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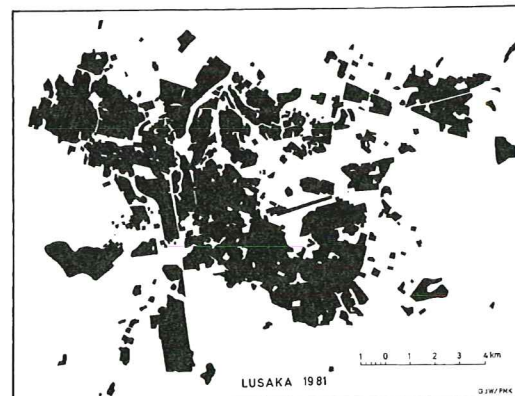
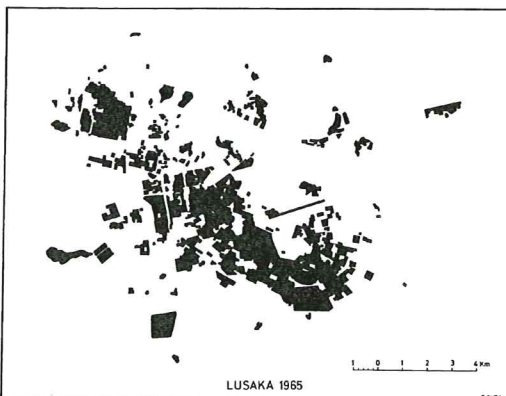
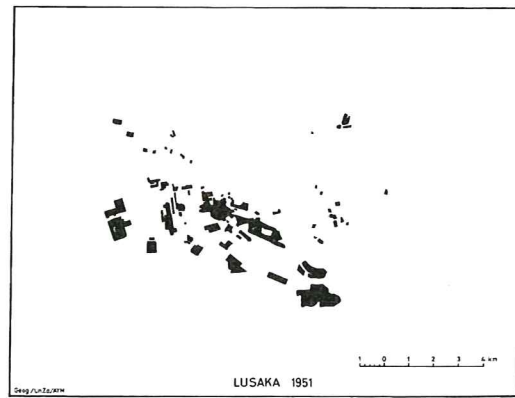
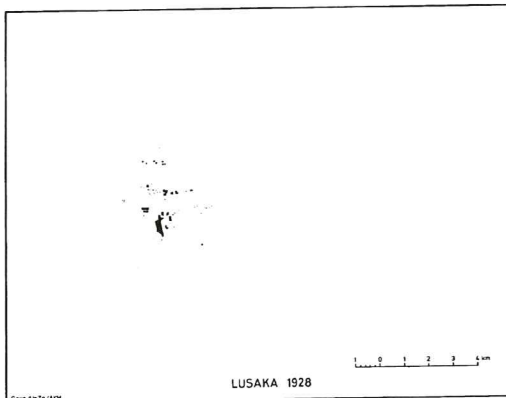
Managing Water for African Cities

**Lusaka City**

**Implementation Plan**

Environmental Component

**Appraisal Report**



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**Abstract**

This is an appraisal of the environmental component of the Lusaka City Implementation Plan under the Habitat guided programme "Managing Water for African Cities". The objective of this appraisal was to ensure the conformity of the plan with the objectives of the Regional Project and Zambia's needs and to explore the availability of domestic resources (human, institutional, and financial) required for efficient project implementation. The appraisal recommends that the design of the city implementation plan should include an inception process involving Zambian partner institutions and stakeholders, since Zambian ownership to the plan is essential to its successful implementation. It is proposed that the city plan should take a step-wise and action oriented approach. It should start with the community based groundwater management component to demonstrate results on the ground in the selected urban communities before embarking on the subsequent large-scale integrated groundwater management intervention. An immediate action will be to establish the environmental task team and appoint a task leader who will act as the main driving force in the City Plan implementation process.

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Managing Water for African Cities

**Lusaka City Implementation Plan**

**Environmental Component**

Appraisal Report

## Preface

The Cape Town declaration adopted by African Ministers in 1997 recognises that increasing population and rapid urbanisation in Africa pose a serious threat of depletion, pollution and degradation of freshwater supplies, especially in the high-density areas. Since the cities are important driving forces in the political and socio-economic development, special emphasis is needed for the protection and management of local water resources and catchment areas, and equitable sharing of water between urban needs. The “Managing Water for African Cities” is implemented and promoted jointly by Habitat and UNEP within the framework of the United Nations Systems-wide Initiative for Africa and is responding directly to the Cape Town Declaration. The aim of the project is to promote integrated urban water resource management and building capacity in key local and regional institutions paying attention to the links between water, urban development and the environment in seven selected cities. These are Abidjan, Accra, Addis Ababa, Dakar, Johannesburg, Lusaka, and Nairobi. These cities have prepared individual City Implementation Plans addressing effective water demand management (WDM) and actions to mitigate the environmental impact of urbanisation on freshwater resources and aquatic systems. The environmental components of these plans are being reviewed with the aim to assist the cities in pursuing the implementation of the city plans. The Lusaka City Implementation Plan has been reviewed by the undersigned in close collaboration with the concerned Zambian partner institutions and Mr. André Dzikus, Human Settlement Officer of Habitat Nairobi. I would like to express my thanks to all people met for their kind support and valuable contributions during the review. This Mission Report highlights some key issues and recommendations on how the city plan process should proceed. This Appraisal Report solely reflects the views of the undersigned, which do not necessarily correspond to either those of the Government of Zambia or those of HABITAT or other institutions mentioned herein.

