safety panel is required.
OP 7.50 Projects in International Waters	The objective of this policy is to ensure that Bank-financed projects affecting international waterways would not affect: (i) relations between the Bank and its borrowers and between states (whether members of the Bank or not); and (ii) the efficient utilization and protection of international waterways. The policy applies to the following types of projects: (a) Hydroelectric, irrigation, flood control, navigation, drainage, water and sewerage, industrial and similar projects that involve the use or potential pollution of international waterways; and (b) Detailed design and engineering studies of projects under (a) above, include those carried out by the Bank as executing agency or in any other capacity.	This policy is triggered if (a) any river, canal, lake or similar body of water that forms a boundary between, or any river or body of surface water that flows through two or more states, whether Bank members or not; (b) any tributary or other body of surface water that is a component of any waterway described under (a); and (c) any bay, gulf strait, or channel bounded by two or more states, or if within one state recognized as a necessary channel of communication between the open sea and other states, and any river flowing into such waters.
OP 7.60 Projects in Disputed Areas	The objective of this policy is to ensure that projects in disputed areas are dealt with at the earliest possible stage: (a) so as not to affect relations between the Bank and its member countries; (b) so as not to affect relations between the borrower and neighboring countries; and (c) so as not to prejudice the position of either the Bank or the countries concerned.	This policy is triggered if the proposed project will be in a "disputed area". Questions to be answered include: Is the borrower involved in any disputes over an area with any of its neighbors. Is the project situated in a disputed area? Could any component financed or likely to be financed as part of the project be situated in a disputed area?
The WB Group Environment, Health and Safety Guidelines.	The General EHS Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors. The guidelines include;- <u>Environment</u> • Air Emissions and Ambient Air Quality • Energy Conservation • Wastewater and Ambient Water Quality • Water Conservation • Hazardous Materials Management • Waste Management • Noise • Contaminated Land <u>Occupational Health and Safety Guidelines</u>	These guidelines will be followed during the preparation of mitigation measures. When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, a full and detailed justification for any proposed alternatives is needed as part of the site-specific environmental assessment. This justification should demonstrate that

Policy	Objective	Trigger for the Policy
	Community Health and Safety Construction and Decommissioning	the choice for any alternate performance levels is protective of human health and the environment.

3.5.1. OP 4.01 Environment Assessment

Environmental Assessment policy ensures the World Bank is able to identify, avoid, and mitigate the potential negative environmental and social impacts associated with Bank's lending operations, while enhancing the positive benefits. The policy guides the screening process for the Bank projects and the scope of environmental assessment commensurate with each screening classification. The screening process categorizes project in category A, B or C. Category A has significant environmental impacts thereby require full EIA while category B requires Environmental Analysis only due to reduced environmental impacts and category C requires none of the above though environmental planning is still applicable especially where there is disposal of waste. The Environmental Assessment Policy sets the parameters for the recruitment of the EIA consultant, the quality of work expected in each type of project and the EIA review process until the EIA report is disclosed. Carrying out the actual EA is the borrower's responsibility.

The government or project sponsor arranges for the EA; they often select consultants or an institution to conduct the analyses. When it is necessary to use international experts to supply skills not available in the borrowing country, the Bank encourages involvement of local consultants as well, in order to take advantage of local knowledge and to strengthen their capability for future EA work. Bank EAs emphasize identifying environmental issues early in the project cycle, designing environmental improvements into projects, and avoiding, mitigating, or compensating for adverse impact. The LSP has been categorized a category B, therefore requiring some Environmental Assessment. This classification is quite consistent with the project scope because the proposed project has potential to generate waste in the on-site component which may affect both surface, ground water quality and also air quality from potential methane gas from potential bio digesters. The project activities traverses across rivers, residential areas and commercial areas that has already existing infrastructure that can be negatively impacted.

The Environmental Assessment Policy is triggered in project. To comply with the policy requirements, this ESMP has been formulated before project appraisal and subprojects ESMPs will be formulated for the detailed project designs and implementation through the provided screening process.

3.5.2. OP 4.04 Natural Habitats

Natural Habitats policy and procedure seeks to ensure that World Bank-supported infrastructure and other development projects take into account the conservation of biodiversity, as well as the numerous environmental services and products which natural

habitats provide to human society. The policy strictly limits the circumstances under which any Bank-supported project can damage natural habitats (land and water areas where most of the native plant and animal species are still present). Specifically, the policy prohibits Bank support for projects which would lead to the significant loss or degradation of any Critical Natural Habitats, whose definition includes those natural habitats which are legally protected, officially proposed for protection, or unprotected but of known high conservation value. The proposed project area does coincide with areas which constitute critical natural habitat since some components of the project are implemented in along major rivers like the Ngwerere River and other smaller feeder streams. **O.P 4.04 –Natural Habitat is therefore triggered**. In compliance with the requirements of the policy, the respective subproject ESIA/ESMPs will focus on management of biodiversity among other issues.

3.5.3. OP 4.36 Forests

The Bank's forests policy aims to reduce deforestation, enhance the environmental contribution of forested areas, promote forestation, reduce poverty, and encourage economic development. The Bank's policy is anchored on three equally important and interdependent pillars to guide future Bank involvement with forests:

- Harnessing the potential of forests to reduce poverty,
- Integrating forests in sustainable economic development, and
- Protecting vital local and global environmental services and forest values.

O.P 4.36 – Forests policy is not triggered because the project area is located in urban areas that do not have forests and are already impacted by the infrastructural development.

3.5.4. OP 4.11 Physical Cultural Resources

The objective of the policy is to avoid, or mitigate adverse impacts on cultural resources from development projects that the World Bank finances. The policy defines physical cultural resources as movable or immovable objects, sites, structures, group of structures and natural features that have archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural significance. The chance of finding such physical cultural resources within the project area is remote. Discussions with ward councillors and community members on the ground do confirm that there are no physical cultural resources within the proposed project areas. **O.P 4.11 Physical Cultural Resources is not triggered**.

3.5.5. OP 4.12 Involuntary resettlement.

Involuntary Resettlement is triggered in situations involving involuntary taking of land or involuntary restrictions of access to legally designated parks and protected areas or when the Bank assisted project's achievement of objectives is dependent on an already existing restriction. The policy aims to avoid involuntary resettlement to the extent feasible, or to

minimize and mitigate its adverse social and economic impacts to displaced people. It promotes participation of displaced people in resettlement planning and implementation, and its key economic objective is to assist displaced persons in their efforts to improve or at least restore their incomes and standards of living after displacement. The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to Bank appraisal of proposed projects.

3.5.6. O.P 4.12- Involuntary Resettlement is triggered because of the following reasons;

- The project areas are heavily settled and in some cases the settlements are not planned and do encroach on the road reserves.
- The road reserves has vendors officially operating at rented sites from the LCC.
- The major roads have billboards and other already existing infrastructure like optic fibre, electricity lines and water supply just to mention a few.

In consistency with the requirements of this policy, a RPF was prepared alongside with this ESMP and any follow up subproject will be screened for resettlement in accordance with the RPF and appropriate RAP will be developed as condition for subproject appraisal.

3.5.7. O.P 4.37 Dam Safety

Operational Policy (OP) 4.37: Safety on Dams requires that experienced and competent professionals design and supervise construction, and that the borrower adopts and implements dam safety measures through the project cycle. The policy also applies to existing dams where they influence the performance of a project. The policy also distinguishes between small and large dams. Small dams are normally less than 15 meters in height and examples include farm ponds, local silt retention dams and low embankment tanks. Dams between 10-15 meters are considered large dams if they present specific design complexities. The policy requires generic dam safety measures designed by qualified as adequate. In cases of large dams, the policy requires some special panel of experts to review the investigation, design and construction of the dam and start of operation. **O.P 4.37-Safety of dams is not triggered** because the project does not involve such dams.

3.5.8. OP 4.10 Indigenous People

This policy contributes to the Bank's mission of poverty reduction and sustainable development by ensuring that the development process fully respects the dignity, human rights, economies, and cultures of Indigenous Peoples. For all projects that are proposed for Bank financing and affect Indigenous Peoples, the Bank requires the borrower to engage in a process of free, prior, and informed consultation. The Bank recognizes that the identities and cultures of Indigenous Peoples are inextricably linked to the lands on which

they live and the natural resources on which they depend. For purposes of this policy, the term "Indigenous Peoples" is used in a generic sense to refer to distinct, vulnerable, social and cultural groups possessing the following characteristics in varying degrees:

- self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;
- collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories[7]
- customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and
- an indigenous language, often different from the official language of the country or region.

O.P 4.10 Indigenous Peoples is not triggered because there are no such people who qualify for the Indigenous Peoples category.

3.5.9. OP 7.50 projects on International Waterways

The policy aims at reducing potential conflicts that may arise from projects that are in shared water resources by ensuring that the riparian countries are notified about the proposed project and their consent has be accorded. Zambia is signatory to the SADC protocol on shared water course and is bound by the protocol's objective of jointly managing water resources on all internationally shared rivers. The protocol is an agreement between the riparian states of the Zambezi River Basin on how to manage the Zambezi River basin. The riparian states are; the Republic of Angola, Republic of Botswana, Democratic Republic of the Congo, Kingdom of Lesotho, Republic of Malawi, Republic of Mauritius, Republic of Mozambique, Republic of Namibia, Republic of Seychelles**,** Republic of South Africa**,** Kingdom of Swaziland, United Republic of Tanzania**,** Republic of Zambia and the Republic of Zimbabwe. The overall objective of this Protocol is to foster closer cooperation for judicious, sustainable and co-ordinated management, protection and utilisation of shared watercourses and advance the SADC agenda of regional integration and poverty alleviation. In order to achieve this objective, this Protocol seeks to:

a) Promote and facilitate the establishment of shared watercourse agreements and Shared Watercourse Institutions for the management of shared watercourses.
b) Advance the sustainable, equitable and reasonable utilisation of the shared watercourses.
c) Promote a co-ordinated and integrated environmentally sound development and management of shared watercourses.
d) Promote the harmonisation and monitoring of legislation and policies for planning, development, conservation, protection of shared watercourses, and allocation of the resources thereof.
e) Promote research and technology development, information exchange, capacity building, and the application of appropriate technologies in shared watercourses management.

Article 4 of the protocol has specific procedures for the notification of riparian state on the proponent's intension to implement a planned activity. It is important to note that notification will then lead to consultation depending on how the other riparian state views the planned activity. **O.P 7.50- International Waters policy is triggered for precautionary reasons because the** Manchinchi and the Ngwerere sewer sheds are part of the drainage into the Zambezi River. **Only projects with possible significant trans-boundary effects require notification.**

Article 4, item 1 (i) provides for implementation of urgent planned activity before notification of riparian states. This provision is applied **"in the event of implementation of planned activity of utmost urgency in order to protect public health, public safety or other equally important interest..".** The ESIA certification for the subprojects could be used as proof to the riparian states that the proponent endeavoured to comply with article 3, item 7 of the protocol.

"Article 3, item 7. a) Watercourse States shall in their respective territories utilise a shared watercourse in an equitable and reasonable manner. In particular, a shared watercourse shall be used and developed by Watercourse States with a view to attain optimal and sustainable utilisation thereof and benefits therefrom, taking into account the interests of the Watercourse States concerned, consistent with adequate protection of the watercourse for the benefit of current and future generations".

Paragraph 7(a) of OP 7.50 spells out one of the basis for exceptions to the notification requirements as "any ongoing schemes, projects involving additions or alterations that require rehabilitation, construction, or other changes that in the judgment of the Bank (i) will not adversely change the quality or quantity of water flows to the other riparians; and (ii) will not be adversely affected by the other riparians' possible water use. This exception applies only to minor additions or alterations to the ongoing scheme; it does not cover works and activities that would exceed the original scheme; change its nature, or so alter or expand its scope and extent as to make it appear a new or different scheme." The combined potential total volume of effluent does not exceed the current treatment capacities for the targeted sewer shed, therefore creates a basis for the LSP to be exempt from the notification requirements. In line with the provisions of O.P 7.50 International Waters Policy and the SADC protocol on shared water courses, LSP will seek exemption from notification through the World Bank exemption system.

3.5.10. Other Safeguards Policies

Due to the nature of the project, its location and overview of the subprojects, the following safeguards policies will not be discussed or triggered because they completely do not apply;

i. O.P 4.09 – Pest Management.
ii. O.P 7.60 – Projects in Disputed Areas.

SAFEGUARD POLICES LIKELY TO BE TRIGGERED UNDER LSP

Safeguard Policies Triggered by the Project(For the Moment)	Yes	Reasons For Triggers	No

Environmental Assessment (OP/BP 4.01)	X	Investments are likely to have potential significant adverse environmental impacts	
Natural Habitats (OP/BP 4.04)	X	Investments may be located in or close to areas with natural unique flora and fauna	
Pest Management (OP 4.09)		The sub projects will not utilize fertilizers or pesticides	X
Physical Cultural Resources (OP/BP 4.11)	X	Investments will involve construction of projects in the water sector and excavation activities can lead to impacts on physical and cultural resources	
Involuntary Resettlement (OP/BP 4.12)	X	Investments may involve land take for construction purposes	
Indigenous Peoples (OP/BP 4.10)		Investments are located in urban areas where there are no vulnerable and marginalized groups/people	X
Forests (OP/BP 4.36)		Investments are not located in or close to areas with natural forests or affect forest catchments	X
Safety of Dams (OP/BP 4.37)		Investments will not construction of dams	X
Projects in Disputed Areas (OP/BP 7.60)*		Investments not in disputed areas	X
Projects on International Waterways (OP/BP 7.50)	X	Riverine system part of the Zambezi Basin	

3.6. ALIGNMENT OF WB AND GOZ POLICES RELEVANT TO THIS ESMP

Both the World Bank safeguards policies and GoZ laws are generally aligned in principle and objective:

- *Both require screening of sub project investments in order to determine if further environmental analysis (ESIAs) is needed.*
- *Both require ESIA before project design and implementation (which also includes an assessment of social impacts).*
- *Both require public disclosure of ESIA reports.*
- *Environmental Act recognizes other sectoral laws while WB has safeguards for specific interests.*
- *The Bank requires that stakeholder consultations be undertaken during planning, implementation and operation phases of the project, which is equivalent to the Environmental Act requirements.*
- *Additionally, statutory annual environmental audits are required by Environmental Act*
- *The national provisions for the management of resettlement related issues are not as fully developed and therefore not at par with the World Bank safeguard policy*

* *By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas*

requirements. Thus, it is expected that the WB OP 4.12 will be mostly applied under the LSP Programme and a separate document to guide the process, i.e. a Resettlement Policy Framework (RPF) document will be prepared as a standalone report to support the social management and acceptability of the projects.

In Zambia, it is a mandatory requirement for all proposed development projects to be preceded by an ESIA study. However, prior to developing an ESIA, a project proponent is required to prepare a project report to aid ZEMA in making a determination whether a full scale ESIA is necessary or not. Thus, under the laws of Zambia, environmental assessment is fully mainstreamed in all development process and starts with a screening process, which is consistent with World Bank safeguard policies on EA that calls for mandatory screening as well to determine the rating category. Project reports will be prepared for all the sub project investments under the LSP to determine if they require a full scale ESIA. Further, in order to fully insure against triggers to WB safeguard policies, individual investments will be screened against each policy as part of the EA process.

3.6.1. Requirements for Public Disclosure

Prior to appraisal of the LSP, this draft ESMP will be disclosed in country through posting on the LWSC website as well as in the Bank's infoshop. If there are any changes, a final version will be disclosed in the same manner and places described later.

CHAPTER 4

4. ENVIRONMENT AND SOCIAL BASELINE CONDITIONS

4.1. INTRODUCTION

This chapter presents that environment and social baseline for the greater Lusaka Province. Though the baseline information is general, it will give insight into the potential project impacts on the bio-physical environment and the socio-economic environment. More detailed and subproject specific baseline assessments will be made at subproject level.

4.2. CLIMATE AND METEOROLOGY

There are two meteorological stations within the project area. These are Kenneth Kaunda International Airport and Lusaka City Airport. The climate of Lusaka is characterized by four seasons, namely winter beginning from June to August, summer from September to October, rainy season from November to March and post rainy season from April to May. More than 90% of the annual rainfall is concentrated in the rainy season from November to March. The remainder falls in October and April. The 30-year average annual rainfall for Lusaka is 820mm. The lowest and highest temperatures vary between 8.4^{O}C and 31.0^{O}C and are recorded in July and October respectively. The average evapo-transpiration for the area varies between 500 and 750mm. The average annual wind speed is 1.8m/s. (Feasibility study and preliminary design for Water Supply and Sanitation Project, Millennium challenge Corporation). The pattern of rainfall coupled with the flat terrain makes the project area prone to flooding. The high rainfall within the four months generates potential for erosion.

In view of this climate and meteorology, it is important that the LSP subprojects be configured to be in tandem with the climatic conditions. The project planning will ensure that the trenching activities are not scheduled in the rain season to minimize the erosional potential for the loosened soil and also avoid the need for dewatering some trenches before laying pipes. Understanding of the climatic conditions is also important in the resettlement planning. Resettlement issues will also ensure there will be no physical resettlements during the rain seasons to minimize the effect of rains on the PAPs.

4.2.1. Topography

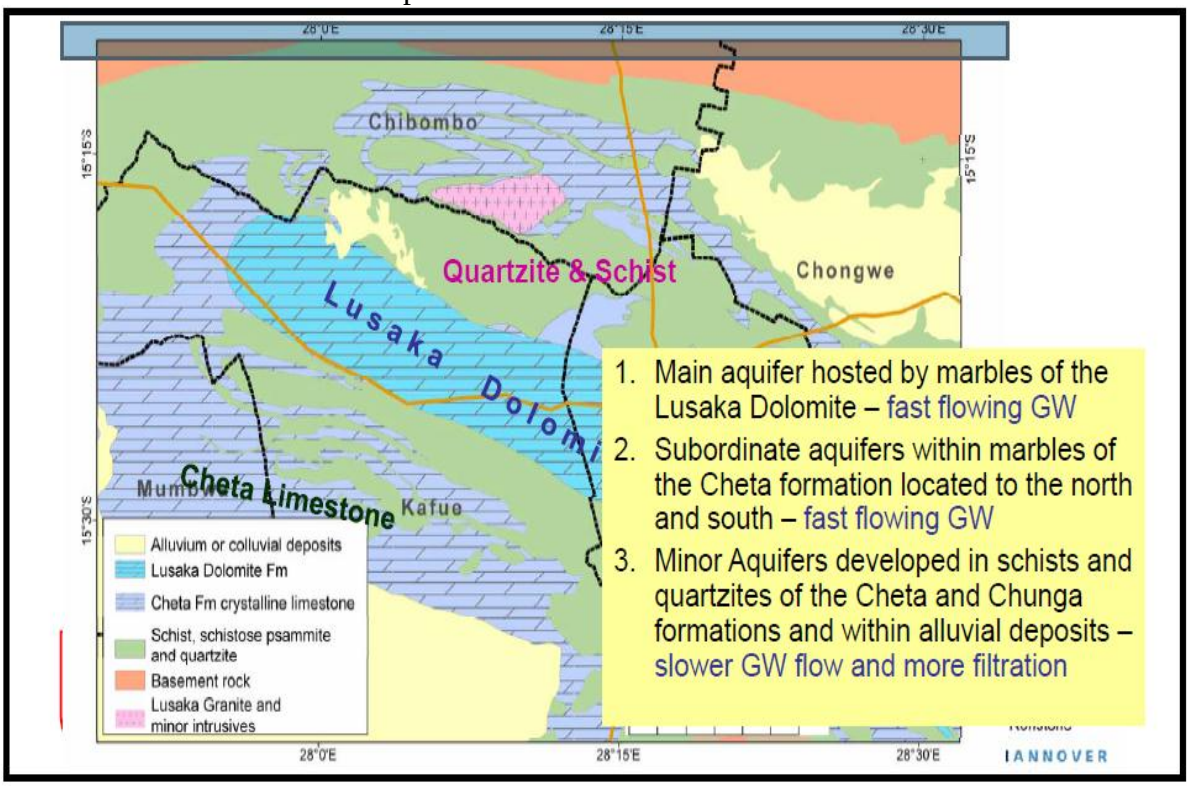
Lusaka lies on a gently rolling plateau having an average elevation of approximately 1300 meters above sea level. It is overlain by flat-topped hills north of Lusaka, marking prominent quartzite horizons, are probably remnants of a cretaceous peneplain. The geomorphology is controlled by the geology. Dolomite and limestone form flat lying area, where as schist and quartzites underlie more broken, hilly country and the older quartzites

in particular form extensive ridges several hundred feet high. Schist-dolomite boundaries are normally indicated by steep downward slopes from schist to dolomite.