Oslo, 31 January, 2000

*Torbjørn Damhaug*

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## Abbreviations

ABO	Area Based Organisation
DISS	Department of Infrastructure and Support Services
DWA	Department of Water affairs
ECZ	Environmental Council of Zambia
ESA	External Support Agency
GRZ	Government of the Republic of Zambia
LCC	Lusaka City Council
LFA	Logical Framework Approach
LWSC	Lusaka Water and Sewerage Company
MENR	Ministry of Environment and Natural Resources
MEWD	Ministry of Energy and Water Development
MLGH	Ministry of Local Government and Housing
NIVA	Norwegian Institute for Water Research
RSU	Water Sector Reform Support Unit (also WSRSU)
SLP	Sustainable Lusaka Programme
UNCHS	United Nations Centre for Human Settlements (HABITAT)
WDB	Water Development Board
WRAP	Water Resources Action Plan
WRM	Water Resources Management
WSS	Water Supply and Sanitation

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## Summary

The Government of Zambia (Ministry of Local Government and Housing) and UNCHS/HABITAT have signed a Memorandum of Understanding as part of the project “Managing Water for African Cities”. This report is an appraisal of the environmental component of the Lusaka City Implementation Plan as it appears in the Memorandum. The mission’s preliminary findings and suggestions were briefly discussed with the co-ordinator before leaving Lusaka. The report in hand gives a summary of findings and recommendations of the mission.

The mission observed that the environmental component of the City Plan is still in a premature stage of preparation compared to the water demand management component, probably because the institutional responsibilities for the environmental part still remain unsettled. Thus, this appraisal has more the character of providing input and recommendations for the next preparatory steps than just reviewing the existing planning document.

The overall objective of the environmental part of the City Implementation Plan of HABITAT is to mitigate the environmental impacts of urbanisation on freshwater resources and aquatic ecosystems, to improve the health of the communities, and prevent deterioration of water resources and the environment. In response to this objective, the existing environmental component of the City Implementation Plan sets out to (i) implement a community based groundwater management demonstration project, and (ii) develop an overall strategy for enhanced aquifer management in Greater Lusaka City. It is proposed that the first stage of the City Implementation Plan shall mainly focus on the community based groundwater management demonstration project in co-operation with ongoing community oriented initiatives in the pilot compounds, such as the CARE supported community transformation project in selected compounds of the city.

The environmental component of the Lusaka City Implementation Plan captures the main water resource challenges facing the city of Lusaka. The City Plan, however, needs some reinforcement with regard to its design, project objectives, scope of activities, institutional responsibilities, sustainability factors, budgets, time schedules, and monitoring indicators before it can be launched. Therefore, it is proposed that the next stage of planning should include a participatory inception process, involving major actors, partners and stakeholders. It is suggested to apply the structure of the Logical Framework Approach (LFA) or similar methods. The results of the above inception process should be an action plan for the environmental component of the Lusaka City Plan.

Zambian ownership and involvement is a key factor to the success of the Plan, so the inception process should be driven by the Zambian environmental “task team”, if needed with some external support organised by HABITAT, to finalise the planning process. The proposed immediate action is to establish the environmental task team and appoint a leading partner/host for the environmental component. The CARE/SLD would be well placed to play a central role in organising the community groundwater management component. Special attention should be paid to the assignment of a task leader for this component since this person will be the key driving force of the planning and implementation process.

# 1. INTRODUCTION

This report is a summary of findings and recommendations from an appraisal mission to Lusaka, Zambia from October 28 to November 4, 1999. The appraisal was carried out by Torbjørn Damhaug, as Technical Advisor from the Norwegian Institute for Water Research (NIVA) Oslo, in collaboration with André Dzikus of HABITAT Nairobi who participated in the planning and start-up of the fieldwork. The mission met with a number of representatives of relevant authorities, institutions, donors and other stakeholders (Annex 1). A similar review of the Dakar City Implementation Plan was carried out from November 21 to 27, 1999. These appraisal reports will serve as an input to the forthcoming city consultations organised by HABITAT.

## 1.1 Managing Water for African Cities

This review has been carried out under the auspices of the initiative “Managing Water for African Cities” (the Project). The Project is implemented and promoted jointly by HABITAT and UNEP within the framework of the United Nations Systems-wide Initiative for Africa, and responds directly to the Cape Town Declaration<sup>1</sup> adopted by African Ministers in 1997.