The general topography is very important especially in the project component with sewers. The flat terrain makes it difficult to drain and makes the project area susceptible to flooding. The sewer trenching is likely to be very deep due to the flat terrain. To avoid too deep sewers, there may be need for more pumping stations in order to ensure optimum flow along the sewer line, otherwise there will be excessive blockages resulting from lack of draught power. The depth of the sewers will also determine the size of the work area required for mechanised trenching.

4.2.2. Geology

Generally, Lusaka city is built on the main aquifer hosted by marbles (Schematic 2-2) generally referred to as the Lusaka dolomite. It also constitutes other subordinate aquifers within marbles that are of cheta formation located to the south and north of main aquifer. Some minor aquifers have also developed in schists and quartzites of cheta and chunga formation and within alluvial deposits.



Schematic 2-2: Geology of Lusaka

4.2.3. Soils

There four distinct soil groups in Lusaka and they correspond to geological formation.

i. **Specialized plateau soils.** The Lusaka dolomite and parts of the calcareous horizons of the cheta formation are overlain by a variable thickness of pisolitic laterite with thin clayey or fine sandy soils often containing large numbers of laterite pisoliths. Where laterite reaches the surface, it forms hard undulated pavements with the little soil cover, south and west of Lusaka, dolomite outcrops over wide area.

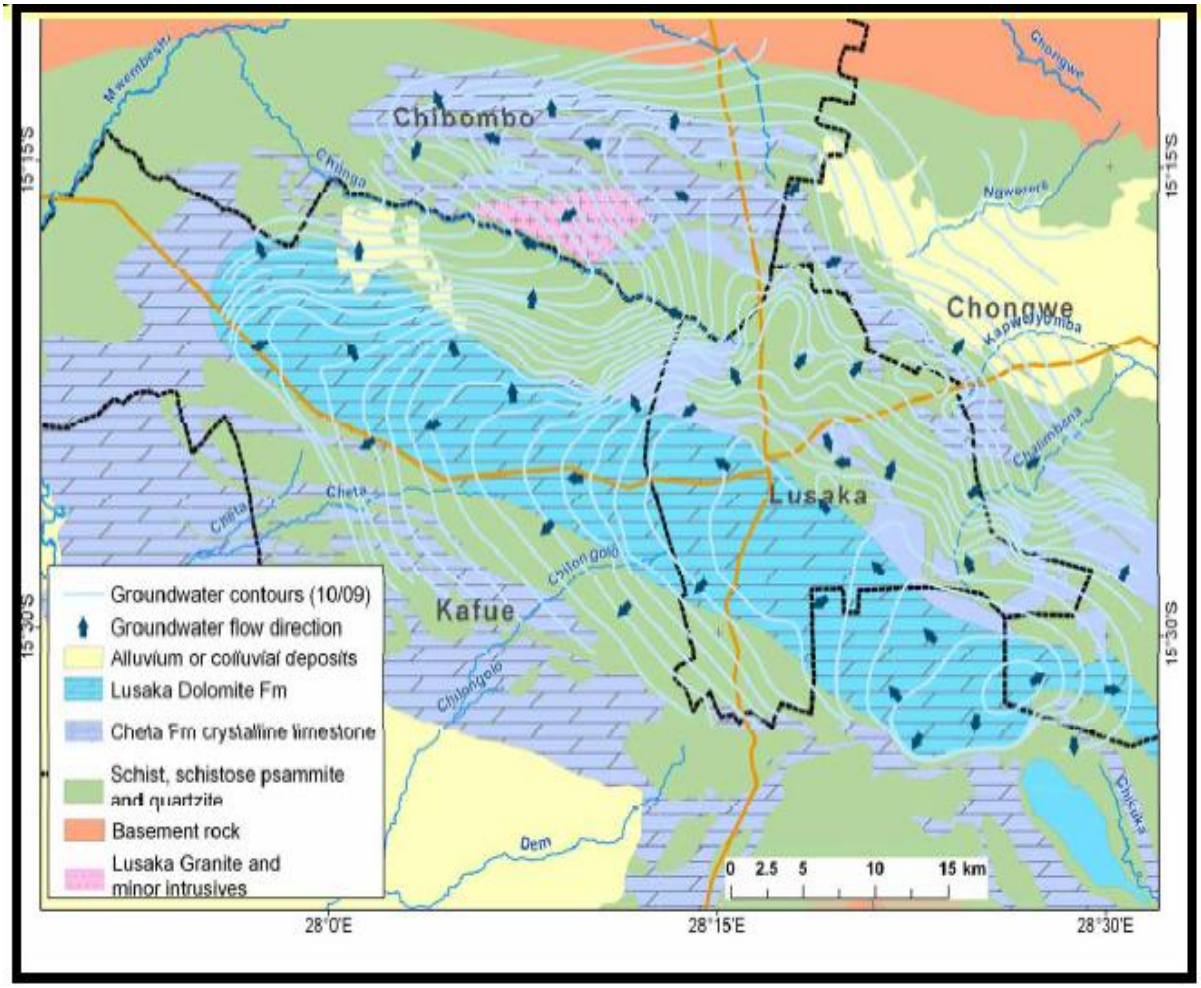
ii. **Plateau soils.** Immediately north of Lusaka dolomite outcrop and in the extreme north east, the fine sandy soils typical of the plateau are products of prolonged weathering of dominantly acenaceous rocks on maturely eroded landscape.

iii. **Upper valley soils (i).** South of the laterite soil zone there is north- west trending belt of rich red-brown and dark brown loams of mixed colluvial origin.

iv. **Upper valley soils (ii).** The soils underlying the gneisses, schist and quartzites of the basement complex are sandy loams. South-east of the line through Ngwerere and chikumbi sidings is the wide flat area of ill-drained swampy ground. The soils are thick and mixed colluvial and alluvial origin. Along the lower reaches of the Chunga River, a broad flat alluvial plain supports valley or flood plain grasslands.

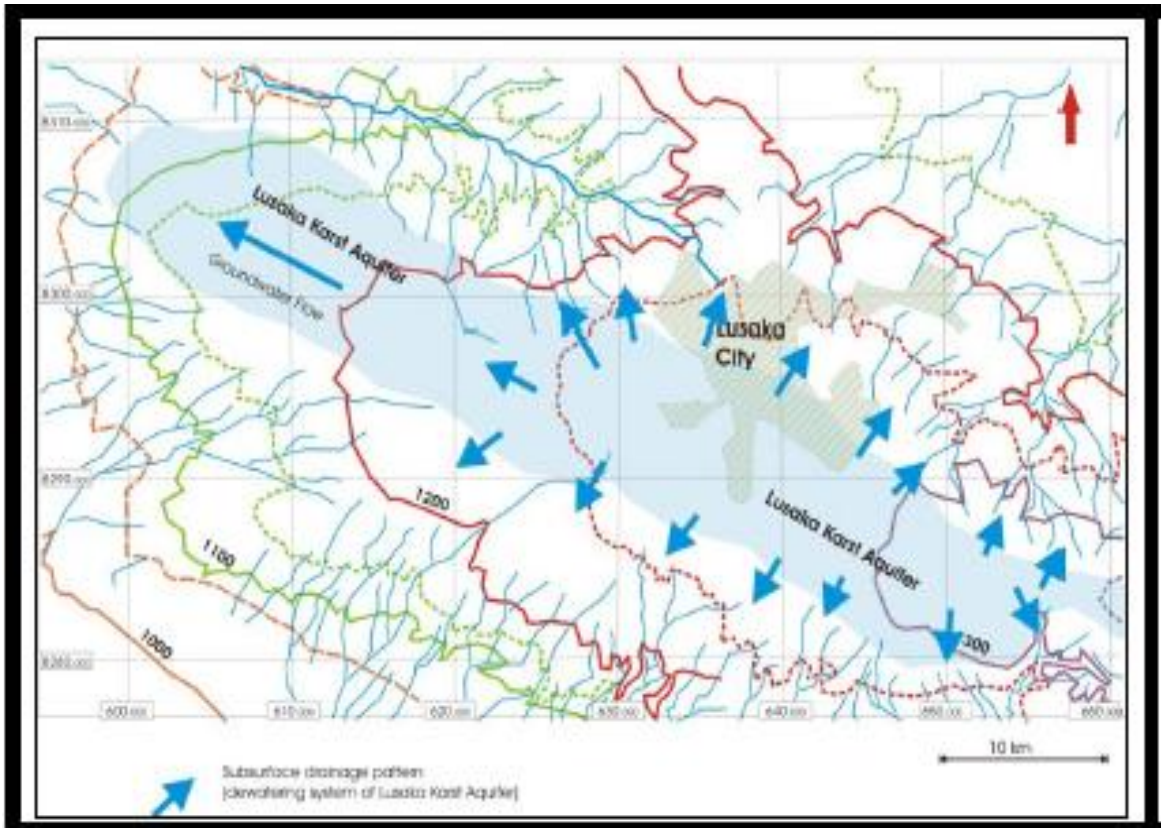
4.2.4. Hydrogeology

Generally, formation as depicted from geological map can be divided into three namely Lusaka dolomite, chunga and cheta. This karst aquifer and carbonate rocks of the cheta formation makes it interesting to understand with regard to groundwater. Schematic 2.3 shows Lusaka groundwater system.



Schematic 2-3: Lusaka ground water systems

This dolomite is cut by the network of fissures called karst, which have remained either as open hollows or been filled with soil plate. (International Mine Water Association Symposium Zambia, 1993). These fissures manifest themselves on surface as pits, sinkholes and caves. The presence of karst features in marbles makes them very vulnerable and susceptible to a very wide range of environmental problems and compromises the quality of water resource. Although Lusaka is located on the higher parts of central Africa plateau, the marble surface on which it stands lacks the slope to allow the surface water to flow. Consequently, most of the surface water percolates into the subsurface through karst conduits to eventually form the groundwater reserves which are subsequently exploited for domestic and commercial use by many boreholes scattered around the area. Despite a porous rock formation, the underlying rock type on the other hand has the ability to hold water and recharge, thus making the area a dependable recharge zone.



Schematic 2-4: Lusaka karst aquifer

4.2.5. Ground Water Usage

About 60% of drinking water in Lusaka is abstracted from groundwater while 40% comes from Kafue River, 45 Km south of Lusaka city. Currently, Lusaka Water and Sewerage Company (LWSC) pumps 125,000 to 140,000 m^3/d from the local groundwater systems. The study area i.e Kafue sewer extension covers 112 hectares and is located in the south-west of Lusaka and extends from the roundabout at the southern end of Cairo Road to the junction of Kafue Road with Chifundo Road. Although the project area lies on a productive karstic aquifer, it is characterized by shallow water tables ranging from 2m to 25m, and lacks protective cover. This makes the area susceptible to pollution from pit latrines and soak ways. There is urgent need to protect groundwater if quality of ground water has to be sustained. Below are some human activities and environmental aspects that need to addressed,

1. Unsecured water sources that flood during rainy season. This has led to decommissioning of Three (3) Chawama quarry in 2009. They were submerged in effluent from close pit latrines within vicinity as a result LWSC decommissioned them. Water quality results were not provided at the time of report generation to justify decommissioning.
2. Predominate use of onsite sanitation. Since the project area is un-sewered, it is serviced by either septic tanks or pit latrines, with effluent percolating into the aquifer.

3. Uncontrolled settlement and rapid increase of commercial properties puts groundwater at high risk.
4. Unsafe disposal of solid and liquid waste in high karsified aquifer by surrounding settlements.
5. Lack of drainage and shallow water tables has been the major contributor of flooding and groundwater pollution.
6. Extensive contamination by nitrates (refer to quality results)
7. Car wash activities, which generate huge volumes of liquid waste.
8. Small scale quarrying creating mini ponds and defecating areas.

4.2.6. Ground Water Quality Monitoring

Karst areas are susceptible to much greater problems than any other terrain because of its porosity, which easily allows water to seep through. Unfortunately, they have been found to be suitable dumping grounds for various forms of waste because of its ability, which favours quick percolation of water.

Uncontrolled waste dumping has impacted negatively to environment and water resource as it promotes disease outbreak and unhealthy environment. Small scale quarrying coupled with absence of storm drains in the area has also contributed to compromised sanity, flooding of water sources and ground water contamination within vicinity. Car washing centers along Kafue road generate quantities of waste waters every day which finally drain in to the subsurface to find their way in to the aquifer. Unplanned development or settlement without safe sanitation service has significantly contributed to unsafe drinking water. Settlers have opted to defecate in the ditches opened as a result of small scale quarrying. Effluent from flooded pit latrines has consequently entered unprotected wells or water sources that are used by the community. A number of boreholes within locality were sampled between March and October 2013 to check water quality. Results are shown in table below.

Table 1. WATER QUALITY RESULTS FROM BOREHOLES WITHIN LOCALITY (2013)

Category	Peri Urban	Date	pH	Cond	Chlorides	Turbidity	Nitrates
2	Chawama BH3	Tuesday, October 01, 2013	7.18	1154	140	3.19	264.64
2	Chawama BH2	Tuesday, October 01, 2013	7.15	1206	142	5.3	239.21
2	Chawama BH1	Tuesday, October 01, 2013	7.20	900	103	2.44	217.25
3	John Howard BH, 135/6	Monday, March 25, 2013	_	_	_	_	152.52
3	John Howard BH 115/2	Wednesday, April 03, 2013	_	_	_	_	_
2	John Howard BH	Thursday, September 26, 2013	7.28	991	66	1.96	_
1	Jack BH 2	Thursday, September 26, 2013	7.29	1081	74	2.88	213.9

1	Jack BH 1	Thursday, September 26, 2013	7.30	975	67	2.03	237.7
1	John Laing BH 1	Sunday, January 27, 2013	_	_	_		_
2	John Laing BH 2	Tuesday, October 01, 2013	7.18	423	9	2	_

All the boreholes tested for nitrates indicated unacceptable nitrate levels, which is the indicator for water pollution. Chawama boreholes 1, 2 and 3, John Howard borehole 6, Jack 1 and 2 showed high nitrates (NO_3^{2-}) levels exceeding the acceptable limit of 45mg/l. No feacal coliforms were observed at the time of testing as the samples were taken after chlorination. No results were available for John Howard 135/6, John Howard 115/2 and John laing.

The high levels of nitrates observed in the water sources indicate pollution levels and this need to be urgently addressed. The fast growth of commercial properties in this catchment area puts the resource at a further risk. In view of this, it is recommended that the construction of a sewer line in this catchment and increased frequency of water sampling to monitor water quality. Prior to analysis of nitrates, other parameters like Total coliforms (TC), Feacal coliforms (FC) and Total dissolved solids (TDS) should be observed. Drainage system should be constructed to combat floods, which occur during rainy season.

4.3. ECOLOGY

4.3.1. Flora

The surveyed proposed LWSC pipeline and the study area (adjacent sections) exhibited natural ecological distortion attributed by construction and human habitation coupled with other economic activities. Located on an average elevation of 1,200m with a moderate undulating terrain formation, the site was dominated by sand-clays soils that influenced the vegetation cover and species distribution. The urban location of the site affected the poor growth form and distribution of vegetation, which determines the availability of fauna and biodiversity in general. The dominated flora species included the *Khaya nyasica*, *Bauhinia petersiana*, *Piliostigma thoninngi*, *Acacia polyacantha, Albizia* species, *Ficus* species among others. Advanced tree forms that existed on the site included a number of ornamental exotic tree species such as the *Gmelina aborea, Jacaranda mimosifolia,* and *Delonix ragia.* There is low accumulation of biomass on the ground due to increased disturbance and proximity to the roads.

The flora species found to be associated with the study area included but not limited to the following categories (1) Ferns, (2) Conifers, (3) Dicotyledons, (4) Monocotyledons. The following species were found to be associated with the study area; *Khaya nyasica, Gmelina aborea, Bauhinia petersiana, Piliostigma thonningii, Acacia polyacantha, Euphorbia ingens, Ficus species, Hyparrhenia, Mangifera indica, Peltophorum africanum, Euphorbia tirachali. Brachystegia longifolia, Julbernadia paniculata, Pine species, Hibiscus syriacus,*

Magnolia tripetala (umbrella tree), *Pinus echinata (*Short leaf pine), *Metasequoia glyptostroboides (*down redwood), and *Rosa Carolina* among others.

The low diversity of tree species and inadequate vegetation cover along the proposed project footprint presents poor habitat value, hence the presence of only micro to moderate terrestrial fauna. The open area and high noise levels of the site makes it increasingly difficult for advanced form of fauna to exist. The sampling technique, period of the survey, and the continued land use in the study area, present the possibility of not capturing all the flora on the site. This could also be attributed to the extent of the site, plants being unidentifiable due to lack of fertile material, or plants lying dormant at the time of the survey. Several species located on the project site are listed as not "Endangered, Vulnerable or Rare" under the IUCN Red list.

4.3.2. Fauna

Fauna was limited to smaller species due to the lost natural habitat. Birdlife on the site includes most common birds such as the Turtle dove (*Streptopelia turtur*), Black-eyed Bulbul (*Pycnonotus barbatus*), White-bellied go-away bird (*Corythaixoides leucogaster*), Red-collared Widowbird (*Euplectes ardens), Roller Bird,* Thick-billed Green Pigeon (Male*) (Treron curvirostra).* No mammals were observed on the site although it is anticipated that rodents such as mole, rats, squirrels and reed mice inhabit the area. A number of Lizards were encountered during the survey and snakes such as the blind snake and house snake have been reported on the site along with frogs.

4.4. SOCIO-ECONOMIC BASELINE

4.4.1. Population

The 2010 census report indicates that Lusaka is the most populated province in Zambia. Lusaka province had the largest percentage share estimated at 16.7% in 2010 translating to 2,198,996 people of the total population of the country as compared to 1,391,329 in 2000. The annual population growth rate for Lusaka, in the period 2000 to 2010, was 4.7%, which is over 65% higher than the national average population growth rate of 2.8%. Factors attributed to high rate of growth of the population in the Province include among other things urban migration of people from other provinces in search of higher economic prospects, opportunities for higher education and higher wage employment. This has been enhanced by the low economic activities in the mining sector, especially on the Copperbelt Province, leading to the shrink in employment opportunities, hence the migration in search of jobs. Furthermore the higher population in Lusaka serves as a market for goods and services, which cannot be, sustained elsewhere in the country. The neighborhoods for the LSP include Nkoloma ward (73380 people), Kanyama ward (166092 people), Matero ward (56127), Lusaka central (50711) and Ngwerere ward (65092 people).