The aim of the Project is to promote integrated urban water resource management and building capacity in key local and regional institutions paying attention to the links between water, urban development and the environment in seven selected cities. These are Abidjan, Accra, Addis Ababa, Dakar, Johannesburg, Lusaka, and Nairobi. The objectives of the Project are to:

- promote integrated approaches to managing urban water resources,
- improve efficiency of water use in urban areas
- improve knowledge base of the impact of urbanisation on freshwater resources
- improve exchange of information and good practices on water resources management for urban areas

The Project includes the preparation of individual city implementation plans addressing the following inter-connected components:

1. Develop an effective water demand management (WDM) strategy for efficient water by the consumers and in African Cities
2. Mitigate the environmental impact of urbanisation on freshwater resources and aquatic systems by:
  - setting up early warning mechanisms for timely detection of “hot spots” where sustainability is likely to be threatened
  - assessment of long-term environmental impacts of large cities on the continent’s water resources

The city implementation plans, as stated in the Project Implementation Strategy<sup>2</sup> and the associated Implementation Strategy for the Environmental Component<sup>3</sup>, is claimed to be the first comprehensive

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<sup>1</sup> UNCHS (HABITAT) Partnership in the Water Sector for Cities in Africa. Report on the Cape Town Consultations 8-10 December 1997

<sup>2</sup> UNCHS (HABITAT) and UNEP: Managing Water for African Cities: Volume 1: Project Implementation Strategy. Expert Group Meeting Cape Town, South Africa, 26-28 April 1999



initiative to support local and national governments and their partners to effectively cope with the growing urban water crisis and related environmental impacts.

## **1.2 The Environmental Component of the Lusaka City Implementation Plan**

### **1.2.1 Objectives**

Appendix C illustrates some water resource issues of greater Lusaka. It is understood that the overall objective of the environmental part of the Plan is to mitigate the environmental impact of urbanisation on freshwater resources and aquatic ecosystems, to improve the health of the communities, and to prevent deterioration of water resources and the environment. This shall be achieved through the adoption of an integrated approach to managing urban water resources, paying attention to the links between water, urban development and the environment. An immediate objective is to improve the knowledge base of the impact of urbanisation on freshwater resources and aquatic ecosystems in the city. From the Memorandum of Understanding between the Government of Zambia, MLGH and HABITAT<sup>4</sup> it appears that the environmental component of the City Implementation Plan sets out to:

1. Develop a strategy for aquifer management in the Lusaka City with the aim of protecting water quality and preventing over-exploitation of groundwater.
2. Develop monitoring and early warning systems for aquifers in the Lusaka area based on co-ordinated monitoring efforts.
3. Promote community based aquifer management with special emphasis on community-based water supply and sanitation in a selected income area.

### **1.2.2 Institutional Framework**

The Ministry of Local Government and Housing (MLGH) - Department of Infrastructure and Support Services (DISS) is the national counterpart institution for the Lusaka City Implementation Plan. Other key counterpart institutions are the Lusaka Water and Sewerage Company (LWSC), the Department of Water Affairs (DWA) under the Ministry of Energy and Water Development (MEWD), the Environmental Council of Zambia (ECZ), Lusaka City Council (LCC). It is understood that the Water Sector Reform Support Unit (RSU) co-ordinates the implementation of the Plan. The Steering committee consists of representatives from the above partner institutions and the University of Zambia – Civil Engineering Department. The Environmental Council of Zambia (ECZ) and the Department of Water Affairs (DWA) of the Ministry of Energy and Water Development (MEWD) have been identified as focal counterparts for the environmental component. The institutional arrangement for the community-based demonstration project is proposed in Figure 3 of chapter 3.

### **1.2.3 Status of the planning process**

The local implementation plan, as it appears in the Memorandum, was supposed to be further refined through a process of stakeholder consultation. In pursuing the implementation of the Memorandum, the LWSC has drafted and submitted to the review mission the draft Terms of Reference for

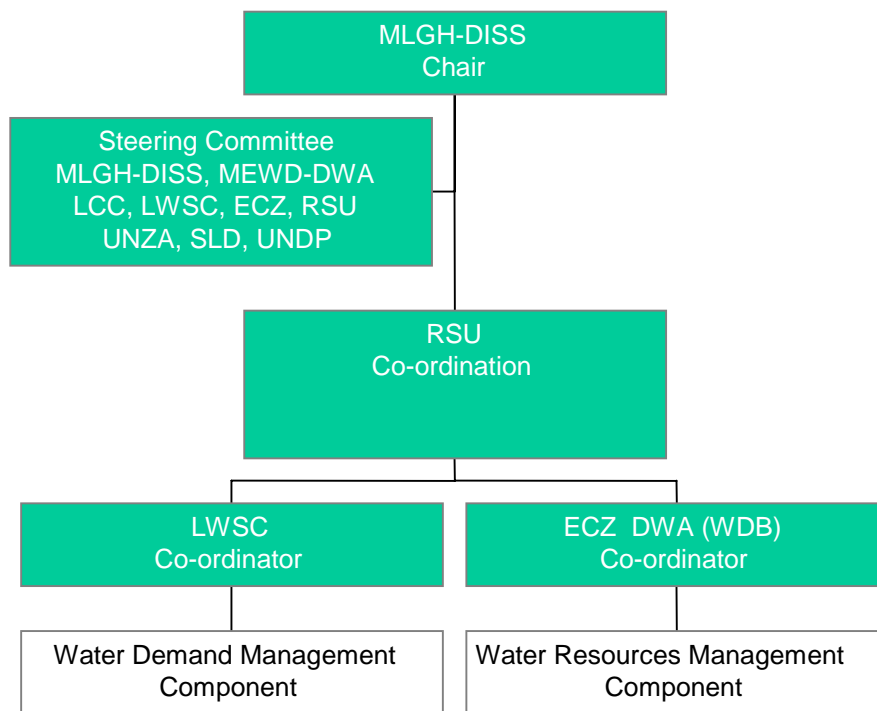
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<sup>3</sup> Managing Water for African Cities: Project Implementation Strategy - Mitigating the Impact of Urbanisation on Freshwater Resources