4.4.2. Public Health Status

Urban developments such as upgrading and rehabilitation of sanitation facilities, solid waste management and sludge management and disposal have significant impact on human health. Access to improved sanitation facilities is generally viewed to be proportional to health status, given that it is often associated with vectors causing illness. Lusaka has 34 government health institutions and about 134 registered private clinics and health centers. The two main hospitals in Lusaka are the University Teaching Hospital, which is the designated national referral health facility, and the newly built Levy Mwanawasa General Hospital. The most common diseases in Zambia are malaria, diarrhorea, cholera, typhoid respiratory, sexually transmitted infections (STIs), HIV /AIDS, skin infections and Tuberculosis. Improved sanitation is expected to have a positive effect on health, including women's health. Due to the absence of public health data for the LSP areas, there will be a separate socio-economic and public health assessment that will be conducted under the LSP. Procurement processes for the baseline study were at an advanced stage by the time of the AARAP formulation.

4.4.3. Land Use

The LSP cover an area with diverse land use pattern. Emmasdale and Chaisa areas are used as residential areas while the Kafue road area are commercial and industrial. Within the residential areas are some vegetable gardens and some orchards and household plantations, mostly in encroached areas. Residential areas in Lusaka include low density, medium density and high density. There are also areas that used to be farm workers compounds and were incorporated into the Lusaka urban area; these are most what is being referred to as peri-urban areas. In the peri-urban areas are largely unplanned settlements with very limited access road into the inner parts of the settlement. These are the areas that may be largely affected by resettlement if there are subproject interventions in such areas. In the high-density areas there is a lot of encroachments on the road reserves such that most of the vegetable gardens and boundary walls may be affected by the project activities. Along the main road reserves are a lot of billboards, which will need to pave way for the project activities. Examples of such potential project areas is the Kafue road area that is built up with industrial and commercial establishment while the road reserve is dotted with all sorts of vendors throughout the project route. These vendors include among others food vendors, block making, sand sales, car wash and taxi ranks etc. Another notable business along this route is the advertising business through billboards, which are found on both sides of the Kafue road as well as the middle of the road (island). Emmasdale is mainly residential whereas, some portions have been turned into trading centers. Ngwerere route is all built up and densely populated. Road reserves on both sides have been turned into trading areas with either built up shops or makeshift stalls. Other land uses in the area include vegetable gardens (subsistence farming) especially near the sewer ponds

Fig 4.1 Kafue Road with billboards, infrastructures and vendors

4.4.4. Housing/Infrastructure

In most industrial areas, there are modern concrete block and glass industrial and commercial buildings. In the recent past high quality and modern structures have mushroomed and are still being built along Kafue road consisting of shopping malls, service stations as well as other industries. The type of housing infrastructure in some areas like in Emmasdale is all congregate with roofing sheets and can be classified into two categories: medium and high cost housing units. Medium housing units are usually institutional or former institutional houses, medium sized concrete walls with ordinary roofing sheets with/without a wall fence usually occupied/owned by Zambians. The other category is high cost housing units: Massive mansions usually double storey buildings with modern fittings (such as aluminum windows, air conditioned etc.), harvey tiled roofs and well-designed block or steel fences. Other areas like the Ngwerere route consists of mostly low cost houses, mostly concrete walls and ordinary iron sheet roofs/asbestos roofs in some cases. Very few houses have concrete fences whilst most houses are either open or have plant hedge fencing off the yard.

Major roads such as the Kafue road route has various types of bill boards ranging from very small to huge steel structures as well as electrical bill boards right in the project area. Kafue road, Emmasdale and Ngwerere project areas all have telephone line, water and sewer lines as well as optic fibre because the project is earmarked in the road reserve where these lines are also passing.

4.4.5. Current sanitation facilities

Most industrial areas are not sewered and thus are on septic tanks except for a few properties at down town shopping mall, which are connected to a sewer line passing in Kamwala. Having the entire stretch on septic tanks is a great health challenge considering that the area is prone to floods and the water table during rainy season is very high. This calls for constant emptying/pumping of the septic tanks to avoid sewer flooding into the

environment. The quality of potable underground water is also compromised especially that properties in the project area are not connected to Lusaka Water and Sewerage for potable water but are on private boreholes

Some residential area has portions that are sewered while other portions are on septic tanks and soak always. Emmasdales also faces healthy challenges, as the area is water logged thus septic tanks gets full every so often. Some residents do not have the capacity to have their septic tanks emptied as required as a result they have connected pipes which are discharging direct into the environment (storm drains). Ngwerere project area is also a mixture; some areas are sewered while others use onsite sanitation (pit latrines). The existing sewer line in this project area is old and overloaded thus it often breaks down and discharges effluent into the community. Implementation of this project will greatly improve sanitation facilities and benefit a lot of people in these project areas.

4.4.6. Water Supply

Properties along the Kafue road route are on private boreholes, Emmasdale has a mixture of LWSC supply as well as private boreholes while Ngwerere route is also mixed with some areas being serviced by Lusaka Water and Sewerage while some households use shallow wells as their source of potable water. There is a water quality-sampling regime for all areas being supplied by Lusaka water and sewerage. The water quality monitoring is done on LWSC through the water supply department. Results of such monitoring are used for internal water quality management by LWSC.

4.4.7. Administrative arrangements

Lusaka district is politically divided into constituencies. The parliamentary constituency is the largest administrative unit to which urban and peri-urban areas belong and each constituency has a duly elected member of parliament who represents the residents in the national assembly. The constituency comprises a number of Wards, which are subdivided into Zones. There are 33 Wards in the Lusaka City area and the Year 1 investments cuts across 6 wards. Each Ward is headed by an elected Ward Councilors. Both Members of Parliament and the elected Ward Councilors are affiliated to political parties and have a mandate covering a period of five years.

Districts are headed by District commissioners who are appointed by the president. Their role is to oversee the civil service in the district. The city district councils are headed by a mayor. The elected ward councilors form a council and they meet regularly to plan and spear head developmental projects. The council secretary assisted by the Director cover various functions of the council. All the sanitation sub-project sites are within the jurisdiction of LCC.

4.4.8. Livelihood

The employment sector in Zambia comprises both formal and informal sectors. Lusaka being the capital city offers a wide range of economic activities offering employment to

various occupational groups. According to the 2010 national employment statistics from the Central Statistical Office (CSO) website: The proportion of the unemployed youth in Lusaka was 25 percent. Sex differentials at national level indicated that of the 4.3 million persons in labour force 2.4 million were males and 1.8 were females country wide. The 4.3 million persons in labour force, 554,202 representing 13% were unemployed with the copperbelt province having the highest unemployment rate at 22.1% while Northern Province was lowest at 6.3%. Almost half of the people of Zambia in the manufacturing industry are employed in Lusaka with the figure of 29,012 out of the total 70,560.

However, there are currently approximately 120,233 people in formal employment in Lusaka. This represents 9.02 percent of the total population, or 16.85 percent of the economically active. In other words the unemployment rate is about 83 percent, notwithstanding informal employment. The Kafue road area has a number of people who survive from vending, selling of live goats, selling of food items to the industries along the road. These people will not be relocated by the project, but will coexist sustainably by continuing with their daily business without moving out of the area. Only infrastructure mentioned will be affected. In Emmasdale and Chaisa the major source of income is employment of members of the family in industries and those who are not formally employed supplement family incomes by vending or part time manual jobs in surrounding low-density areas. These people also do practice urban agriculture in service lanes where they plant mostly maize. Such fields will not be affected since they are much further away from the roads along which the sewer pipes will follow.

Fig 4.2 Mandebvu Market within the project area

CHAPTER 5

5. STAKEHOLDER CONSULTATION AND DISCLOSURE

5.1. INTRODUCTION

Stakeholder consultation process is a valuable source of information on key impacts, potential mitigation measures and the identification and selection of alternatives for project design. The consultation process was open and transparent. It is anticipated that the stakeholder participation will be maintained throughout the project life cycle and serious consideration of stakeholder input will be made so that the potential negative impacts will be effectively mitigated while potential positive impacts will be maximized. The key stages of this public consultation process involved public information and consultation. It is anticipated that stakeholder consultation will lead to total stakeholder participation in the implementation of the project.

5.2. OBJECTIVES OF THE STAKEHOLDER CONSULTATION PROCESS

The objectives of the stakeholder consultation were;

- To inform the stakeholders about the LSP and its potential subprojects.
- To identify potential negative and positive environmental and social impacts associated with the proposed project.
- To formulate joint impact mitigation and enhancement measures for the negative impacts and positive impacts respectively.
- To assess the availability of mechanisms for cooperation and conflict management between and amongst local stakeholders and implementing partners during project implementation.

5.3. PRINCIPLES GOVERNING PUBLIC CONSULTATION

The following principles were followed to achieve the above goals of the stakeholder consultation;

- **Inclusivity:** The public consultation process covered representatives of all relevant stakeholders. To ensure this principle was upheld, the stakeholder listing was done with the participation of a diverse safeguards team.
- **Open and transparent:** In order to enhance this principle, LWSC ensured that all steps and activities of public consultation were understood by all consulted stakeholders.
- **Relevance:** Relevance was also key in this ESMP and this was achieved through remaining focused on the project issues that matter. The consultation boundaries also ensured that the consultation process remains relevant to the proposed activities.

- **Fairness and responsiveness:** To achieve the objectives of the stakeholder consultation process there was a need to ensure that the consultation was conducted impartially. All stakeholders were empowered with project information first in their preferred local language, and then solicit their informed input.

5.4. PUBLIC CONSULTATION METHODOLOGY

The methodology that was used to capture stakeholder concerns was multi-facetted. The local leadership, and community were consulted through meetings at the Donchi Kubeba market and vending areas along the Kafue Road. Community meeting was also held in the Ngwerere area. The Government departments, business representatives, community leaders and NGOs were consulted through a stakeholder meeting at Mulungushi Conference Centre. A targeted Kafue Road business cluster meeting was conducted at the LWSC offices. Newspaper notices were also placed in the local dailies to capture submissions from a wide range of stakeholders. Separate meetings with organizations that have infrastructure along potential affected road areas including the LCC, the RDA and Zamtel were also held. The stakeholder consultation list is in section 5.4 below and the attendance registers are in appendix A.

5.5. STAKEHOLDER CONSULTATION LIST

To allow hybridization of ideas and also ensure full impact identification the stakeholder listing targeted diverse community organizations and representatives. The contact details of the consulted stakeholders are in Appendix A. Below is the category of stakeholders targeted the following stakeholders;

1. Zamtel.
2. Airtel.
3. MTN.
4. RDA.
5. LCC.
6. ZACI.
7. Vendors Association.
    - Ngwerere market
    - Kafue markets
8. Business Operators Representatives.
    - Kafue
    - Comesa
    - Bus Company Association
9. Ward Councillors.
    - Mississi
    - John Lang
    - Cook
    - Kombooka
    - Lusaka Central
    - Ngwerere

- Emmasdale

10. ZESCO.
11. Ministry of Local Government.
12. Ministry of Water Affairs.
13. NGOs.
    - Kanyama Water Trust
    - Zambia and Alliance
    - Churches Associations
    - UNICEF
    - USAID
    - Citizens for better environment
14. Women Organizations.
15. MWASCO.
16. Ministry of Health.
17. Commuters Association.
18. Ministry of Water and Energy.
19. Ministry of Community, Mother and Child Development.
20. Transporters Association.
21. Road Transport and Safety Agency (RTSA).
22. Traffic Police.
23. Association of the disabled.
24. National Heritage.

The list and contact details of the consulted stakeholders are in appendix C.

Stakeholder Consultative Meeting Held At Lusaka Water And Sewerage Company With Kafue Road Business Community.

Table 5.1 Summary of discussions at the stakeholder meeting

Name of stakeholder	Stakeholder concern/ in put	Response/Comment
1. Mr. Micheal Mukombo of Castle Shopping Complex	Any efforts by LWSC to improve the quality of potable water from the boreholes.	LSP project was about improving the sanitation situation in Lusaka, but a project on the bulk water pipeline from Kafue river will be undertaken soon.
2. Ms. Davina Bhagat of Puma Service Station	Which access roads will be affected (cut) and for how long will the affected access roads be closed off? Engagement of landlords where there are tenants.	This will be done in liaison with the Lusaka City Council (LCC), Notifications and consultations with stakeholders will be made proactively, Reinstatement will be made.
3. Mr. Musonda **of** Embassy Shopping Mall Consultant	When would the project commence and how long it will take to complete.	Tentatively commences in July 2015 and may take a year to complete.
4. Cornelius Mwamba of Hebron Tabernacle Church	Most billboards have contact details. At whose cost will the properties connect to the main sewer interceptor? Comfortable on septic tanks. Kafue road has been earmarked for expansion.	Business owners would be compelled, according to the public Health act to connect to the sewer mains, once the service was made available. RDA will be consulted on the roads related issues.
5. Patrick Simwanza of NorthPoint	Looks forward to the implementation of the project.	LWSC assured implementation once funds are released.
6. Richard Nanchengwa of Jack Kawinga	Will the surrounding communities benefit in terms of sewer connections once the interceptors had been installed	Not specifically in this subproject, but in other future subprojects.
7. Clara Kondowe of Cenacle of the Holy Spirit Church	Do properties that already had connections from the Kamwala line have to connect to the new interceptor	The old Kamwala line is currently facing challenges of constant blockages. Therefore once the new interceptor was installed, a decision will be made whether to migrate some properties to the new line.
8. Brian Samuhela of BUK	Will there be further communication before the project commences and whether stakeholders will have access to safeguard documents.	LWSC will continually communicate with stakeholders. Safeguards documents are public documents, available from ZEMA, LWSC and LCC. A public notice will be made when they are ready for viewing.
9. Mr Chikama of LWSC	Willingness and support of the business sector for the project.	Mr Musonda(consultant with castle shopping complex) advised that LCC should be enganged as these business houses pay to LCC for bill board adverting and the sewer line is in public interest and that it will definitely take top priority and be supported by businesses.

5.6. 2nd STAKEHOLDER CONSULTATION MEETING HELD AT MULUNGUSHI INTERNATIONAL CONFERENCE CENTRE FOR GREATER LUSAKA STAKEHOLDERS

Fig 5.2 Delegates to the Mulungushi stakeholder meeting

Table 5.2 Summary of discussions at the stakeholder meeting

NAME & ORGANISATION	QUESTION/COMMENT/ISSUE	RESPONSE
John Pinford - UNICEF	Happy with 100% sanitation coverage by 2035 and not 100% sewerage coverage because sewerage 100% was a pipe dream. UNICEF is willing to partner with LWSC on the sanitation options for peri urban areas that are not necessarily revenue generating.	LWSC is grateful for UNICEFs support and plan to work with as many stakeholders as possible as improving sanitation in peri urban areas was expensive and complex.
Kelvin Chileshe – Matero ward 28 Councillor.	Wondered why no hand-outs (print outs) of the project presentation were given beforehand for easy following of the presentation, and further asked as to when the project would commence.	Handouts were given later. The project is in its preparation stage and is likely to start by August this 2015.
David Manjulunji - RTSA	Grateful for the project as it was long overdue. Concern about poor reinstatements of infrastructure esp. roads after being cut which lead to accidents.	LWSC will ensure reinstatement the road through the subproject RAP, thrust boring may be considered.
Frederick Bwalya – Ngwerere Councilor.	The procedure for people to be connected to the sewer network. Will the Garden ponds be backfilled to avoid more deaths as a result of people drowning in the ponds? Any program of fumigation in place by LWSC to lessen mosquito breeding in the ponds as Garden compound and the surrounding localities have been infested by mosquitoes.	Interested residents apply for the service at the Peri urban unit of LWSC. LWSC was already taking measures to address the breeding of mosquitoes by fumigating the ponds
Kelvin Chileshe – Matero ward 28 Councilor.	Proposed that sewer expansion project should actually start in Matero compound.	It will be considered in view of other subprojects.
Estella Mbulo –LCC	Appreciated the fact that the LSP was a baby of the Lusaka Master Plan initiated by the City Council. She however, was concerned that only about 15% of the city was on sewerage system, while the rest of the city was on onsite sanitation. She wondered as to what mechanisms where in place for the Council to work together with LWSC to improve the sanitation situation in the City, seeing that plots allocated for housing by the Council where too small to accommodate septic tanks.	The project has technical support funding to both LWSC and LCC to work together in enforcing City bye-laws
Bonje Muyunda - ZESCO	Wanted to know what resettlement issues had arisen so far and who was the project affected people (PAPs), as well as what EIA issues have been considered. She further wanted to know which organization was going to meet the cost for resettlements	The first year investments, no major resettlement issues had been encountered and that one important criteria used to selection of first year investment projects was the minimization of resettlements and the number of PAPs to be affected. The reason why this stakeholders' meeting was called was to receive issues of concerns from project affect people (PAPs) and others generally, arising from the project impacts. Such concerns were going to be considered for mitigation in

		the safeguards management in line with ZEMA regulations.
William M. Banda – Zambia Police	Expressed concern about the security (negative reactions from venders in case of demolitions) during project implementation of infrastructure and wanted to know whether people in the project areas had been sensitized about the project	LWSC: The PAPs are being consulted and sensitized but we appreciate the concern and we are grateful that the Zambia Police are one of our stakeholders in this project.
Bwalya Kapuwe – Matero ward 28 Councilor.	Indicated that a similar project in Matero's Maiteneke area had "backfired" and therefore wanted to know what measures would be put in place to avoid similar experiences. Has there been sensitization?	This will be mitigated by consulting all relevant stakeholders.
Jonathan Mwamfulilwa - ZAMTEL	Requested LWSC to invite ZAMTEL to walk the route for the proposed project so that they can also identify their cables and re-route them where necessary prior to the implementation of the project.	LWSC arrange for walk through with ZAMTEL.
Frederick Bwalya – Councilor Ngwerere	Re-echoed on the issue of mosquitoes in his ward and that he was not satisfied by the answer he was earlier given.	LWSC took note and assured him that they will look at how best they can improve the situation.
Lawrence Sichalwe – Councilor Msisi and Kuku	Indicated that a 'CAB' memo had been developed with Government on the redevelopment of MISISI compound and therefore requested that LWSC should not do anything regarding the development of MISISI compound outside the memo.	LWSC: Thanked the councilor for bringing the issue up but assured him that all stakeholders will be considered and consulted during project implementation.
Ben Mwila – Episcopal Conference	Lamented that LWSC should have looked at other areas for consideration of sewer network extension, particularly areas such as Chalala that are on septic tanks	
Peter Mutale - NWASCO	Commented on the issue of the sewer ponds being near the people and the breeding of mosquitoes. Mr. Mutale appealed to the councilors to assist water utility companies as well as the regulator (NWASCO) in such issues by advising people in their ward not to build houses near the ponds. This is because ponds cannot be enclosed or fenced off. Nwasco is concerned that the cost being incurred by LWSC to fumigate or secure the ponds might end up being transferred to the customers by raising tariffs.	LWSC: Thank you
Alick Mbewe - ZESCO	Expressed concern, regarding power cables that are along the Kafue road and that he would like to be availed the lay out designs for the interceptors prior to the project being implemented.	Lay out designs will be made available and invitations to walk the route will be made to avoid unnecessary interruptions.