<sup>4</sup> Memorandum of Understanding between the Government of Zambia, Ministry of Local Government and Housing and HABITAT concerning collaboration on project “Managing Water for African Cities” (May 6, 1999).

Consultancy Services<sup>5</sup> for the execution of the environmental component of the Plan. These ToR propose a series of tasks to be carried out by a consultant as part of the implementation of the Plan. The appraisal mission is; however, of the opinion that the Zambian project team should be directly involved in execution of the City Plan and the use of external consultants should be limited to some specific tasks when needed. This will require the City Plan documents being further refined and completed through follow-up deliberations jointly between the key institutions involved. In that connection, this appraisal provides input and advise to the design of the Plan in collaboration with the key actors and participating institutions.

**Figure 1.** Lusaka City Implementation Plan - Institutional Framework



### 1.2.4 Appraisal Approach

The terms of reference for this external review of the environmental component of the Lusaka City Implementation Plan call for the following responsibilities of the Technical Adviser:

- assist in appraising the city implementation plan in the area of environmental assessment/pollution control to ensure broad conformity with the objectives of the Project: “Managing Water for African Cities” and compliance with Zambia’s priorities and needs
- initially assess the available institutional and human resources capacity required for efficient project implementation

<sup>5</sup> GRZ-HABITAT: Managing Water for African Cities – TOR for Consultancy in Mitigating the Impact of Urbanisation on Fresh Water Resources and Aquatic Ecosystems through executing a Demonstration Project in the City of Lusaka (October 1999).

The review of the environmental component of the Plan comprised consultations with all relevant actors and stakeholders in Lusaka to assess gaps and/or shortcomings and recommendations on improving the Plan and necessary immediate and long-term follow-up actions.

## **2. REVIEW OF THE LUSAKA CITY IMPLEMENTATION PLAN**

### **2.1 Policies and Objectives**

#### **2.1.1 The Plan is consistent with Zambia's priorities**

In principle, the concept of the Cite Implementation Plan corresponds well with the ultimate goal of the Government of Zambia Policy Framework<sup>6</sup> to reduce the incidence of poverty and improve the well being of the Zambian people. Increasing access to safe water services and sanitation is stated as a vital factor to improve the health of the population. Air and water pollution has affected the health and productivity of Zambia's workforce, particularly in the urban areas and facilities to manage sanitation and solid waste are inadequate. The Lusaka Implementation Plan is apparently in agreement with the Government strategy to resolve the serious deficiencies of water and sanitation services in peri-urban areas and informal settlements as a priority issue.

#### **2.1.2 The Plan well justified in relation to user's needs and priorities**

Residents of the peri-urban and informal areas of Lusaka spend excessive amount of money and time getting hold of water, which is often of poor quality, resulting in a high incidence of water-related diseases. For example, the periodical cholera-outbreaks during the rains underscore the seriousness of the urban environmental situation. The Plan's goal to mitigate the environmental impact of urbanisation on the urban water resource environment and its clear orientation towards the urban poor is well justified through the stakeholder consultations and experience of associated projects, in particular the PROSPECT (CARE) and the Sustainable Lusaka Development (SLD).

#### **2.1.3 Zambian commitment in place**

The success of the Lusaka City initiative heavily depends on Zambia's commitment to and ownership of the agreed Implementation Plan. The mission noticed that all key actors expressed their keen interest in seeing the Plan moving forward, however, the progress of the environmental component has until now been slow and disjointed. This is likely due to uncertainties concerning the sharing of responsibilities among the participating institutions rather than poor commitment to the initiative. Nevertheless, the real state of ownership and commitment in terms of response to agreed actions and funding contributions will first appear during the forthcoming stages of planning and execution of the Plan.

### **2.2 Assessment of Project Design**

#### **2.2.1 The Plan entails two major of strategic interventions**

The Plan sets out to: (i) develop a strategy for enhanced aquifer management in Lusaka to prevent pollution and over-exploitation of groundwater; (ii) develop monitoring and early warning systems for aquifers; and (iii) promotion of community based aquifer management with special focus on water supply and sanitation in selected areas. It seems logic that the strategic interventions should combine (i) and (ii) in one component and keeping (iii) as a separate one. The notion "early warning" related to aquifer management means in reality monitoring since over-exploitation is a slow process that has to be detected through long term monitoring. It also requires appropriate analytical skills to distinguish signs of over-pumping from those of natural groundwater level variations. Therefore, the issue (ii) is

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<sup>6</sup> Ministry of Finance and Economic Development: "Zambia Policy Framework Paper 1999-2001

suggested to be an integrated part of element (i). Hence, it is proposed that the City Plan will have two broad areas of activity as follows:

*Community based groundwater management (iii)*

This intervention is related to impacts of groundwater over-exploitation and pollution in local communities due to over-pumping of private wells/boreholes and/or contamination of local water resources caused by short-circuiting with latrines/garbage pits or other local contaminants. Basically, this is a serious health and welfare issue in the communities concerned, without necessarily posing a threat to the entire aquifer systems. This will need community-based interventions, such as awareness building campaigns and development of locally owned and managed services in selected demonstration communities.

*Strategy for enhanced aquifer management in Greater Lusaka City (i)& (ii)*

This element relates to mitigation against massive aquifer pollution and/or over-exploitation posing a threat to the entire aquifer system possibly with irreversible impacts. This is basically an aquifer management and protection issue that will need a holistic and efficient approach organised at city level, requiring concerted efforts between regulatory authorities and water users with substantial resource inputs.

These two project interventions will be further elaborated under the recommendations.

## **2.2.2 Surface water resources not part of the Plan**

The Plan is basically geared towards groundwater resources management and consequently it does not capture the water related environmental issues related to the surface water in Lusaka, such as raw sewage being discharged into the local river systems. It needs to be clarified to which extent the Implementation Plan should include surface water issues.

## **2.2.3 More facts about the aquifers**

The access to reliable facts about the existing water resource situation is a prerequisite for the planning of mitigation measures and improved water management practices. The Plan's description of the existing water resources situation in Lusaka reflects the lack of consistent information about the water resources and the environmental situation. Also the knowledge of the water qualities, yields and capacities of the Lusaka aquifers appear limited and fragmented. A question is if the groundwater resources could sustain a much larger population than they do today, or if their exploitation is stretched to the limits of tolerance. The Plan claims that the above situation is due to fragmented and insufficient qualitative and quantitative monitoring of aquifers and surface waters caused by unclear institutional responsibilities, lack of resources and insufficient water laboratory services.

## **2.2.4 Socio-cultural and gender issues to be addressed by associated projects**

The socio-cultural aspects, for instance priorities and needs of various population groups (gender, class, ethnicity, age, religious affiliation etc.) have not been dealt with as project issues. These aspects are, however, addressed by key associated projects (such as CARE and SLD), provided the City Plan takes advantage of selecting the same communities as sites for the demonstration project.

## **2.2.5 Clarify synergies with associated projects**

The implementation plan for the Lusaka City Demonstration Project is supposed to be based on linkages with other ongoing initiatives in Lusaka with similar objectives. The planned interventions of the environmental component suggest that the Plan have great potential of complementing and interact with ongoing projects in Lusaka. It is, however, necessary to demonstrate more specifically the

synergies between the activities of the Plan with ongoing projects, and the value the Plan will add to the management of Lusaka's water resources at community and overall levels.

### **2.2.6 Update of the list of associated projects**

The Appendix B of this report gives a summary of existing associated projects mentioned in the Memorandum of Understanding (project 1 to 6), complemented with other relevant projects identified during the review (project 7 to 13). The annex also gives a summary of the projects, which are of various degree of relevance to the City Implementation Plan. The updating of the overview of associated projects and exploration of opportunities for co-operation need to be further in conjunction with further project preparation.

### **2.2.7 Performance monitoring indicators needed**

It is important to include the performance monitoring and review of the Plan as a project activity. Since the monitoring aspects have not been specifically addressed in the planning documents it is suggested to identify this activity under the suggested inception process.

## **2.3 Economic and Financial Aspects**

### **2.3.1 Need specification of activities and related budgetary breakdowns**

The Memorandum mentions the inputs required implementing the Plan. The matrix in section F.2 summarises the funding contribution from the main actors like GRZ (MLGH and DWA), UNFIP/UNCHS/UNEP, and projects associated to the Plan. Hence, in order to identify the need for funding of the Plan, the project document should also give a breakdown of its budgetary requirements connected to each activity. It is thus necessary to have a clear picture of which activities belong to the city plan itself, and which activities will be carried out by associated projects.

### **2.3.2 The priority assigned to the Plan in national budgets not yet verified**

The Memorandum of Understanding states that the Government (through MLGH and DWA) has pledged a contribution to the Plan equivalent to US\$ 204,000. As part of the forthcoming preparations it will be necessary to confirm the availability of the funding contributions and provide the particulars about the accounting and spending of these funds. The availability of this contribution is needed for the effective involvement of the Zambian institutions in the implementation of the Plan.