Donchi Kubeba market is located near Intercity Bus terminal, Zambia's biggest local and international bus travelers' transit point and the ever busy Kamwala shopping center, a commercial place in Lusaka on the Independence Avenue near to the interception of Dedan Kimathi Road with Independence Avenue. This trading facility is located on the right side of Independence Avenue Flyover Bridge, and directly opposite the 23-storey FINDECO House, owned by the National Housing authority (NHA). The aim of the meeting was

primarily to communicate to the traders about the Lusaka sanitation program. As such the meeting focused on the primarily objectives of the program and the benefits of the program to the city

Table 8.3 Summary of discussions with the market traders

Stakeholder Concerns/ Submissions	Mitigation/ Way Forward/Response
It's a political move by government to relocate them.	LWSC assured that the project will be implemented without any political motive. LWSC wants to work with the traders to ensure that the project is implemented with minimum negative impact to the traders.
Loss of business and trade once the works commence	LWSC is conducting a socio-economic survey using to generate information on how you are trading then some further considerations will be done.
Will the program compensate them and what criteria will the program follow if there will be compensation?	We promise to reinstate every property effected due to our project and cushion economic losses due to down time.
Fear of relocation	The traders are only temporarily relocated and will return after installation of the pipes.
There are not enough market places if they are relocated, because the other markets are overcrowded.	The traders are only temporarily relocated and will return after installation of the pipes.
Trading at the market is not just for the sake of it but its rather for survival because they have failed to find employment in the formal economy.	LWSC understands that and it will discuss the concern with other partners in consideration of the trading incomes.

The chair person thanked the traders for attending and LWSC for extending it's usual respect to the residents by sensitizing the affected and beneficiary of the services, he further requested the company to update the traders on every step of the project and notify them in time.

5.7. AWARENESS RAISING MEETING HELD AT NGWERERE PONDS

Fig 8.4 Stakeholder meeting at the Ngwerere Ponds

Table 8.4 Summary of discussions with the market traders

Stakeholder Concerns/ Submissions	Mitigation/ Way Forward/Response
The gardeners expressed concern on the loss of income and gardens once the works commence.	They were assured that, that's why information was being collected to enable the company handle the situation if this occurred.
They also wanted to know if the program will compensate them and what criteria will be followed if they had to be compensated because they deal in different crops?	They were assured that consideration for compensation will be made with their full participation and consent before project commences. They were assured that the compensation method will be discussed fully with them at a time that the project details are fully known and which gardeners will be affected.

The chair person thanked the gardeners for attending and urged them to be truthful when answering the tools used he further thanked LWSC for extending it's usual respect to the residents by sensitizing the affected and beneficiary of the services, he further requested the company to update the traders on every step of the project and notify them on time.

5.8. CONCLUSION

The consultations showed that the stakeholders are keen to have the project implemented since they understand it has huge impact on the sanitation status for the city. They also openly expressed their willingness to be continually engaged and where appropriate, they expect the project to mitigate the potential resettlement related impacts to their satisfaction. LWSC assured the stakeholders that the consultation continues throughout all the project phases. There is therefore need to consult all key stakeholders timely during the subproject formulations.

CHAPTER 6

6. DETERMINATION OF POTENTIAL ENVIRONMENTAL AND SOCIAL IMAPCTS

This chapter analyses the potential positive (beneficial) and negative (adverse) environmental consequences of the sub project investments envisioned under the LSP.

6.1. IMPACT ANALYSIS AND ASSESSMENT

6.1.1. Positive Impacts

- **Employment and Improved Service Delivery**
  Increased employment opportunities, improved service delivery to enterprises and the population across the water sector in general remains one of the positive benefits that will arise from the LSP sub projects. This project will therefore provide substantive employment opportunities to local populations. It is anticipated that the project will provide direct employment during the construction phase and another operational stage. Indirect employment through aspects such as transportation, infrastructure maintenance, markets, research and marketing will be far much greater and over a longer period of time. A positive direct and induced impact for men, but especially for women, is the opportunity for employment during project operation in operation and maintenance when labour is required. There also is a potential negative, cumulative impact that may occur in terms of children of poor families, reaching working age, remain in the community but have new families, hence a growth in the need for services and employment may occur. A further induced negative impact, albeit very small, from unemployment leading to potential domestic incidents and of human trafficking or abuse by employees.

- **Increase Water Supply**
  Water and Sanitation supply systems under this program will ensure that the general public in the targeted areas have access to clean water supply a pre-requisite for health and sanitation and a basic right.

- **Improved economic growth**
  Poor sanitation infrastructure has been identified as one of the primary causes of poor economic and employment growth in Zambia. If the LSP succeeds, the program will translate to overall measurable economic growth for the country.

- **Gender**
  There will be a positive induced impact in improved safety and security for women and children in the communities, from better water available in daylight hours and not at night, which reduces the risk of violent attacks and rape.

- **Solid Waste Management**
  The impact of improvement to health may be limited by the continuing, poorly managed solid waste build-up in the communities, which also create an environment for flies, mosquitoes and other insects along with cholera and typhoid to continue to put communities at risk.

- **Health**
  A positive induced impact is that improved water and sanitation will lead to less water and insect borne illness leading to a healthier, productive community, whose members will be able to attend school or carry out income earning activities. This also has a positive induced impact by reducing the burden on women and girls, who are often required to look after the ill members of the family or will be the first to miss out if opportunities are limited.

- The project will largely generate positive impacts contributing to better health through increased access to sanitation facilities, reduced incidence of water borne disease, and improved awareness of good hygiene practices. The major potential positive impact generated by the project is the provision of sewer services to areas that currently have only problematic onsite sanitation facilities, thereby reducing the potential for groundwater pollution from such areas. The enhancement of this benefit lies with the strengthened enforcement of the local authority by laws—that currently require households within 60 meters of a sewer main to connect—to ensure all possible connections to the sewer are made.

- Although investigations by the Department of Water Affairs linked ground water contamination to the use of pit latrines in the peri-urban areas, the construction of improved on-site facilities should nevertheless reduce this contamination, as the fecal load is a given, and if not contained is circulating elsewhere in the environment, with ample opportunity to contaminate groundwater. This positive impact will be achieved by adopting sustainable pit latrine designs that improve access to sanitation, facilitate hygienic FSM, and limit ground water pollution by ensuring separation of fecal waste and urine from grey water.

6.1.2. Potential Adverse Impacts

This ESMP based on the environment and socioeconomic baselines in combination has identified potentially significant environmental and social impacts for sub projects under this program and proposed the mitigation measures to be incorporated into the design of sub project investments to prevent impacts occurring, or reduce or compensate these impacts such that they are no longer significant.

There will only be localized short-term impacts during construction due to the implementation of the civil works. Impacts are proposed to be addressed at the design stage of each sub project by choosing engineering solutions that, as far as is possible, minimize the impacts during construction. During the operational phase the sub-projects will deliver the intended benefits of improved water supply whilst the infrastructure will be hidden

from view below ground. The impacts of sub projects which cannot not be eliminated by the design, mostly impacts during construction, will be reduced or eliminated by mitigation and monitoring measures specified in the ESMP. These construction related impacts could be mitigated by (i) the contractors' work practices, especially those related to maintenance of access, methods of trench excavation, the storage of construction materials and cleanliness of the work sites; (ii) cooperation by the local authorities with the contractor in terms of traffic management and use of public space and utilities; (iii) project management's strict enforcement of the correct construction practices and standards; (iv) the incorporation of the mitigation measures identified in the ESIA into the bid documents and specifications; (v) public awareness including liaison at ward level shortly in advance of work in each work location; and (vi) close monitoring of the contractor's implementation of the required mitigation measures.

The environmental impacts resulting from implementation of civil works are expected to be minor and short-term since the improvement works are principally for the laying of buried pipelines and works at existing above ground structures with the exception of new water kiosks and service reservoirs. The potential adverse environmental and social impacts of the project are numerous and this ESMP highlights these impacts which are broad and cross cutting across most of the envisaged sub projects. However, the specific adverse impacts for each investment will be distinguished during the preparation of the specific ESIA or ESMP once the screening process is complete.

1. Surface and Ground Water Contamination

Potential environmental risks will largely be related to the contamination of the surface and ground water by effluents. The Chunga River drains into the Kafue River while the Ngwerere River drains into the Chongwe River, both of which drain into the Zambezi River. The surface water quality within the Ngwerere and Chunga River is negatively impacted by the effluent discharges from households. Monitoring by the Water Resource's Authority shows that the ground water shows signs of fecal pollution, though the exact origins of this have not yet been established. It is probably due to multiple causes, including sub-standard on-site and sewerage infrastructure, unsatisfactory FSM practices and periodic flooding of sanitation systems in low-lying areas such as Kanyama.

2. Increased Effluent Load

The upgrade and expansion of the sewer network will likely increase the load of effluent discharges into receiving water. The proposed sewer expansion and upgrades may result in increased inflow to the already overloaded sewage ponds, thereby increasing the pollution load to the existing Rivers that finally drains into the Zambezi River. The negative impact can be mitigated to a large extent through the upgrading of the wastewater treatment facilities and introduction of effluent reuse. Enforcement of effluent discharge standards from industries to the sewer line and ensuring adequate pre-treatment by industries may increase the water quality of the effluent discharges.

3. Decreased Water Quality

Increase in suspended particles due to construction works; risk of human contamination from construction camps; and competition for water will affect the water quality especially where investment projects are close to natural water bodies.

4. Loss of Flora/Vegetation

There will be vegetation loss during the construction phase (for sub project investments) either to pave way for access roads, sewerage systems, boreholes, ponds and actual project construction among others. The vegetation will be cleared so that the area where the construction work is to take place is clear for the construction work to be performed. The construction works will involve land take, bush clearing, removal of top soil, excavation and haulage. These activities will expose the land to elements of erosion such as wind and water and thus will trigger the process of land degradation.

5. Soil Erosion

Soil erosion could occur during the construction phase when loose soil is swept by waters and during the construction phase. This will be as a result of the intensive activities that will be going on in the construction areas especially land clearing. The heavy equipment and machines that shall be used in the construction process will interfere with the soil structure making it loose hence liable to erosion. Increased run off is likely to be experienced during the construction phase of certain sub projects under this program due to clearing of vegetation. Construction will involve the removal of vegetation during construction and will hence accelerate erosion during the construction process.

6. Borrow Pits and Quarry Sites

Borrow pits and quarry are sites where stone, sand, gravel, till, clay, or other granular soils are extracted for construction of the various sub projects. The term 'pit' is used when granular material is extracted. The term 'quarry' is used where consolidated rock is removed. Environmental impacts of pit and quarry development will include the loss, reduction or disturbance to wildlife and habitat, erosion, dust, soil/groundwater contamination, damage to historic resources, waste disposal, noise, and aesthetics.

7. Decreased Air Quality

Airborne dust will be caused by excavation, vehicle movement hence engine combustion and materials handling, particularly downwind from the construction sites during the construction phase of the identified investments. Uncovered stockpiles and asphalt mixing plant operations are another source of dust. Air pollution will be further caused by emissions from vehicles and construction machinery. There will be decreased air quality due to dust, suspended particles, hydrocarbon vapours, oxides of nitrogen and sulphur (NOx and SOx) and Volatile Organic Compounds (VOC) among other emissions. Sewerage ponds are also likely to decrease air quality through foul smell/odour.

8. PCBs

Polychlorintated Biphenyl (PCBs) are manufactured organic chemicals which have been used in several industries because they do not burn easily. The PCB group of chemicals are

on the Stockholm Convention on Persistent Organic Pollutants list because of their known harmful effects to the food chain and to human health. In animals, PCBs are consumed in contaminated water and stored in body fats, and hence spread to humans. They can also enter humans directly through exposure, mostly in contaminated ground and surface water. PCBs act as a carcinogen, causing development and behavioural problems in children and immune suppression in all humans.

PCBs have been used in power transformers in the form of askeral oils, amongst other products in the power industry. Many countries no longer allow the use of PCBs, including Zambia, since it is a signatory to the Stockholm Convention (Zambia ratified in 2006). On the water supply project small transformers will require relocation. These may or may not contain PCB contaminated oil, although ZESCO maintains that they have not used askeral oil in transformers for many years. On the project, all materials supplied under all contracts in the rehabilitation, construction, erection and commissioning will be PCB free.

Since the half-life of PCBs being up to 1.5 years, it is thought that the transformers to be relocated will not be an issue, given that the PCB-based oil would not have been used since 2006-07. However, in older transformers, the remnants of askeral oils or the contaminants from these cannot be guaranteed. Therefore, the following is recommended:

In cooperation with MCA, ZESCO and ZEMA, the works contractor will confirm the age and maintenance history of the transformer, obtaining written records of the type of oils used. If the oil used at any time is found to be potentially PCB contaminated, it must be assumed that the transformer remains contaminated.

Potential PCB contaminants in a transformer may give rise to potential contamination of surface and ground water from PCBs contained within the transformers. Management measures to eliminate the environmental risk from the release of PCBs into the receiving environment are:

- PCB testing shall be conducted by the works contractor, in consultation with ZESCO and ZEMA, with results provided to the contractor;
- Workers safety equipment will be provided by the Contractor including appropriate work attire (clothes and footwear) and provision of personal protective equipment (PPE) gloves;
- Full details of each test including site/location, general condition, manufacturer, year of manufacture will be recorded;
- Following testing the works contractor shall submit a test report detailing the outcomes. Together with MCA-Zambia, ZEMA and ZESCO, the works contractor project manager will determine the magnitude of PCB and hazardous waste levels;
- If PCBs are identified, the works contractor will develop an emergency procedures manual approved by ZEMA and rehearse those procedures, based upon the magnitude of potential hazard found;
- Workers who handle equipment with potentially hazardous materials, should also be briefed on the hazards and the use of safety equipment by the works contractor prior to handling hazardous materials;

- Works contractor is required to identify and utilize an appropriate warehouse, in which the contaminated transformers may be stored until such time as disposal can be carried out;

- Drip trays and spill containment precautions must be used where transformers are being removed, transported and stored, so as to ensure no hazardous materials are released into the ground or surface water bodies; and
- In the event of PCB contamination, ZESCO/ZEMA may choose to store under specific conditions, clean (by specialist equipment) or destroy the equipment (normally in a high temperature furnace). ZESCO with MCA-Zambia, the works contractor and ZEMA will need to approve all hazardous waste handling procedures and ZESCO will obtain permits from ZEMA as required.

9. Asbestos

Most of the existing old sanitation pipes and many existing water mains in Lusaka are asbestos cement (AC) concrete pipes that contain asbestos. Although not dangerous whilst in the ground, if still in good condition, it is important to ensure that the correct knowledge and procedures are determined in the event that these old pipes need to be replaced, removed and disposed of, ensuring that the public and labourers are not exposed to the negative effects of the substance.

Asbestos is a mineral fibre that occurs naturally in rock and soil. The strength and heat resistance of the fibre product makes it good for effective use in a range of manufactured goods from building materials (including concrete pipes) to vehicle parts (e.g. brakes), heat resistant fabrics, packaging and coating.

Exposure to asbestos becomes dangerous to human health when it is ingested in the form of fibres, ingested by humans, especially through breathing the fibres when they are released into the air. Exposure eventuates into high risk of lung disorders, generally developing over a long period of time and is, therefore, a potential minor issue for construction labour and surrounding residents of this Project, in cases of concrete pipe replacement/removal. Three main impacts on human health are:

- Lung cancer;
- Asbestosis – a non-cancer lung disease; and
- Mesothelioma – a rare form of cancer found in the outer lining of the lung, abdomen and heart.

Although the exposure to asbestos will be small the following mitigation arrangements will be required:

- Prior to construction activity in an area, the works contractor will identify asbestos-containing pipes that will need to be removed/replaced or worked on. The works contractor will then inform ZEMA and MCA-Zambia, requesting their approval and providing a method for working on the identified pipes, indicating procedures by which the least amount of asbestos fibres will be released into the air and risk

exposure of humans;

- As necessary, ZEMA will instruct on international and Zambia legal standards for the work activity, exposure levels and PPE standards, including measuring air quality for fibres per cubic centimetre, the need for specialist masks and clothing, hygiene and other requirements; and
- The tility operator or works contractor, with ZEMA and the MCA-Zambia, shall identify disposal methods for waste asbestos-containing pipe products that will not cause environmental damage or exposure of fibres to any human or animal receptors.

10. Sandblasting of lead based paint

It is important that all debris generated during the removal of the existing paint is handled properly and that operatives are provided with the correct PPE for the job. If the paint contains metals, potentially lead, the works contractor shall furnish the PMC with a certified test report showing 'Toxicity Characteristic Leaching Procedure' results for a representative random sample taken from the debris. Should any laboratory result exceed 5.0 mg/l for lead the works contractor shall be required to dispose of the waste in accordance with the ZEMA regulations and requirements. Waste should be separated into hazardous and non-hazardous portions, e.g. the lead may be separated from the abrasive but the lead cannot be diluted to render it non-hazardous. The contractor should be encouraged to utilize measures such as wet blasting, shrouding, chipping etc. in order to minimize the impact on nearby residences and the environment.

11. Diseases Spread-Public Health

Improved access to water will have positive benefits on the lives of the communities such improved in yield and better access to drinking water. However, it also could have some negative impacts. The will provide a benefit in improving water supply services, hence conditions for improving health and hygiene practices in the beneficiary communities. This is expected to somewhat reduce the incidence of secondary disease incidence to HIV/AIDS infected persons such as diarrhoeal and insect transmitted illnesses in particular. However, the potential indirect negative impact, although expected to be negligible, may also arise from when local labour is used by the contractor and increased disposable income for the labourers will follow. Hence, the labourers will have money to pay for transactional sex and for other activities that may lead to spread and increased prevalence of HIV.

HIV/AIDS is well known to particularly spread through mobility and in-migration and these are stated as factors increasing the spread of HIV in Zambia. While it is acknowledged that this is particularly pronounced in road and transport sector development, all large-scale infrastructures have the potential to increase both in migration and mobility.

12. Traffic including accidents

Traffic congestion from construction and operation phases of sub projects could potentially cause health and safety impacts, as well as economic impacts. The use of heavy moving construction vehicles and machineries in project sites is generally known to cause traffic reducing movement and flow of vehicles.

13. Loss of Land

The construction activities may involve a relatively land take. Construction activity is temporary change in land use for small areas of land taken temporarily for contractor work sites. Permanent acquisition of land for boreholes, reservoirs and kiosks among others. Potential negative impacts of the project include related resettlement issues arising from the construction of sewer pipelines, pump stations, and related infrastructure.

14. Noise and Vibration Impacts

Construction/operation activities could result in significant noise impacts so as to impact on general well-being, health and functioning. Infrastructure developments (involve the use of heavy equipment (graders, drilling equipment, trucks, blasting equipment, tractors, and excavators) for among others rock blasting, excavation, asphalt mixing plant operations and vehicular movement that emit incessant noise usually harmful to the environment. Introduction of new sources of noise is an issue in areas where ambient noise levels have been low.

15. Health and Safety of Workers

Sub projects are likely to lead to occupational health and safety concerns especially during construction where equipment and machinery will be operated by human beings. Another potential negative impact will arise from the fecal sludge management initiatives that could expose employees to infections. This occupational safety risk will be mitigated through the selection and effective use of mechanical equipment and personal protective equipment. Safe working procedures, training, and annual screening and treatment for excreta-related infections of employees will also be implemented.

16. Solid and Effluent Waste Hazards Generation and Pollution

Solid waste issue is a potential adverse impact that will be as a result of abandonment of litter/construction materials on site, use of plastic container/bags by road users and the construction crew and use of polythene sheet for curing by the contractor. Construction camps may be a further source of both solid and liquid wastes.

17. Increased crime and in-migration

The increase in the number of people in a specific project area or site especially during construction has the potential to lead to a number of negative socio-economic impacts, including increased insecurity and community conflicts, increased incidences of diseases; increased risk of accidents and occupational hazards; and immigration of construction workers and labour force management challenges.

18. Visual Intrusion:

Unsightly earthworks and borrow pits during construction may be a source of visual related impacts especially through scarring of landscapes. During operations, visual intrusion of equipment on site may be seen as a negative impact at the local level.

19. Solid and Effluent Waste Hazards Generation and Pollution

Solid waste issue is a potential adverse impact that will be as a result of abandonment of litter/construction materials on site, use of plastic container/bags by road users and the construction crew and use of polythene sheet for curing by the contractor. Construction camps may be a further source of both solid and liquid wastes.

6.2. POTENTIAL CUMULATIVE/INDUCED IMPACTS

Cumulative Impact Assessment (CIA) has been defined, and is applied in this Section, as the analysis of all the effects on an area from one or more activities as they accumulate over time and space (IPENZ, 2000). Cumulative effects can be different in nature (e.g. additive, synergistic or interactive), larger in magnitude, greater in significance, more long-lasting, and/or greater in spatial extent than is the case with individual effects (IPENZ, 2000). Additionally, the individual impacts from a single development may not be singularly significant on their own, but when combined with other impacts, those effects could become significant (Cooper, 2004).

LSP investment projects may individually have insignificant adverse environmental impacts. However, several water investments in combination, or in combination with other government or private sector activities within the water sector, could have a larger, more significant cumulative impact. This is particularly likely to be the case for:

1. **Land use**

There are no cumulative impacts upon land use. The acquisition of land and new way leaves are induced impacts because they permanently sterilize or restrict uses of the land.

2. Terrestrial ecology and biodiversity

Potential induced impacts during construction are transport of pollutants or seeds by water, and general disturbance of other receptors air, water and land along the road. These impacts may be cumulative and collectively significant. Mitigation measures in the ESMP and specification are designed to minimize or eliminate these impacts such that the potential residual cumulative impact is insignificant. These measures include protection and restoration, contractor awareness, compliance with ZEMA instructions for identified species, and contractors not to encroach outside of worksite. There are no induced or cumulative impacts on terrestrial ecology and biodiversity during operation.

3. Surface water resources

There are no induced or cumulative impacts on water resources.

4. Fisheries

There are no induced or cumulative impacts on fisheries.

5. Hydrological regime and flooding

There are no induced or cumulative impacts on hydrological regime and flooding.

6. Water pollution (surface and groundwater)

There are potential direct and cumulative impacts during construction from water pollution due to release of chemicals and hydrocarbons into the water column as well as contamination from worker sanitation facilities. The mitigation will eliminate all but accidental spillage through application of the standard FIDIC requirements for worker sanitation and specific measures in the ESMP and Specification to contain pollution.

7. Quarries and borrow areas

There is an induced impact after closure of a quarry or borrow area because the site is a scar on the landscape and further land uses are limited.

8. Traffic control

During construction there will be a cumulative impact requiring traffic control measures from blocked roads, increased congestion and disruption of public transport and deliveries.

9. Public Safety

There is potential for induced and cumulative impacts upon public safety. Works contractors should be required to coordinate with LWSC and, in conjunction with their community liaison staff, plan and implement appropriate activities in each community in the two or three weeks immediately preceding the start-up of works in that community. Such activities could include posters, public meetings, delivery of printed statements to be read in churches, loudspeaker announcements made through a sound system attached to a vehicle that circulates through the community, etc. The specific methods considered to be most effective by the community leaders should be used in each case. The communications should inform the community of exactly where and when drains will worked upon, how long the works will take, and what precautions should be taken while the works are in progress.

10. HIV/AIDS

There is a potential induced impact during construction causing increased incidence of HIV/AIDS and communicable diseases due to new entrants in communities for employment. The socioeconomic environment created by the Project, that may encourage migrant labour also may lead to a direct and induced impact of human trafficking. There is a potential induced impact when increased income in the communities, from construction worker salaries, leads to domestic abuse in the home. Both these impacts can be mitigated by the HIV/AIDS, human trafficking and sensitivities awareness programs set out in the ESMP.

11. Gender

A further direct and induced impact relates to gender differences in income for the same position and a tendency to provide income that is below the legal standards in the country. Often women receive less income than men, for doing the same job and in the same position. This impact is also classified as induced because previous income is often used as a method for determining a standard for negotiating an income in another or the next place of employment. Contractors will be required to develop an equal opportunity employment policy that does not discriminate on grounds of gender, race, religion or income levels.

Income will be monitored both in terms of gender disaggregation and to ensure legal standards for Zambia are maintained or exceeded.

Women in construction activities, a non-traditional line of employment, is not only a direct, but also induced impact, as skills provided through employment in construction may positively lead to employment opportunities elsewhere post-construction. Similarly, the disabled and men can be employed on the project in various positions, leading to skills being provided for future employment.

As the 'breadwinner' and having control of income and other resources in the household, the male household head may demand the right to keep entitlements for resettlement compensation impacts for himself rather than sharing with his spouse. This may lead to family members being deprived of some resources. The conditions dispersal of entitlements will require that the household head the spouse both be present to sign the agreement and receive the entitlement.

12. Demographic

Given the age structure of the population in Lusaka and project area, there will be considerable numbers of young, many uncertified, males and females joining the working age population. There is a project cumulative impact in that there will be pressure on employment during the project period. This may be mitigated through the contractor employing local males and females wherever possible.

13. Resettlement

There will be an induced resettlement impact related to businesses that need to be temporarily closed during construction. This may cause a localized demand for employment and hence a potential for human traffickers to recruit unemployed. The RAP will be able to mitigate this issue by compensating businesses fairly and appropriately that will cover employers and employees. However, there are still opportunities for PAPs to seek alternative employment and may be prey for human traffickers. Human Trafficking awareness within the communities, which is a part of the HIV/AIDS awareness program, will further mitigate this potential risk.

6.3. ENVIRONMENTAL & SOCIAL MANAGEMENT PROCESS

This ESMP contains potential mitigation measures and monitoring indicators **through** which the adverse impacts for specific sub project investments may be managed. However, each sub project investment will have to prepare an ESMP. The ESMP for each sub project should at a very minimum contains among others;-

(i) Description of the possible adverse effects that the ESMP is intended to address;
(ii) Identification of project design alternatives that would meet similar objectives, and a description of why these projects are not viable, especially if they have a lesser environmental or social impact;
(iii) Description of planned mitigation measures, and how and when they will be implemented

(iv) Program for monitoring the environmental and social impacts of the project, both positive and negative;
(v) Description of who will be responsible for implementing the ESMP; and
(vi) Cost estimate and source of funds.

6.4. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Phase/Activity	Environmental Aspect	Impact	Objective for Mitigation	Proposed Mitigation Measures
Site Preparation	Noise creation	Impact to local villagers, livestock breeding and wildlife	Noise levels should not affect local households, livestock breeding or wildlife species	• Construction activities shall occur mainly in daylight hours • If activities occur outside of daylight hours, local villagers will be informed and agreement will be sought from local authorities
	Dust creation	Decreased air quality can impact construction workers, local villagers and surrounding environment	Dust level created must not impact the health of construction workers, local villagers and surrounding environment	• Water work area and associated roads. • Transportation vehicles shall follow in the designated area and road. • Use exposed stockpiles and material as soon as possible • Cover any exposed materials during transportation

	Loss of forest cover	Impact productive land	Construction activities to be confined to designated areas to minimize loss of forest cover	• Avoid excess clearing for project requirements • Vegetation debris shall be either disposed and/or burned at designated sites

Phase/Activity	Environmental Aspect	Impact	Objective for Mitigation	Project Mitigation Measures
			dependent on forestry production	• Resettlement households shall be provided productive land for cultivating bamboo and forestry production • LWSP will have training programs to diversify incomes
		Impact to biodiversity and habitat	No impact to listed species, biodiversity and habitat	• Avoid clearing in restricted and protected areas. • Education and training to enhance contractors and construction worker's awareness on necessity of protection of surrounding areas and biodiversity. • Assist in protected areas management
	Road Traffic	Dust Creation	Refer to above section on "Dust creation"	
		Increased road traffic	Minimize impacts to local villagers	• Minimize traffic in villages and other populated areas • Install traffic signage • Roads shall be kept free from mud, debris and other traffic obstacles • Education for increasing community traffic awareness

		Deterioration of roads	Minimize road damage	Repair and maintain roads, as necessary,
		Noise and vibration	Minimize noise and vibration levels affecting local households, livestock breeding or wildlife species	• Road traffic shall operate mainly in daylight hours • If road traffic occurs outside of daylight hours, inform local villagers • Machines should be periodically examined to comply with requirements of technical specifications
	Accidents and unplanned events	Increased risk to personal health and safety during construction	Minimize risks to local villagers or construction workers' personal health and safety	Training and monitoring of worker safety shall be provided by contractor as stipulated

Phase/Activity	Environmental Aspect	Impact	Objective for Mitigation	Project Mitigation Measures
		activities		• Protective equipment and tools are to be provided to workers by the construction contractor • Implement regular inspection of equipment and machinery
	Vehicle and equipment maintenance and storage	Gas emissions and particulate matter decrease air quality	Air quality standards are maintained throughout construction	• Maintain vehicles in accordance with manufacturer specifications • Repair vehicles and equipment, as necessary
		Storage and discharge of oils, lubricants and other hazardous materials during operation and maintenance	No hazardous materials shall be released into the environment.	Provision and maintenance of designated storage and fuelling areas

	Domestic waste (garbage, litter, human waste, etc.)	Impact to ecosystems (water, soils, vegetation, etc.)	Waste production shall not impact surrounding ecosystems	• Domestic waste is properly collected and disposed of at approved locations • Implement recycling program where possible.
	Natural organic debris	Impact to ecosystems (water, soil, vegetation, etc.)	Waste production shall not impact surrounding ecosystems	Natural debris shall be either disposed and/or burned at designated sites
	Impact or alteration of cultural, archaeological or historical sites	Damage or destruction of site contents	Minimize damage during excavation activities	• Follow procedures in "Chance Find Procedures" and " Site Clearing Plan" • Coordinate planning of cemetery sites with local authorities to ensure that they are suitable with local cultural custom
		Damage or destruction of newly discovered sites	Minimize impact to newly discovered sites until properly investigated	Discovery of new sites shall follow "Chance Find Procedures"

Phase/Activity	Environmental Aspect	Impact	Objective for Mitigation	Project Mitigation Measures
		structure and cultural and ethnic identities	of life	Information, education and communication activities and social programs shall be put in place to assist both resettled households and those that are currently in resettlement areas.

Construction Clearing, grading, excavation, leveling, blasting, truck hauling, stockpiling, waste disposal, road development, transport vehicles, river diversion, transport vehicles, camp site construction, labor force and camp followers).	Noise and vibration creation	Disturbance to local households, livestock and wildlife species	Noise and vibration levels should not interfere with daily activities	• If construction is required outside of working hours, community and households shall be informed. • Blasting activities should be implemented within the designated time and local people shall be informed prior to blasting.
	Alteration of forest cover	Refer to above section on "Alteration of forest cover"		
	Soil erosion	Increased sedimentation	Minimize soil erosion and sedimentation	• Implement soil erosion and sedimentation control measures at susceptible locations (i.e. Steep slopes, sandy soils, etc.) • Construction activities shall avoid working in wet conditions
		Slope instability	Slope integrity shall be maintained throughout construction	• Installation of rock or stabilization structures • Proper grading practices and water diversion structures
		Alteration of productive topsoil	Maintain topsoil stockpiles for future use	Implement the Construction and Worker Camp Management Plan for reinstatement
	Dust creation	Refer to above section on "Dust creation"		
	Domestic waste and Natural Debris	Refer to above sections "Domestic Wastes" and "Natural Debris" for further details		
	Borrow pit and quarry creation	Removal of subsurface and creation borrow pit and quarry	Land gradient and drainages are maintained	• Excavated rock or gravel shall not compromise river bed and banks or impede flows • Confine activities to approved locations

Phase/Activity	Environmental Aspects	Impact	Objective for Mitigation	Project Mitigation Measures
		Dust and debris created during transportation of materials	Minimize the creation of dust and debris during transportation	Implement protective measures during transportation (i.e. Covering loads, reduced travel speeds, etc.)

		Abandonment of borrow pits and quarries	All disturbed areas are properly reclaimed after construction	Implement the Construction and Worker Camp Management Plan for reinstatement
		Decreased water quality (sedimentation pollution, etc.) and impacts on aquatic ecosystems	Minimal disturbance to water quality and aquatic ecosystems	• Construction activities should occur during low water levels • Maintain river diversion structures throughout construction • Minimize in-stream activities • Proper maintenance of vehicles and equipment • Implementation of clean-up activities and restoration of side channels
Construction Camp	Site clearing	Refer to above sections in "Dam Site and Preparation" for additional details on clearing impacts		
	Construction of new camp buildings	Increased demand for building materials	Exploitation of local natural resources shall be minimized for construction purposes	Make use of excavation site and clearing materials for construction
		Installation requirement for sanitation services	Adequate provision of sanitation and disposal services	• Provide adequate and compliant sanitation services • Designated discharge points for sanitation shall be addressed as procedures stipulated prior to discharging to environment
		Noise and dust creation	Refer to previous "Noise" and "Dust" section for further details	
		Domestic waste	Refer to above section on "Domestic waste" for further details	

Phase/Activity	Environmental Aspect	Impact	Objective for Mitigation	Project Mitigation Measures

		cause social conflicts	sanitation and waste disposal	sites shall be collected and treated in agreement with local government
		Increased power/fuel demands may cause social conflicts	Power/fuel shall be supplied without compromising existing resources or exploiting natural areas (i.e. firewood)	• Enforce regulations to prevent exploitation of natural resources (firewood) • Provide additional fuel supplies to prevent conflict with local villagers • Increase security around protected areas, especially along roads
	Health Impacts of Construction Worker Camps	Increased disease transmission rates	Decreased disease transmission rates	• Contractor shall be required to regularly test of health of construction worker and construction local worker according to Vietnam Law as stipulated. • Construction workers and local workers shall receive necessary health care services. Camp clinics shall be established • Education and promote awareness on personal hygiene and sexually transmitted disease
		Increased drug use and trade	Construction worker are strictly prohibited to use, trade and transportation drug	• Contractor construction workers and local worker shall be routinely healthy tested • Increase security in construction campsite, especially on roads and rivers • Drug education and awareness programs
	Health Impacts to local villagers and communes	Increased disease transmission rates	Minimize the risk of exposure to local villagers	• Healthy facility is supported by local medical centers • Educate and promote awareness on personal hygiene and disease transmission

		Increased demand for sanitation and health in resettlement	Resettled individuals have proper access services	Educate and promote awareness on personal hygiene and disease transmission

Access Road	Disturbance to biodiversity and increased pressure on protected areas	Decreased forest cover, increased road traffic noise and vibration creating disturbance to local villagers, livestock and wildlife species	Minimize disturbance to protected areas, people, livestock and wildlife	• LWSC shall assist the protected area management board in coordination with local authorities to strengthen protection and management measures for protected areas in the vicinity of the access road • Construction activities shall occur in daylight hours. Inform the local authority, community and the protected area management board If construction activities occur outside of daylight hours • Install road signs and signals.
	Alteration of forest cover	Refer to above section on "Alteration of forest cover"		
	Alteration of cultural / archaeological / historical sites	Refer to above section on "Alteration of cultural / archaeological / historical sites"		
	Soil Erosion	Refer to above section on "Soil erosion"		
	Increased road Traffic	Refer to above section on "Increased road traffic"		
	Accidents and unplanned events	Refer to above section on "Accidents and unplanned events"		
	Vehicle and equipment maintenance and storage	Refer to above section on "Vehicle and equipment maintenance and storage"		
	Change in cultural and ethnic identities	Refer to above section on " Change in cultural and ethnic identities"		

6.5. MONITORING PLANS AND INDICATORS

Monitoring of Environmental and Social Indicators

The goal of monitoring is to measure the success rate of the project, determine whether interventions have resulted in dealing with negative impacts, whether further interventions are needed or monitoring is to be extended in some areas. Monitoring indicators will be very much dependent on specific project contexts.

Monitoring

Bank's Monitoring Support

The Bank will provide the second line of monitoring compliance and commitments made in the ESMP through supervision albeit in a less frequent manner and detail as compared to the first line of monitoring that will be undertaken by SBF or external consultants. The bank will further undertake monitoring during its scheduled project supervision missions.

Specifically, for each year that the agreement is in effect, sub project executing agencies will be required to submit all the monitoring reports to the Bank as part of its reporting to and the Bank supervision missions will review these reports and provide feedback.

TABLE 7: MONITORING INDICATOR

Item	**Monitoring Parameters:**	**Sampling Frequency:**	**Monitoring Locations:**
Baseline			
The baseline program should collect water balance data (surface and groundwater flow rates, evapo-transpiration rates, infiltration, etc.) and water quality data.			
Operations Phase			
Ground Water Quality	PH Salinity Alkalinity Conductivity Ammonia Total nitrates Phosphorous Herbicide and pesticide scans BOD	Monthly	Tube wells, tile drain outfalls, and/or monitoring wells

	COD		
Surface Water Quality- Receiving Waters[1]	PH Salinity Alkalinity Conductivity Ammonia Total nitrates Phosphorous Herbicide and pesticide scans BOD COD Coliforms	Weekly	Above and below project influence and at strategic stations above and below drainage outfalls, at minimum every 500 meters; if the river exceeds 3 meters depth, samples at all stations should be at surface and at 60-80% of depth.
Drainage Quality	PH Salinity Alkalinity Conductivity Ammonia Total nitrates Phosphorous Herbicide and pesticide scans BOD COD Coliforms	Weekly	At point of discharge

TABLE 8: PROJECT MONITORING INDICATORS AND RESPONSIBILITIES

Category	Parameters	Monitoring location	Frequency	Responsibility
Air quality	SO2; NOx; PM10	Residential streets in Mtendere, street with Kaunda Square Interceptor and Kaunda Square Ponds.	Twice	PMC
Noise pollution	Noise level	Residential streets s in Mtendere, street with Kaunda Square Interceptor and Kaunda Square Ponds.	Twice	PMC
Soil erosion	Visible sheet, rill or gully erosion Adequacy of erosion control measures	Backfilled trenches, cut and fill areas, slopes, and quarries	Weekly at active worksites and thereafter as necessary during the period of use but not less than quarterly.	Works contractor*
Soil contamination	Electrical conductivity (mMhos/cm) Oils and greases Coliforms (#/100ml)	Works contractor's temporary operational sites, around areas of plant and machinery operation; storage areas for fuel, oils and bitumen, chemicals and hazardous materials	Throughout construction but not less than quarterly.	Works contractor
Surface water pollution	Turbidity (NTU) Total SS (mg/l) BOD (mg/l) 90 percentile Ammonia (mgN/l) 90 percentile Total phosphates (mg/l) Nitrates (as NO3-Nmg/l) Oils and greases (mg/l)	Watercourse downstream of active worksite	Minimum once each worksite and additional when deemed necessary during construction	Works contractor

	Faecal Coliforms (#/100ml)			
Ground water pollution	PH, Turbidity, Total SS, Total DS, Oil and greases	Selected water supply boreholes.	Before and after construction in close proximity to borehole where no work on borehole is required under the Project.	Works contractor
Air and dust pollution	SO2;NOx PM10	Work sites	Minimum once each worksite and additional when deemed necessary during construction	Works contractor
Noise (Leq)	55 dBa	Work sites	Minimum once each worksite and additional when deemed necessary during construction	Works contractor
Conservation of eco-resources (including forests and trees at work sites).	Trees damaged or felled unnecessarily; Vegetation disturbed beyond worksite (RCoI)	Work sites	When clearing land and restoring used areas	Works contractor
Hazardous materials	Use or disposal of hazardous materials.	Work sites	Monthly	Works contractor
Vehicle and pedestrian safety	Compliance with works contractor approved Heath and Safety Plan	At and around work site	At each activity requirement traffic control or measures to accommodate pedestrian movement.	Works contractor
Occupational Health and Safety.	At and around work site	At work site	Routine audits no more than quarterly.	Works contractor
Employment opportunities for women during	Percentage of women employed by works contractors for works under the contracts.	At the works contractor's temporary operational sites during construction activities	Monthly	Works contractor

construction.