### **2.3.3 HABITAT's Contribution must be specified**

HABITAT's contribution of some US\$ 75,000 for the environmental component should be used to achieve most impact on improving the management of Lusaka's water resources. Although the Memorandum is not clear about the priorities of this funding contribution, it is recommended to prioritise the roles of: (i) facilitation of the inception process, (ii) networking, (iii) attracting additional funding, and (iv) replication of good practise within Lusaka and among the cities concerned.

## **2.4 Institutional Aspects**

### **2.4.1 The environmental task team not yet established**

The mission noticed that for the time being the environmental component of the Lusaka City Implementation Plan has not gained the same momentum as the water demand management component. The people met at ECZ and DWA claimed that there has been a low activity level in the environmental team, however they would like to see the respective institutions becoming more effectively involved in the project. It was also indicated from the key institutions met that there are

human capacity limitations that have to be looked into and it will be necessary to reprioritise the use of staff to meet the demands of the City Plan. For instance, the ECZ informed the mission that their role in the Plan should preferably be as the regulator in terms of discharge licensing, effluent control, etc., and that ECZ would not be responsible for organising environmental remedial actions. Moreover, the Water Development Board (WDB), which is now undergoing reforms and capacity building together with DWA under the WRAP program should be among the key actors. These aspects need to be sorted out as part of the inception process.

### 3. THE WAY FORWARD

#### 3.1 Project Interventions and Overall Schedule

As suggested in chapter 2, the main project components should involve:

1. Project Mobilisation and Inception
2. Demonstration of Community Based Groundwater Management
3. Strategy for Enhanced Management of Lusaka City Aquifers
4. Exchange of Experience and Replication
5. Performance Monitoring and Review

The above components of the environmental part of the City Plan need to be broken down into project activities accompanied by time schedules to see their relative duration. It is also required to identify in co-operation with the respective partners which activities belong to the Plan itself and which of them will be carried out by associated projects.

The Plan should be a step-wise and action oriented strategic approach, interacting with relevant projects and initiatives in Lusaka City. Figure 4 suggests an overall framework of interventions and time schedule of the environmental component of the City Plan of Lusaka. It is recommended that in order not to spread the focus of the Plan, it should start with the Demonstration of Community Based Groundwater Management part. This is because this component has the most direct focus on results on the ground in the urban communities. The Lusaka aquifer strategy should follow when the community demonstration part is on the track. The figure is meant to serve as a basis for further elaboration and revision during the inception process. The timing of the Plan has to be in agreement of what the main actors feel to be realistic.

**Figure 2.** Tentative Implementation Schedule

Activity	Year 1			
	1	2	3	4
1. Project Mobilisation and Inception				
2. Demonstration of Community Based Groundwater Management				
3. Strategy for Enhanced Management of Lusaka Aquifers				
4. Exchange of Experience and Replication of Good Practice				
5. Performance Monitoring and Review				