HIV/AIDS Awareness for Contractor and Community	Number of sessions, Number of Participants, regularity of sessions, topics of session	Contractor and community /HIV Awareness sites	Quarterly	Contracted HIV/AIDS Training Agency

6.6. MONITORING ROLES AND RESPONSIBILITIES

LWSC

The LWSC will be solely responsible for the environmental monitoring of the activities that they are responsible for implementing. They will be required to prepare periodic (monthly, quarterly and annual) monitoring reports for submission to the Bank and ZEMA.

Zambian Environment Management Authority (ZEMA)

The Environmental Act places the responsibility of environmental protection on ZEMA as the coordinating agency. ZEMA is charged with the overall role of providing oversight in regard to monitoring for all project activities that have potential impacts on the environment in Zambia. ZEMA will undertake periodic monitoring of the investment projects by making regular site inspection visits to determine compliance with the investment projects ESIAs approved and will further rely on the submitted annual audit reports submitted for each investment project annually as required by Act as a way of monitoring. ZEMA will provide approvals and ESIA licence to all the investments based on the ESIA reports submitted, without ZEMA's approval implementation of the investment project will not move forward. All monitoring reports as well as annual environmental audit repost will be submitted to ZEMA as specified by the environmental assessment and audit regulations.

LSP/PIU -Environmental and Social Specialist

The LSP has recruited environmental and social safeguard specialists who will provide oversight, screening of sub projects, and preparation of ToRs for ESIAs, facilitation, coordination, review of ESIAs, monitoring and evaluation of all the sub projects. The environmental and social specialists based at the LSP/PIU will submit quarterly monitoring reports of all active investments under implementation to the LSP/PIU Coordinator who will then submit these reports to the World Bank.

CHAPTER 7

7. PROJECT REVIEW, COORDINATION & IMPLEMENTATION ARRANGEMENTS

7.1. SUB PROJECT INVESTMENT REVIEW

The Environmental Act require that all projects be subjected to a review and screening process in order to determine whether a full scale ESIA is necessary or otherwise. This is done through preparation of a project report, which will be prepared by the LSP/PIU. Each investment will need to be reviewed independently for potential environmental and social impacts. In cases where a full scale ESIA is required, it will be paramount that the feasibility studies occur concurrent with the ESIA study in order to ensure that the findings of the ESIA are incorporated in the feasibility study at the design stage. This will ensure that environmental sound design including proposed mitigation measures as well as alternatives are incorporated in the feasibility reports at the design stage hence avoiding design change at an advanced stage.

The LSP has been rated as category **B** this requires a ESIA which must be conducted parallel to the feasibility studies to ensure that the findings of the ESIA are incorporated in the feasibility study at the design stage. The Environmental Act require that all projects be subjected to a review and screening process in order to determine whether a full scale ESIA is necessary or otherwise. Project investments will each need to be reviewed independently for potential environmental and social impacts.

A completed appraisal package comprises all of the results of the ESIA procedures in order to permit a full environmental review. If the World Bank determines that the appraisal package is not complete because the environmental procedures have not been completed, or because after further review it is discovered that the information provided earlier for the screening procedures was incorrect or misleading and that further information is required, the appraisal package will be deemed incomplete and the Task Manager will promptly notify the applicant of the deficiencies.

No LSP support will be provided until (i) the applicant has presented the WB with a certified copy of the positive conclusion of the relevant national authority or - as the case may be - the World Bank determines that no further environmental review is required, and (ii) the World Bank has reviewed and cleared the environmental documentation and issued its formal no objection.

Consultation and Disclosure Requirements: In addition to the environmental documentation requirements described above, World Bank Operational Policy 4.01 (paragraphs 15 and 16), and the WB Policy on disclosure stipulates that the following consultation and disclosure requirements be utilized for all Category B sub projects:

Consultation should occur at least twice, once near the beginning of the EA process and once when a draft final report has been disclosed. During the EA process, the applicant shall consult groups affected by the subproject and local NGOs about the subproject's environmental aspects and take their views into account. The applicant shall initiate such consultations as early as possible. Consultations with stakeholders should take place only ones after a draft EA report is prepared. In

addition, the applicant shall consult with such groups throughout project implementation as necessary to address EA-related issues that affect them.

For meaningful consultations, the applicant shall apply the following disclosure requirements:

- The applicant shall provide relevant material in English and/or the local language (as appropriate) in a timely manner prior to consultation;

- The applicant shall make the draft ESIA report including a detailed summary of the ESIA's conclusions available at a public place accessible to groups affected by the subproject and local NGOs.

CHAPTER 8

8. INSTITUTIONAL ARRANGEMENTS AND CAPACITY

8.1. INTRODUCTION

Planning, implementation and monitoring of the ESMP for the LSP has both internal and external agents. The internal agents relate to LWSC's environment and social management system which has the technical (environmental section) and the Social (peri-urban section) who are part of the safeguards team. The external agents for enforcement of the ESMP aspirations revolve around the ZEMA and Ministry of Health functions for the protection of the environment and promotion of public health respectively.

8.2. LWSC SAFEGUARDS MANAGEMENT SYSTEM

8.2.1. Safeguards Team

LWSC has established a comprehensive safeguards team that has a management representative in the form of the Safeguards Coordinator. The Safeguards Coordinator is one of the senior managers of LWSC and this appointment will ensure timely access of the safeguards issues by LWSC directorate who have an important part to play in the compliance of the whole project with the RPF. The Safeguards team include staff from the Peri-Urban Department, Environment and Quality Systems Department, Sewage Department, Procurement Department and GIS Department. Each of the departments above is understood to give a special impetus to environmental and social management of the LSP.

The Peri urban department interacts closely with the communities and is essential for mobilization for consultations, participatory screening and valuations, engagement for monitoring and evaluation of resettlement impacts. This department has the requisite Social Experts that are important for the management of socio-economic issues relating to the LSP.

The Sewage department is critical in the management of environment and social issues from the project, they assist with details of the exact alignment of the pipelines for impact assessment. The department also helps with alternative project sites where the initial site is rejected for intense environment and social issues.

The GIS department helps in documentation and digitization of the project activities in relation to land use impacts on the ground. The Environment and Quality department is the coordinating wing for all safeguards issues including resettlement. LWSC is working towards being ISO certified for Environment, Quality and Occupational Safety and Health Management System so the department is critical in ensuring that all the resettlement issues are management as part of the LWSC systems approach.

The procurement department is included to ensure that all procurement related issues in the management of safeguards and resettlement in particular are also proactively articulated since compensations and resettlement usually stand in the way for the whole anticipated project.

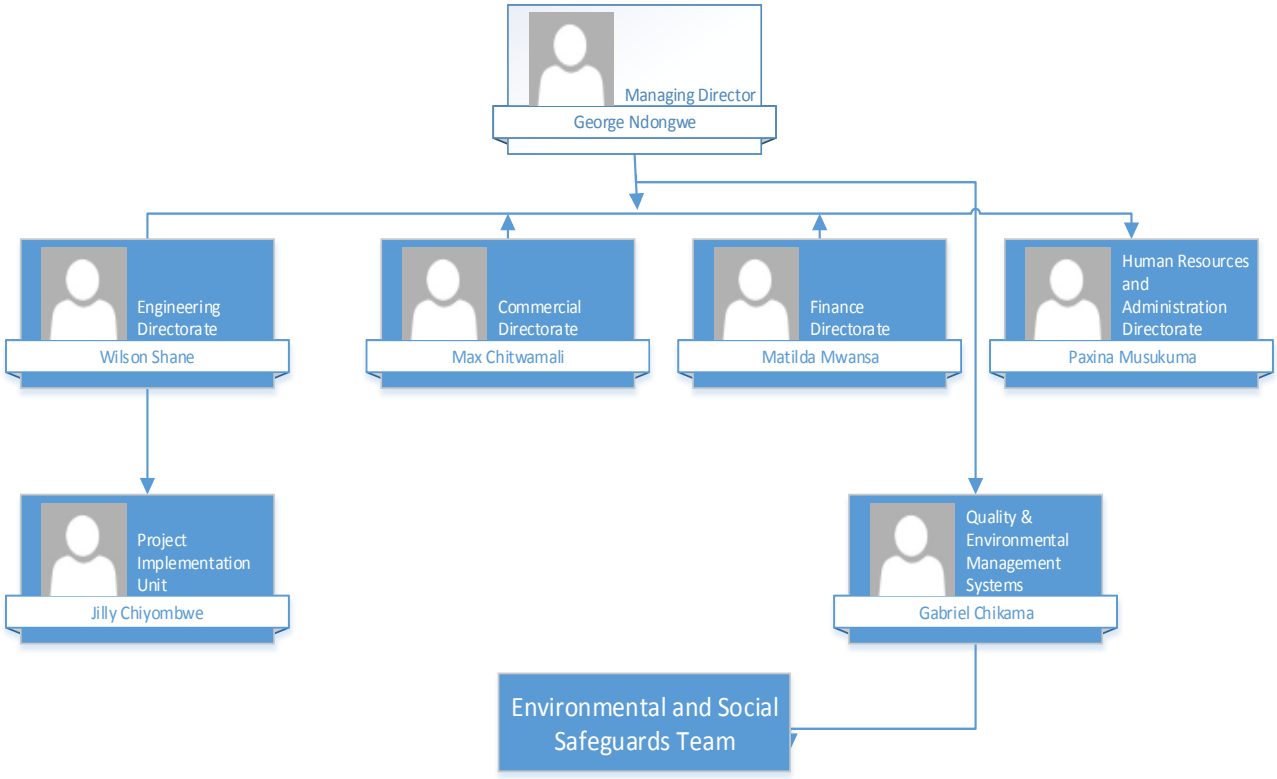


Fig 8.1 LWSC Organogram and link with safeguards team

8.2.2. Functions of the Safeguards Team

The safeguards team has the following broad functions;

- Environmental and social screening of sub-projects.
- Formulation of TORs for applicable safeguards instrument.
- Formulation and disclosure of the appropriate safeguards instrument.
- Implementation and internal monitoring of the safeguards instruments

The specific functions of the safeguards team include;

- Liaison with affected parties (landowners, venders, hamlet residents and farmers) in all project planning, implementation and monitoring.
- Ensuring that compensation principles, policies, and procedures are followed.
- First line in resolving any grievance arising from compensation issues on the project.
- Enforce compliance of the LSP with the requirements of the ESMP.
- Provide progress reports.
- Conducting consultations with the local community.

- Prepare appropriate daily, weekly and monthly logistical and operational plans related to safeguards management on the project in close co-ordination with project management, contractors and service providers on the project.

8.2.3. Safeguards meetings and reports

The Safeguards Coordinator convenes a weekly progress meeting with the safeguards team members, consultants and contractors to review safeguards implementation. It is at such a meeting where progress on project impacts from the ground are discussed for follow up. The weekly safeguards meetings are a feeder to the monthly organizational project review meetings. Through the Safeguards Coordinator, safeguards issues will be part of the monthly organizational project progress meeting agenda. The monthly progress meetings are a build up to the quarterly, biannual and annual project progress review report that is submitted to the Bank for implementation support review.

8.2.4. Project Consultants and Contractors

The project consultants, contractors and suppliers/service providers on the project will are also part of the internal system that will ensure effective management of environment and social safeguards. LWSC will ensure that the safeguards documents are part of the bidding documents that the contractors, consultants and any related suppliers are furnished with. This will ensure that these internal stakeholders include the safeguards issues in their technical and financial proposals. The Safeguards coordinator will ensure that such bidder's contracts include compliance to safeguards management. During project planning, implementation and monitoring, these players will be on the ground and in direct contact with the community. Any noncompliance on their part will be counted as violation by LWSC to the ESMP, therefore it is important that they are closely integrated as part of LWSC compliance system. Important role of these players will include;

- Assist the safeguards team in locating any affected persons that may be discovered during project implementation.
- Assist the safeguards team to follow up on compensation matters providing the relevant information required to effect compensation settlements.
- Provide description of skills that will be required for the locally sourced construction labour to evaluate which of the affected persons may qualify for employment.
- Restricting civil work to the agreed and compensated impact zones.
- Ensuring that no civil works will begin before resettlement issues are completed.
- Attending safeguards review meetings onsite.
- Deployment of a safeguards contact person within their site establishment.
- Comply with safeguards requirements for the subproject.

8.2.5. External Monitoring Agents

Though LWSC will be proactive and consultative in dealing with safeguards issues, it will also rely on other stakeholders who have a legal mandate or a special interest securing the effective

management of environment. Some of these stakeholders include ZEMA, local communities and leadership, LCC and the MLGH.

8.2.6. Local Leadership and Project Affected Persons

During project screening process, LWSC will ensure that it identifies the local leadership who will be directly involved in the resettlement screening. The local leadership will also be responsible to assess the magnitude of the resettlement impact since they have the direct contact with the potentially PAPs. The local leadership will ensure the PAPs are mobilized for consultation and valuation during the actual RAP process. The monitoring mechanism al the local level will therefor include the local leadership and the PAPs. The PAPs will be directly involved in the valuation process and the final compensation agreement will bear the signature of the PAP and the local leadership where applicable. One important content of the compensation agreement is that compensation and resettlement will be completed before the actual civil works. With this condition for resettlement, the PAP and the local leadership will be able to closely follow the implementation of the resettlement and compensation process to ensure that the PAP is compensated before the civil works. Through a continuous engagement system, new resettlement issues that arise during project implementation will be noted and compensated as they arise, though it is anticipated that such new matters arising will be minimum. Such new raisings usually come from the contractor's failure to restrict impact to the initially assessed zones. The safeguards team, the consultant, the contract and the PAP will quickly agree on new compensation schedules to keep the momentum of the project without prejudice to the community.

8.2.7. Zambia Environmental Management Agency

ZEMA's mandate as provided for in the Environmental Management Act No. 12 of 2011 is to ensure that developmental activities are implemented in a sustainable manner. All sub projects that have some resettlement or environmental issues within them are monitored by ZEMA through for that subproject. Subproject that have minor environmental and social impacts are managed through a project brief while those subprojects that have significant environmental or resettlement impacts are managed through an ESIA that should be accompanied by a RAP. For both the project brief and the ESIA, ZEMA issues a decision letter giving the project a go ahead. As part of the review and monitoring system, ZEMA carries its own independent site visits and stakeholder consultations to verify the contents of the ESIA and the RAP. Through the ESIA review fees, ZEMA will afford to carry out the monitoring functions. During project implementation, ZEMA works with the local leadership to ensure that the resettlement issues were effectively implemented. ZEMA carries out independent monitoring audits during the project implementation.

Beside ZEMA audits, LWSC is compelled through the conditions of the decision letter, to submit quarterly returns to ZEMA on the progress on RAP implementation. ZEMA's decision letter can be suspended should a LWSC fail to comply with the arrangements agreed in the ESIA/RAP or fails to resolve a dispute arising from the resettlement issues of the subproject. The RAP should include a complete inventory of affected households and agriculture fields, land, structures, site local plan and compensation. ZEMA carries out resettlement audit to ensure such issues have been implemented. Where disputes arise and are not resolved this shall be deemed as failure to adhere

to ZEMA directive and may result in cancellation of the decision letter until issues related to resettlement/compensation are resolved. Cancellation of the decision letter implies the project should stop until all matters have been resolved.

During the operation of the various sanitation infrastructures that will be constructed through the project, ZEMA will issues operational licenses for effluent discharge or air emission license for related FMS infrastructure. These licenses have operational parameters and if the parameters are not being met, there will be fines for such discharges. This means that the project design should endeavor to comply with the final ZEMA waste disposal requirements. More of this will be discussed in the various sub projects.

8.3. INSTITUTIONAL CAPACITY

LWSC has adequate personnel to implement the requirements of the ESMP and any subsequent safeguards document and requirement. The organization has adequately qualified and experienced personnel. There is a good mix of experts within LWSC, with some being degree holders in various disciplines including Water Quality Management, Environmental Management, Civil Engineering, Sociology, Chemistry and Hydrogeology just to mention a few. The staff has wide ranging experience in sanitation and environment related disciplines.
Despite the technical competences within the staff, there is need to further capacitate the safeguards team in various respects;

- **Transport Resources**. During the formulation of the safeguards documents, it was realized that there is no adequate transport resource for the function. This incapacity led to considerable delays in the execution of the safeguards functions. A dedicated vehicle for safeguards management will facilitate formulation, implementation and monitoring of the safeguards issues.

- **Safeguards training**. The team requires a deliberate training on the World Bank Environment and Social Safeguards. This training will assist to ensure that the various disciplines are harnessed in an informed manner for safeguards management.

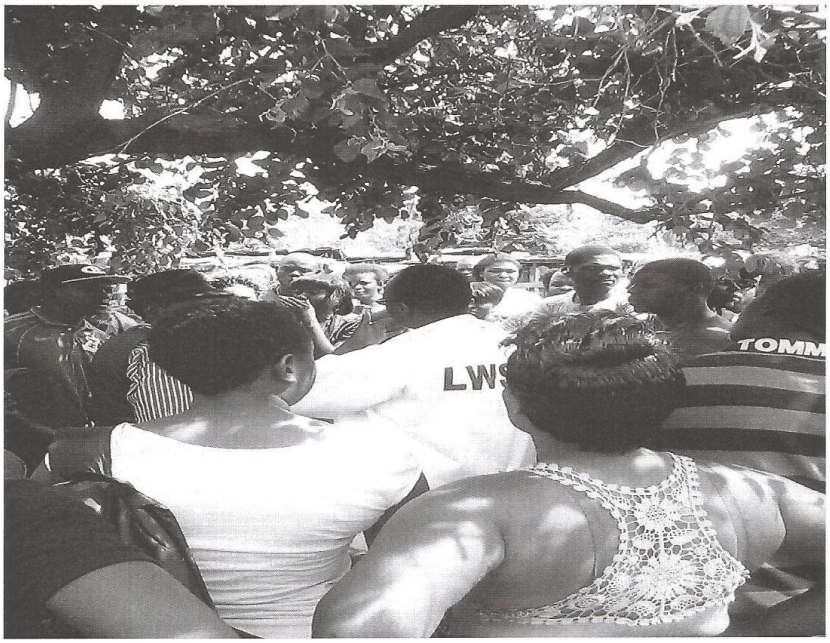
- **EIA training**. LWSC produced the safeguards documents internally and this has been a welcome development as it saved on time and resources. It has been observed that most of the team members lacks clear understanding of the EIA processes. It will be very useful for future subproject ESIAs to have all the safeguards team members trained in the EIA processes. To maximize on the numbers trained, an in-country training program coordinated by a local university will be useful.

- **Data Capturing and processing equipment.** The team needs some equipment like cameras, GPS, photocopying and other data processing equipment. During the formulation of the safeguards documents, it was not possible to capture some field observations in a manner that would facilitate transmission to other information users.

APPENDICES

STAKEHOLDER CONSULTATION REGISTERS AND MINUTES

LUSAKA SANITATION PROGRAM



REPORT ON THE AWARENESS RAISING MEETING HELD AT *DONCHI KUBEBA MARKET*

13th February 2015

INTRODUCTION

The Lusaka sanitation program has a number of objectives among which are improving sanitation services especially informal settlements of Lusaka province. It also aims to meet regulatory requirements on waste disposal into natural environment. it will ensure direct impact on public health, environmental conservation and economic returns on investment for sustainability purposes.

Overall it seeks intervention as per investment master plan.

Following the commencement of the program a number of awareness activities are underway, among these are meetings with traders along the proposed project sites. One of these sites is the Donchi kubeba Market.

The Awareness Raising Meeting

The meeting was held on site on Friday 13th February 2015. The meeting was well attended and the traders raised a number of concerns.

Donchi Kubeba market is located near Intercity Bus terminal, Zambia's biggest local and international bus travelers' transit point and the ever busy Kamwala shopping center, a commercial place in Lusaka on the Independence Avenue near to the interception of Dedan Kimathi Road with Independence Avenue.

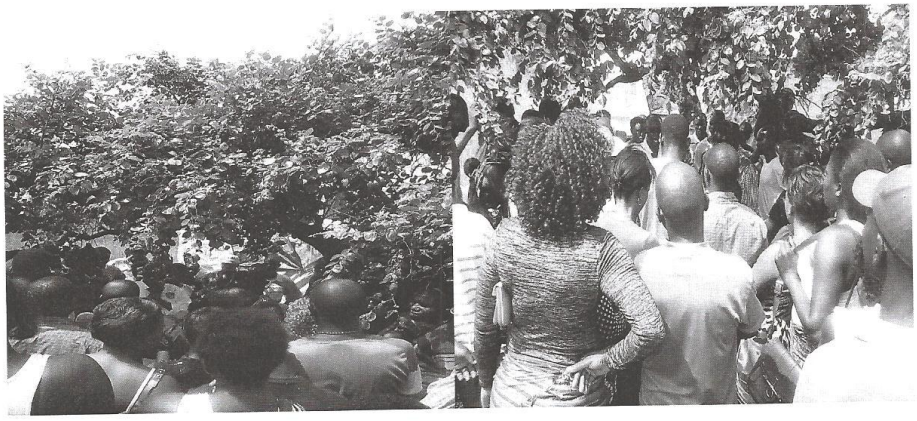
This trading facility is located on the right side of Independence Avenue Flyover Bridge, and directly opposite the 23-storey FINDECO House, owned by the National Housing authority (NHA).

The aim of the meeting was primarily to communicate to the traders about the Lusaka sanitation program. As such the meeting focused on the primarily objectives of the program and the benefits of the program to the city

Concerns of the traders

- It's a political move by government to relocate them.
- As a company we want to work with your blessings that is the more reason we are conducting meetings. Because even our pipes needs to be protected by you our partners.
- They will lose out business and trade once the works commence
- We are conducting a survey using forms which needs you to give us information on how you are trading then some considerations will be done.
- Will the program compensate them and what criteria will the program follow if there will be compensation?
- We promise to reinstate every property effected due to our project.
- Fear of relocation
- The company will dig lay the pipe and cover the trench and you will continue using the your space.
- There are not enough market places if they are relocated, because the other markets are overcrowded.
- Lusaka water has no right to reallocate you to a different market.
- Trading at the market is not just for the sake of it but its rather for survival because they have failed to find employment in the formal economy.
- The company understand that and it will discuss your concern with other partners it is working with.

- They trade at the market as their only option and they can't afford to lose out on the trade.
- The contractor will make sure that works are done in a shortest possible period considering that it is a market place which has other activities taking place



Traders listening 1

Traders asking questions 2

Conclusion

The chair person thanked the traders for attending and LWSC for extending it,s usual respect to the residents by sensitizing the affected and beneficiary of the services, he further requested the company to update the traders on every step of the project and notify them in time.

Chairperson

Secretary

LWSC RESETTLEMENT MEETING DUCHI KUBEBA MKT.

DATE: 13/02/15

ATTENDANCE LIST

NO.	NAME	PHONE	NRC	SIGNATURE
1	MANDA VINCENT	0979289405	321926/1	[signature]
2	GILBERT CHEWE	0966799522	357820-61-1	[signature]
3	GILBERT MUKANGA	0961636064	34163764	[signature]
4				
5	STEPHEN MUKALULA	0964345525	381010/61/1	[signature]
6	STEPHEN KABASO	0967 [illegible]	-	[signature]
7	Nod M W[illegible]	0964 711814	-	[signature]
8	FATIMA JERE	0979630196	-	[signature]
9	SAKAGA JOHN	097[illegible]	29665958	[signature]
10	Racheal [illegible]	0976 [illegible]	-	R[illegible]
11	Purity N Sabvu	0977147773	191005/[illegible]/1	P[illegible]
12	Edward SALA[illegible]	097171 9933	—	[signature]
13	D DAVIS CHISAPWA	0975 012478	320436/61/1	[signature]
14	[illegible]	[illegible]606		[signature]
15	Presly MUMBA	097541930[illegible]		[signature]
16	JAIRUS ZIMBA	0966212174	305476/53/1	[signature]
17	STEWARD NGULALE			S[illegible]
18	Moses KAYEMBA	097[illegible]	30[illegible]/68/1	[signature]
19	ASTRIDAH MPULA	0962 92[illegible]	288799/[illegible]	A. Mpula
20	Stella Ngwele	0977263097		S. Ngwele
21	Mwansa Gilbert	0978 512003	179543/[illegible]	[signature]
22	Emmanuel Phiri	0968 142538		E. phiri
23	Monica Chilufya	0979 465547	—	m. Chilufya
24	Mwansa makusa	0975 402978	219633/17/1	[signature]
25	Hope Minyochi	0974 920272	363139/65/1	M. Hope
26	Mercy Chituma	0977 500536	136565/19/1	[signature]
27	Prisca Ngwele	0975 402970	219633/17/1	[signature]
28	Sinkala George	—	446015/16/1	[signature]
29	Harriet Likando	0973559029		
30	Mary Buyambo	0968 932166		
31	Cecilia Zulu	0962 741455	577382/58/1	C. Zulu

LWSC RESETTLEMENT MEETING DOCHI KUBEBA MKT

DATE: 13/02/15

ATTENDANCE LIST

NO.	NAME	PHONE	NRC	SIGNATURE
1	CHONGA maggie	0971381069		
2	TAFARI [illegible]	0974[illegible]3945	363421/16/1	
3	SAMUEL MUSONDA	0976911150	332803/61/1	[illegible]
4	MOSES KAPEYA	0974596965	—	M-KAPEYA
5	Rodgers Kalongolo	0963-639246	—	[illegible]
6	OSWARD Lungo	0973-674758	2376603/1	[illegible]
7	EVONNE Yonika	0979-673289	236611/15/1	
8	Simon Chilufya Kunda			[illegible]
9	FRANCIS [illegible]	0978783574		
10	YOHANNY [illegible]	097576276	8.[illegible]	[illegible]
11	LISA MALESU	0967696811		LMALESU
12	DERICK Phiri	0961633238	103053/[illegible]	[illegible]
13	FELIX [illegible]	0964[illegible]		[illegible]
14	JACKSON MUSHANGA	0955002233	109253/55/1	[illegible]
15	RACHELA MONTA	0966946848		
16	ESTHER BANDA	0977 [illegible]	82855 [illegible]	
17	ANTHONY SICHAMBA	097[illegible]	410049/[illegible]	[illegible]
18	Bwalya Joseph	0964999568		396230/31/1
19	CHRISTOPHER CHISANGA	0979652191	336772/67/1	[illegible]
20	CHARITY KAKENGE	0964182316	291252/[illegible]	Chakenge
21	MOSES KACHASA	0969285955	397209/67/1	[illegible]
22	ELIZABETH PHIRI	0962789683	853680/11/1	E phiri
23	YOBERT Chulu	0969841791	315927/10/1	[illegible]
24	LEVISON LEVISON	~~[illegible]~~	0961925438	[illegible]
25	MICHAEL Chara			
26	Maxdennis Songa	0974783634		
27				
28				
29				
30				
31				

LUSAKA WATER AND SEWERAGE COMPANY LIMITED

LWSC RESETTLEMENT MEETING DOCHI KUBEBA MKT.

DATE: 13/02/15

ATTENDANCE LIST

NO.	NAME	PHONE	NRC	SIGNATURE
1				
2	Jackson Kapimpa	00168 150073	157827/10/1	[illegible]
3	Micheal Chlewe	0978 656516	357839/61/1	[illegible]
4	Chintu Musa	0977 930774	355796/61/1	[illegible]
5	Ruth Kumwenda	0979 700147	724003/11/1	R. kuumenda
6	Estelle Mumba	0979 756325	778403/11/1	E mumba
7				
8	Rose Banda	0968 236450	106462/10/1	[illegible]
9	Ronald Chishala	0965 029497	124302/34/1	[illegible]
10	Eustous.C. Simfukwe	0976 689096	—	[illegible]
11	Kolala Lisaonepll	0976 164530	—	[illegible]
12	Getrude pemesa	0974 573242	536590/11/1	G. Pemesa
13	ELizabeth lungu	0969 134656	201604/10/1	[illegible]
14	Cecilia Sakala	0964 714768		[illegible]
15	Lutangu Bryan	0966 924583	—	B. lutangu
16	Francise Kasongo	0978 339650	100504/10/1	[illegible]
17	Lini mumba	0977 509061	—	[illegible]
18	Roidha Ngwele	0976 478434	219633/17/1	[illegible]
19	Ruth Ngwele	0973 995943	—	R. ngwele
20	Naluwe Natukwe	0977 859633	—	N. natukwe
21	Hope Mingochi	0974 920272	363189/65/1	H. mingo
22	Gift Chatwe	0973 044860	295226/17/1	Ghalwe
23	Ruth Kanogovele	0976 620057	—	[illegible]
24	Lister papalu	0974 155557	—	L papalu
25	Frank Makai	0973 563382	—	F. [illegible]
26	Harriet Likando	0973 559029	—	H. Likando
27	'AStridha mwape	0965 2550429	—	[illegible]
28	maurren zulu	0976811516	339313/11/4	
29	Chitenge boniface	—	—	[illegible]
30	Mary Nyirenda	0977 364740	227753/7/1	M. nyirenda
31	Lillian Tembo	0967 042868	389075/61/1	[illegible]

LWSC RESETTLEMENT MEETING DOCHI KUBEBA MKT.

DATE: 13/02/15

ATTENDANCE LIST

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1				
2	Jackson Kapimpa	00168 150073	157827/10/1	[signature]
3	Micheal Chewe	0978 656516	357839/61/1	[signature]
4	Chintu Musa	0977 930794	393796/61/1	[signature]
5	Ruth Kumwenda	0979 700147	724003/11/1	R. kumwenda
6	Estelle Mumba	0979 756325	778403/11/1	E mumba
7				
8	Rose Banda	0968 236450	106462/10/1	[signature]
9	Ronald Chishala	0965 029497	124302/34/1	[signature]
10	Eustous.C. Simfukwe	0976 689096	—	[signature]
11	Kolala Lisaonepll	0976 164530	—	[signature]
12	Getrude pemesa	0974 573242	536590/11/1	G. pemesa
13	Elizabeth lungu	0969 134656	201604/10/1	[signature]
14	Cecilia Sakala	0964 714768		[signature]
15	Lutangu Bryan	0966 924583	—	R. lutangu
16	Francise Kasongo	0978 339650	100504/10/1	[signature]
17	Lini mumba	0977 509061	—	[signature]
18	Roidha ngwele	0976 478434	219633/17/1	[signature]
19	Ruth Ngwele	0973 995943	—	R. ngwele
20	Naluwe Natukwe	0977 859633	—	N. natukwe
21	Hope Mingochi	0974 920272	363189/65/1	H. mingochi
22	Gift Chatwe	0973 044860	295226/17/1	Ghatwe
23	Ruth Kanogovele	0976 620057	—	[signature]
24	Lister papalu	0974 155557	—	L papalu
25	Frank Makai	0973 563382	—	F. Makai
26	Harriet Likando	0973 559029	—	H. Likando
27	Astridha mwape	0965 25 50429	—	[signature]
28	maureen zulu	0976 811516	539313/11/4	
29	Chitenge boniface	—	—	[signature]
30	Mary Nyirenda	0977 364740	227753/71/1	M. nyirenda
31	Lillian Tembo	0967 042868	384075/61/1	[signature]

LWSC RESETTLEMENT MEETING – DOCHI KUBEBA MARKET

DATE: 13/02/15

ATTENDANCE LIST

NO.	NAME	PHONE	NRC	SIGNATURE
1	Samuel Musonda	0976911150	332803/61/1	[illegible]
2	Mercy Kapongolo	0961370339	–	M. Kapongolo
3	Rodgers Kapongolo	096363924	–	[illegible]
4	LILIAN Kaunju	0978803108	766254/11/1	L. Kaunju
5	mary Lungu	0972435353	–	M-Lungu
6	JAMES PHIRI	0964654711	877080/11/1	[illegible]
7	Luckson mwape	0977 477214	–	[illegible]
8	JACK MUBANGA	0964688235	–	MuBanga
9	MOUREEN SUNTWE	0976906220	214400/16/1	[illegible]
10	LISTONE MALESU	0979902973	254336/16/1	L MALESU
11	BETRIGGS NALAVWE	0975922355	–	B. NALAWE
12	ROYD KAFUWA	0977712512	–	R. Kaa
13	kennedy Chipili	0974729969	–	[illegible]
14	Manther phiri	0978741186	–	M·phiri
15	Betha mulenga	0978170658	–	B. mulenga
16	PATRICIA KATONGO	0969608096	25669/64/1	P. Kaa
17	Shadreck Nyirongo	0963095237	940290/11/1	[illegible]
18	matias Njovu	0974072223	181516/10/1	[illegible]
19	THERESA MWANSA	0975521592	224306/16/1	[illegible]
20	~~[illegible]~~ FELIX SHCHUMBA	0962787720 0976368456	114444/10/1	F. chiTUMBA
21	MWENYA MCGEACHY	0963 227030	–	M. MCGEACHY
22	KABWE MARIA	0962326466	919578/11/1	[illegible]
23	Malinda Kunwenda	0977-888631	93287/11/1	Mumwenda
24	PAUL CHILA	0968-704699	291034/10/1	[illegible]
25	Good Hope Chiezhe	0966175251	–	Good Hope·C
26	Noran nanyangwe	0973-272186	–	[illegible]
27	KENNY SASA	–	–	K. SASA
28	STEPHEN SICHONE	0978742418	301819/16/1	S hone
29	DOUGLAS MULEYA	0968716510	–	D MULEYA
30	Ngandu Benny	0969558041	395373/61/1	[illegible]
31	LEVISON TAMBO	0971925438		

AWARENESS RAISING MEETING
DONCHI KUBEBA MARKET
13th February 2015.

Chairperson

Maxdennies Songa
0963
0966 52528

MANDA VINCENT
0979289405

Secretary

MICHAEL CHEWE
0978 656516

KAFUE ROAD BUSINESS COMMUNITY MEETING

LUSKA SANITATION PROJECT

STAKEHOLDER CONSULTATIVE MEETING HELD AT LUSAKA WATER AND SEWERAGE COMPANY ON 29TH JANUARY 2015.

The meeting was dubbed as "stakeholder awareness meeting" on the Lusaka Sanitation Project. Invitation letters were prepared two days earlier, 27th January 2015 and distributed to targeted businesses along the Kafue Road along which the sewage interceptors will be laid.

The meeting started at 10:00hrs in conference room, at LWSC's Head office. The meeting was opened by Mr. Gabriel Chikama (Safeguards Team Coordinator). A round of introduction followed by way of full names and institutios represented. The purpose of the meeting was explained to the guests and then Mr. Jilly Chiyombwe (Projects Implementation Unit Manager, at LWSC) was asked to give a presentation on the Lusaka Sanitation Project overview and the details of the Kafue Road Sewage Interceptor sub-project.

After a slide presentation by Mr. J. Chiyombwe, a plenary session was declared and guests where invited to express their views, concerns and questions.

Discussions

1. Mr. Micheal Mukombo, a representative from Castle Shopping Complex expressed gratitude for the sanitation project but raised his concern about the quality of potable water from the boleholes they are currently using. Mr. Mukombo wanted to know if a project to improve potable water was being considered
   Answered: He was informed that indeed, this project was about improving the sanitation situation in Lusaka, but that there is soon to be launched a project on the bulk water pipeline from Kafue river, and that this will take care of his concern.
2. **Ms.** Davina Bhagat, a representative of Puma Service Station wanted to know which access roads will be affected (cut) during project implementation and for how long will the affected access roads be closed off?
   Answered: This guest was informed that cutting and closing off of the access roads will be done in liaison with the Lusaka City Council (LCC) and that most access roads will only be cut when the interceptor was being installed. Further, it was explained that restoration of the cut lane will be immediate. Further, that notifications would be given to the businesses affected by a particular access road to be cut.
   Ms. Davina also advised LWSC to engage the landlord of Puma Service Station over the handling of the electrical bill boards at Puma Service Station during implementation of the project as she was just a tenant
3. Mr. Musonda, a consultant with the Embassy Shopping mall wanted to know when the project would commence and how long it will take to complete

Answered: He was informed that commencement of the project depended on when the World Bank would approved the project, but he was told tentatively in July 2015 and that it would take about a year to complete.

4. Cornelius Mwamba, a representative of Hebron Tabernacle Church observed that most Bill Booards have contact numbers for advertisers or their agents who could be engaged regarding the issue of cost of billboards. He further wanted to know at whose cost will the properties connect to the main sewer interceptor, seeing that they are already comfortable on septic tanks, as far as he was concerned?
   Answered: The LWSC team acknowledged the advice of contacting the Advertising agents regarding the way forward on billboards. Further, one of the guests (Mr. Musonda, a former Director of Public Health at the LCC) who was representing the Embassy Shopping Mall as a consultant, commented that business owners would be compelled, according to the public Health act to connect to the sewer mains, once the service was made available.