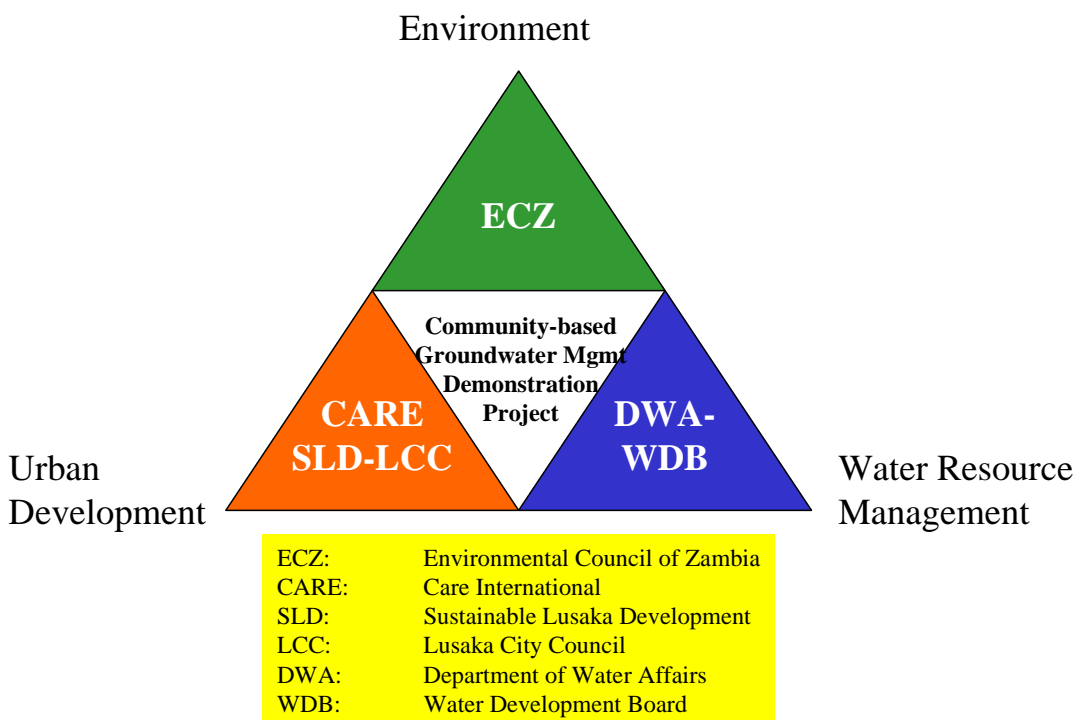


### 3.2 Proposed Organisational Structure for the Environmental Component of the Plan

It is recommended that the institutional arrangement of the wastewater management component should reflect the integrated approach to managing urban water resources, paying attention to the links between water resources, urban development and the environment. The institutions of the environmental component must have the required skill mix to cover the key dimensions of the Plan, and must be given the necessary time and resources to perform efficiently. The identified cornerstone institutions shown in Figure 3 include the Department of Water Affairs/Water Development Board (water resource management) – Environmental Council of Zambia (environment) and Lusaka City Council/Sustainable Lusaka Development/CARE (urban development). Concerning the latter, it is envisaged that CARE/SLD will play a major urban development role in the Demonstration of Community Based Groundwater Management part, whereas the Lusaka City Council will be more active in the subsequent Strategy for Enhanced Management of Lusaka City Aquifers. This strategy relates to information and analysis of the aquifers and enforcement of joint regulatory measures to mitigate over-exploitation and/or pollution affecting large parts of the aquifer systems. This will need a holistic approach organised at city level, requiring concerted efforts between regulatory authorities and water resource developers and users.

It is needed to clarify and develop the regulatory roles of ECZ (pollution control) and those of DWA/WDB (abstraction licensing and water rights) at city level. This is to ensure the sustainable development of Lusaka’s water resources and to review and refine current policies and practices and move towards more integrated management of a resource that supports the city’s long-term social and economic development. The need for strong and competent authorities to regulate the water rights and ensure that the water is equitably shared between conflicting interests ranging from the poorer segments of the informal and peri-urban populations to high cost residential areas, commercial enterprises and other users. The City Plan provides an opportunity to strengthen the co-operation between the main regulators ECZ, DWA/WDB, and LCC.

**Figure 3.** Proposed Institutional Structure for the Environmental Component



### 3.3 Project Mobilisation and Inception

The design of the Plan has to be firmed up to give a clear picture of project planning factors, such as objectives, activities, outcomes, outputs, indicators, management, resource requirements, and conditions for sustainability before embarking on the implementation of the environmental sub-plan. This will require an interactive and dynamic process between the main actors and stakeholders concerned, including NGOs, and community representatives. It is suggested using a form of Logical Framework Approach (LFA) as a guiding tool to establish the objectives structure and activity plans, since this is a recognised method among donors and other funding agencies and will probably make achievement of additional external support easier. An experienced moderator should facilitate the inception process, but it is a prerequisite that the Zambian task members play a leading role. The inception process could draw upon experience from the preparatory approach of the Water Resources Action Plan (WRAP) (associated project 8). The ToR for the inception process could be organised by the Steering Committee, and if necessary with the assistance of an external consultant. The ToR for the inception process could be a Revised Version of the ToR prepared by LWSC, organised by the Steering Committee, and if necessary with the assistance of an external consultant. HABITAT will be the main external partner guiding and supporting the inception exercise.

Some specific issues that should be addressed during the inception stage are to:

- re-assurance of political will and commitment
- appoint the environmental task team (see Ch. 3.2)
- exchange of views with major associated projects to verify their objectives and current activities, explore opportunities for co-operation, and make agreements of co-operation for maximum mutual benefits
- verify donor involvement and support to the Plan, and seek possibilities for supplementary support to the implementation of the Plan
- address issues raised in chapter 2 of this report

It is proposed that the immediate actions to be initiated by the Steering Committee of the Lusaka City Implementation Plan in consultation with HABITAT would be to:

- establish the environmental task teams and appoint a leading partner/host for the environmental component. Special attention should be paid to the assignment of a task leader for the environmental component of the Plan since this person will be the key driving force of the planning and implementation process
- organise the preparation of the terms of reference for the environmental task leader and the responsibilities of each key institution
- initiate the preparation of the ToR, plan and budget for the inception process, if necessary with the assistance of an external consultant
- carry out the inception
- identify project activities and make a breakdown of the budgetary requirements connected to each activity

### 3.4 Demonstration of Community Based Groundwater Management

Important to develop an integrated approach to community water management in the peri-urban and informal settlements. It is necessary to demonstrate the connections between health and well being and the water and sanitation including development practice, disposal of garbage, and storm water drainage. It is recommended that the focal point of this element should be adapted sanitation solutions, such as small bore piped sanitation systems, in peri-urban and informal settlements of Lusaka in the view of wastewater handling/utilisation and local groundwater protection. Affordable technological and social options are under development in other cities.

The actual activities of this component will be identified as part of the inception process, however some activities would be to:

- identify compounds suitable for the demonstration project to explore alternative solutions and approaches to mitigate impacts of urbanisation on water resources including public awareness building and structural interventions;
- collect the necessary information, such as water use and future demand, land use, socio-cultural aspects, and demography in the selected pilot areas;
- develop public awareness campaign tools and approaches for promotion of community based aquifer management;
- facilitate necessary physical interventions;
- implement and monitor public awareness campaigns within the selected communities.