   Cornelius also wanted to know how far the sewer line was from the road as from his knowledge Kafue road has been earmarked for expansion.

   Answered: LWSC was going to meet with all stake holders before the implementation of the project and such issues will be ironed out.
5. Patrick Simwanza, a representative from NorthPoint observed that he has attended a meeting similar to this one that was organized by business owners to mobilize funds in order to install a sewer line but such efforts never came to fruition. He hoped that this project will be implemented this time around and that he was happy to attend this meeting.
   Answered: He was informed that unlike the private initiative, this was a government of the Republic of Zambia (GRZ) initiated project, with the funding from the World Bank and that project will come to fruition.
6. Richard Nanchengwa, a representative from Jack Kawinga wanted to find out whether the surrouningcommunities were going to benefit in terms of sewer connections once the interceptors had been installed
   Answered: he was informed that no sewer networks were envisaged for the surrounding communities because of the layout of those communities (unplanned for communities) and that these communities were not part of this projct but that they will have their own considerations in other projects.
   Clara Kondowe , a representative from Cenacle of the Holy Spirit Church wanted to know whether properties that already had connections from the Kamwala line would have to connect to the new interceptor

Answered: That the old Kamwala line is currently facing challenges of constant blockages. Therefore once the new interceptor was installed, a decision will be made whether to migrate some properties to the new line.
Brian Samuhela a representative from BUK wanted to know if there will be further communication before the project commences and whether stakeholders will have acess to safeguard documents.
Answered: LWSC will continue communicating every step of the project to the stakeholders and that safeguard documents are public documents and will be accessed from places such as ZEMA documentation centre, LWSC and LCC etc
Gabriel Chikama from LWSC wanted to know from the business people in the meeting how much leeway they would give the project concerning their bill boards.

Answered: M r Musonda(consultant with castle shopping complex) advised that LCC should be enganged as these business houses pay to LCC for bill board adverting. He further added that laying a sewer line was in public interest and that it will definitely take top priority.

The meeting ended around 11:30hrs and participants where thanked for attending the meeting.

Minutes by: **G. Chikama**

SIGNED MINUTES FOR THE CONSULTATIVE MEETING WITH KAFUE ROAD BUSINESS REPRESENTATIVES

Stakeholder Representative

Name: Michael Mukombo

Signature: Mukombo

Date: 20 - 02 - 2015

Stakeholder Representative

Name: DAVINA BHARAT

Signature:

Date: 20-02-15.

STAKEHOLDER MEETING NOTIFICATION - LSP

	NAME	ORGANIZATION	SIGNATURE
01	NGOSA HARRISON	VOLVO [TIME TRUCKING]	[signature]
02	WILFRED MWAPE	UNIQUE CAR CONNECTION	[signature]
3	Sim Be	ZAM AUTO	[signature]
4	Odette Chimba	AFGRI CORPORATION	[signature]
5	JOHN TEMBO	PHARAMID SOLUTIONS LTD	[signature]
6	BERTHA MBEWE	FIRST CAPITAL BANK	[signature]
7.	Mula Mwima	ZAMEFA	[signature]
8.	Sheila Mitt	BOK	[signature]
9.	Zulu Nehemiah	BAT	[signature]
10.	[illegible]	Master Joinery & Aluminium	[signature]
11.	MUYANDA	Downtown Shopping Mall	[signature]
12	Craig Eastcroft	Autoworld Downtown	[signature]
13	Star Casino	Delivered but couldn't sign	
14	DOMINIC SIMATAA	PETRODA ZAMBIA (HTD)	[signature]
15	William Habeenzu	SANA CASH N CARRY	[signature]
16	FAYAZ H. PATEL	TOTAL FILLING STATIONS.	[signature]
17	Elizabeth Muyanga	AGOLUS INTERNATIONAL	[signature]
18	Mohammed	KDG	[signature]
19	William Samwata	Zambia Paint	[signature]
20	Rapheal Osembe	Mikes Car Wash	[signature]
21	ELIJAH SIMWAWA	NORTH POINT MOTEL	[signature]
22	Mrs. A. GIANNAKAKIS	CASTLE ESTATE	[signature]
23	Mr Victor Lubemba	Puma	[signature]
24	Advent Chipa	Engen	[signature]
25	Sheron Kachapulula	Clicks Z Ltd	[signature]
26	[illegible]		
27	Fabio Panicco	Rotor Moulders ENT	[signature]
28	DJM Mwingo	Asif Electrical System	[signature]
29	Namakau Mutupa	Flame promotions & procurement	[signature]
30	TEDDY HAMWEEMBA	New Horizon P.P.	[signature] P.P.
31	SERGIO MENDONCA	Ltd	[signature]
32	Joyce Muleya	ENGEN SERVICE STATION.	
33	DANIEL MUSONDA	Kobil	[signature]

LUSAKA WATER AND SEWERAGE COMPANY LIMITED

Sanitation is Health

STAKEHOLDERS' AWARENESS MEETING - LUSAKA WATER AND SANITATION PROJECT.

ATTENDANCE LIST.

Date: 29 - Jan - 2015

No.	NAME	ORGANISATION	PHONE No.	SIGNATURE
1	MAPULANGA TIMOTHY	STAR CASINO	0965145811	[signature]
2	CLARA KONDOWE	CENACLE OF THE HOLY SPIRIT	0977145579	[signature]
3	DUNCAN KONDOWE	CENACLE OF THE HOLY SPIRIT	0965638064	[signature]
4	MICHAEL MUKOMBO	CASTLE ESTATES LTD	0977400460	[signature]
5	BRIAN SAMUHELA	BUK TRUCK PARTS LTD	0977-845456	[signature]
6	AKI VASILAKOPOULOS	EMBASSY SHOPPING MALL	0966861001	[signature]
7	AMOS MUSONDA	"	0966753834	[signature]
8	Patrick Simwanza	North Point Hotel	0977888079	[signature]
9	Elijah Simwawa	" "	0978151694	[signature]
10	PETER MAKWAKWA	AUTOWORLD	0966742641	[signature]
11	JAVINA BHAGAT	PUMA ENERGY	0979306578	[signature]
12	REJOICE C. HACHIBAMBA	KFC MAKENI/MAKENI MALL	0979100744	[signature]
13	WORTHLIN MWAMBA	HEBRON TABERNACLE	097-7-783661	[signature]
14	Nanchengwa Richard	Jack Kawinga LTD	0961188687	[signature]
15	Eunice M Chimfwembe	LWSC	0966743235	[signature]
16	Gabriel Chikamba	LWSC	0977776631	[signature]
17	Jilly Chiyombwe	LWSC	097782586S	[signature]
18	TOPSY SIKALINDA	LWSC	0977762657	[signature]
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MULUNGUSHI SCOPPING MEETINGS

MINUTES OF THE ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCOPING MEETING HELD AT MULUNGUSHI INTERNATIONAL CONFERENCE CENTRE ON THE 13TH February, 2015

ATTENDANCE
The scoping meeting was attended by 38 people. The attendance register has been attached as appendix to these minutes

AGENDA
1. Opening remarks
2. Introduction
3. Project overview
4. Subprojects for first year investments
5. Overview of ZEMA requirements
6. Plenary targeting safeguards concerns

1.0 OPENING REMARKS

The meeting was opened at 10:15hrs. Participants were welcomed to the meeting by the facilitator, (the Public Relations Officer, LWSC). He thanked the participants for coming and explained to them that the meeting was a consultative one and thus all participants were expected to participate freely and that every contribution will be highly appreciated. He further explained that the meeting intended to disclose the proposed LSP and make known the possible impacts both positive and negative that would arise from the proposed project. Therefore contributions and concerns relevant to the project were welcome.

1.1 REMARKS BY LWSC ENVIRONMENTAL AND SOCIAL SAFEGUARDS COORDINATOR (ESSC)

The ESSC explained to the meeting that Lusaka Water and Sewerage Company (LWSC) was about to implement the Lusaka Sanitation Project and that the details of the project would be presented shortly to the meeting. The essence of the meeting was to receive comments or concerns about the impact of the project to be directly or indirectly affected by the project. ESSC further explained that it a requirement of the Environmental Management Act of 2011 for any project of this magnitude being undertaken by LWSC, to engage with all the stakeholders and a scoping meeting was one of the ways in which stakeholders could be consultated.

He further explained that as LWSC we are fully alive to the fact that a project of this magnitude will definitely have both negative and positive impacts, resettlement and displacement issues as well as interference with existing infrastructure. This is the more reason why all stakeholders need to be consulted to allow for the smooth running of the project.

2.0 INTRODUCTION

Participants introduced themselves by name and institutions they were representing.

3.0 PRESENTATION BY MANAGER PROJECT IMPLEMENTATION UNIT

LWSC Project Implementation Unit manager, Mr. Jilly Chiyombwe welcomed everyone to the meeting and appreciated their coming. He further proceeded to disclose the Lusaka Sanitation Program in a slide show presentation.

4.0. OVERVIEW OF ZEMA REQUIREMENTS

The principal legislation in Zambia that governs environmental management is the Environmental Management Act (EMA) of 2011. The act provides for the sustainable management of natural resources and protection of the environment, and the prevention and control of pollution

Part III Section 29 of the Act states that " *A person shall not undertake any project that may have an effect on the environment without the written approval of the Agency, and except in accordance with any conditions imposed in that approval".*

The Act also provides for public participation in decision making and access to environmental information under part VII section 91.

The Environmental Impact Assessment Regulation, SI 28 of 1997, part III under the EMA of 2011 demands that before a developer commences implementing a project, an EIA (depending on the magnitude of the project) be prepared and submitted to the relevant regulatory authority for review and approval.

The process of preparing an EIA demands a scoping report and thus an EIA scoping meeting is inevitable.

5.0 PLENARY (QUESTIONS AND ANSWERS)

No.	NAME & ORGANISATION	QUESTION/COMMENT/ISSUE	RESPONSE
1	John Pinford -UNICEF	Commented that he was happy at a clarification during project presentation that referred to the program as aiming at targeting 100% sanitation coverage by 2035 and not sewerage coverage because sewerage coverage of 100% was a pipe dream. He further mentioned that UNICEF was willing to partner with LWSC on the sanitation options for peri urban areas that are not necessarily revenue generating.	LWSC: Grateful for UNICEFs support and plan to work with as many stakeholders as possible as improving sanitation in peri urban areas was expensive and complex
2	Kelvin Chileshe –Matero ward 28 CLLR	Wondered why no hand outs (print outs) of the project presentation were given beforehand for easy following of the presentation, and further asked as to when the project would commence.	LWSC: Hand outs will be given later. The project is in its preparation stage and is likely to start by August this year
3	David Manjulunji - RTSA	Expressed gratitude for the project as it was long overdue. His concern was on the poor reinstatements of infrastructure esp. roads after being cut which lead to accidents. What has been put in place to avoid this?	LWSC does not reinstate the road, instead it's the LCC/contractor that reinstates the roads. However thrust boring may be considered
4	Frederick Bwalya – Ngwerere CLLR	• Demanded to know what it took for people to be connected to the sewer network. • He further demanded to know whether the Garden ponds where going to be backfilled to avoid more deaths as a result of people drowning in the ponds. • In addition he demanded	• He was informed that all they needed to do was apply for the service at the Peri urban unit of LWSC. • LWSC was

		to know what program of fumigation had been put in place by LWSC to lessen mosquito breeding in the ponds as Garden compound and the surrounding localities have been infested by mosquitoes.	already taking measures to address the breeding of mosquitoes by fumigating the ponds
5	Kelvin Chileshe –Matero ward 28 CLLR	proposed that sewer expansion project should actually start in Matero compound	It will be considered when the project unfolds
6	Estella Mbulo –LCC	Appreciated the fact that the LSP was a baby of the Lusaka Master Plan initiated by the City Council. She however, was concerned that only about 15% of the city was on sewerage system, while the rest of the city was on onsite sanitation. She wondered as to what mechanisms where in place for the Council to work together with LWSC to improve the sanitation situation in the City, seeing that plots allocated for housing by the Council where too small to accommodate septic tanks.	The project has technical support funding to both LWSC and LCC
7	Bonje Muyunda - ZESCO	Wanted to know what resettlement issues had arisen so far and who was the project affected people (PAPs), as well as what EIA issues have been considered. She further wanted to know which organization was going to meet the cost for resettlements	She was informed that for the first year investments, no major resettlement issues had been encountered and that one important criteria used to selection of first year investment projects was the minimization of resettlements and the number of PAPs to be affected. The

			meeting was further informed that the reason why this stakeholders' meeting was called was to receive issues of concerns from project affect people (PAPs) and others generally, arising from the project impacts. Such concerns were going to be considered for mitigation in the EIA in line with ZEMA regulations.
8	William M. Banda - ZP	Expressed concern about the security (negative reactions from venders in case of demolitions)during project implementation of infrastructure and wanted to know whether people in the project areas had been sensitized about the project	LWSC: The PAPs are being consulted and sensitized but we appreciate the concern and we are grateful that the Zambia Police are one of our stakeholders in this project.
9	Bwalya Kapuwe – Matero ward 28	Indicated that a similar project in Matero's Maiteneke area had "backfired" and therefore wanted to know what measures would be put in place to avoid similar experiences. Has there been sensitization?	
10	Jonathan Mwamfulilwa - ZAMTEL	Requested LWSC to invite ZAMTELto walk the route for the proposed project so that they can also identify their cables and re-route them where necessary prior to the implementation of the project.	LWSC: will continue communicating to all stakeholders at every stage of project implementation in

			order to avoid disruption of existing infrastructure.
11	Frederick Bwalya – Councillor Ngwerere	Re-echoed on the issue of mosquitoes in his ward and that he was not satisfied by the answer he was earlier given	LWSC: Took note and assured him that they will look at how best they can improve the situation
12	Lawrence Sichalwe – Councilor Msisi and Kuku	Indicated that a 'CAB' memo had been developed with Government on the redevelopment of MISISI compound and therefore requested that LWSC should not do anything regarding the development of MISISI compound outside the memo.	LWSC: Thanked the councilor for bringing the issue up but assured him that all stakeholders will be considered and consulted during project implementation.
13	Ben Mwila – Episcopal Conference	lamented that LWSC should have looked at other areas for consideration of sewer network extension, particularly areas such as Chalala that are on septic tanks	
14	Peter Mutale - Nwasco	Commented on the issue of the sewer ponds being near the people and the breeding of mosquitoes. Mr. Mutale appealed to the councilors to assist water utility companies as well as the regulator (NWASCO) in such issues by advising people in their ward not to build houses near the ponds. This is because ponds cannot be enclosed or fenced off. Nwasco is concerned that the cost being incurred by LWSC to fumigate or secure the ponds might end up being transferred to the customers by raising tariffs.	LWSC: Thank you
15	Alick Mbewe - ZESCO	Expressed concern, regarding	LWSC: Lay out

		power cables that are along the Kafue road and that he would like to be availed the lay out designs for the interceptors prior to the project being implemented.	designs will be made available and invitations to walk the route will be made to avoid unnecessary interruptions

6.0 CONCLUDING REMARKS

There having been no more questions or concerns from the participants, the facilitator thanked the participants for taking their time off to come and attend the scoping meeting. The participants was informed that they were free to get in touch with LWSC should there be any burning issues after this meeting because every contribution was highly valued. The meeting was closed at 12:30hrs.

Chairman

Name: O. MWSONGO

Signature: MWSONGO

Date: 20.02.2015

Stakeholder Representative

Name: SIMPITO AARON

Signature:

Date: 20.02.2015

ZAMTEL

Stakeholder Representative

Name: Estella N. Mbulo

Signature:

Date: 20/02/2015

NGWERERE PONDS COMMUNITY

LUSAKA SANITATION PROGRAM

REPORT ON THE AWARENESS RAISING MEETING HELD AT NGWERERE PONDS

19th February 2015.

The Lusaka sanitation program has a number of objectives among which are improving sanitation services especially informal settlements of Lusaka province. It also aims to meet regulatory requirements on waste disposal into natural environment. it will ensure direct impact on public health, environmental conservation and economic returns on investment for sustainability purposes.

Overall it seeks intervention as per investment master plan. As part of the requirement under the policy of resettlement it is import to engage would be beneficiaries and assess the impact the project will have on the existing infrastructure and determine how these would be compensated. The meeting was therefore held with the traders to meet the requirement above.

Following the commencement of the program a number of awareness activities are underway, among these are meetings with various stakeholders/ beneficiaries who include gardeners along the proposed project site known as Ngwerere ponds.

The Awareness Raising Meeting

A meeting was held on site on Thursday 19th February 2015 followed by a gardens survey using the agreed tools by the team . The meeting was attended by all the affected gardeners and the team explained the project components and the impact it will have on their gardens to which the gardeners raised a number of concerns.

Ngwerere Ponds are located in Chongwe district

The aim of the meeting was primarily to communicate to the gardeners about the Lusaka sanitation program. As such the meeting focused on the primarily objectives of the program and the benefits of the program to the city

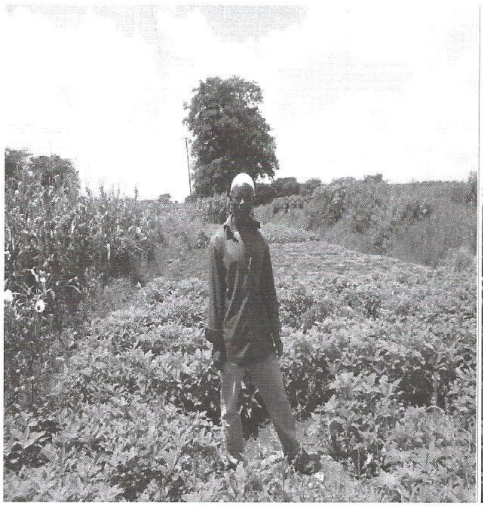
Concerns of the gardeners

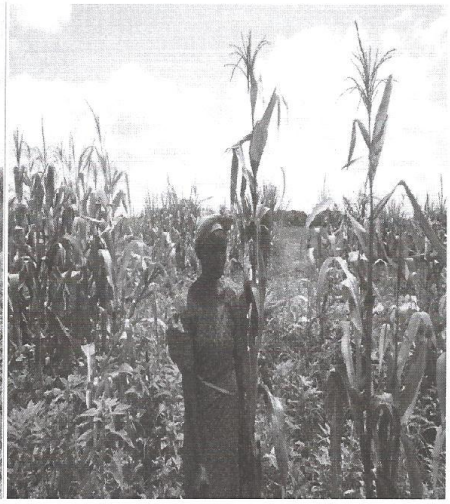
- The gardeners expressed concern on the loss of income and gardens once the works commence.

- They were assured that that' s why information was being collected to enable the company handle the situation if this occurred.

- They also wanted to know if the program will compensate them and what criteria will be followed if they had to be compensated because they deal in different crops?

- They were assured that the company understood and the issue will be tabled to other partners to explore the matter further.





Conclusion

The chair person thanked the gardeners for attending and uged them to be truthful when answering the tools used he further thanked LWSC for extending it,s usual respect to the residents by sensitizing the affected and beneficiary of the services, he further requested the company to update the traders on every step of the project and notify them on time.

SCANNED SIGNED REPORT ON THE AWARENESS RAISING MEETING – NGWEKERE

Chairperson **Secretary**

VICTOR MALAMBO - 0968461800

DANIEL ZULU - 0955570974 - DZULU – SECRETARY