### **3.5 Strategy for Enhanced Management of Lusaka Aquifers**

The development of a strategy for sustainable management of Lusaka's aquifers will involve a number of factors, such as:

- water resources monitoring and assessment,
- environmental and ecological effects,
- legal framework, political support and local ownership,
- institutional responsibilities (separate regulatory and service provider functions)
- financial/economic conditions,
- technological factors,
- socio-cultural factors.

As can be derived from the above list, strategy development needs concerted efforts by a broad range of authorities, interest groups and experts, as well as a solid funding base. This will have implications for the approach of the Lusaka City Plan. It is proposed that this shall be further addressed as part of the inception exercise, to find out where the Plan can contribute the best. Some specific tasks that should be considered carried out in co-operation with associated projects in Lusaka City (Annex 2) are to:

- establish the baseline situation of the existing water resources.
- promote the strengthening upgrading and harmonisation of the water quality laboratory services in Zambia from being fragmented and project specific to become regular services carried out by accredited institutions and laboratories.

### **3.6 Exchange of Experience and Replication of Good Practice**

The experiences from the City Plan will contribute to the development of good practices for pollution control and preservation in existing compounds in connection with development of water supply and sanitation services, including storm-water drainage and solid waste disposal. This project component will also involve cross-fertilisation across cities in Zambia and the other cities involved in the project "Water for African Cities".

### **3.7 Performance Monitoring and Review**

It is recommended that performance monitoring and reviews shall be regular activities during the implementation of the City Plan. Monitoring entails checking and control of the Plan's achievements compared to the planned inputs, activities and outputs, using the developed indicators. It is important

to establish one format for monitoring and reporting that will be used throughout the life of the Plan. The format should be such that inputs, activities and outputs are monitored with reference to the Goals and Objectives of the Plan and its sub-components. The factors essential for the sustainability of the Lusaka City Implementation Plan comprise: (i) policy support measures and local ownership; (ii) institutional aspects; (iii) financial/economic conditions; (iv) technological factors; (v) socio-cultural factors; and (vi) environmental and ecological effects.

## Appendix A. People Met

<b>Name</b>	<b>Position</b>	<b>Affiliation</b>
Mr. Lazarus Mwiinga	Director	MLGH - Dept. of Infrastructure & Support Services (DISS)
Mr. Oswald. M. Chanda	Project Manager	Water Sector Reform Support Unit (WSRSU)
Mr. Charles Chipulu	Managing Director	Lusaka Water and Sewage Company (LWSC)
Mr. Paul Banda	Chief Inspector	Environmental Council of Zambia (ECZ)
Mr. Jacob Chichiba	Senior Inspector	Wastewater Pollution Control
Mr. Adam Hussen	Director	Department of Water Affairs (DWA) MEWD
Ms. Litumelo Mate	Community Development Co-ordinator	Sustainable Lusaka Programme (SLP) Lusaka City Council
Mr. Wilson Shane	Manager Sewerage Services	LWSC (Visit to Libale sanitary landfill )
Mr. Elijah Musonda	Head of Department	LWSC - Mapping and Draft Department
Mr. Cecil Nundwe	Water Officer	Water Development Board (WDB)
Mr. Andrew Graham	Senior Programme Engineer	CARE International PROSPECT
Mr. Francois Huppé	Pollution Control Specialist	Technical Assistance Project to the ECZ (CIDA)
Mr. André Dzikus	Human Settlements Officer	United Nations Centre for Human Settlements (HABITAT)
Mr. Gudbrand Stuve	First Secretary Natural Resources Management	Royal Norwegian Embassy, Lusaka

## Appendix B. Associated Projects

Some projects of relevance to the environmental component of the Lusaka City Implementation Plan

	Title	Host Institution	Partner Institutions	Funding agencies	Approximate Budget	Year
	* Projects mentioned in the Plan:					
1	LCC Care Project	LCC		CARE		
2	LWSC (EU)	LWSC		EU	US\$ 20 mill.	
3	Technical Assistance Project to the Environmental Council of Zambia – Phase 2 Ground Water Sub-Project	ECZ	DWA	CIDA	US\$ 0.35 mill.	2002
4	Groundwater development project?			JICA		
5	Prospect. Programme of Support for Poverty Elimination and Community Transformation		CARE	DFID-UK	US\$ 2 mill	1988-2003
6	Sustainable Lusaka Development (SLD)	LCC		UNDP	US\$ 1.1 mill.	1999-
	* Other Projects Identified:					
7	Development of a Strategy for Peri-Urban Water Supply and sanitation	RSU		UNDP World B.		
8	Water resources Action Plan (WRAP)	MEWD		NORAD, UNDP, World B.	US\$ 1.5 mill.	1999-2002
9	Environmental Support Program (ESP)	MENR	ECZ	World B. UNEP		1999-2002
10	Industrial Pollution Prevention Programme (IPPP)	ECZ	SFT (Norway) ZACCI	NORAD	US\$ 2 mill US\$ 1.9 mill	97-2000 2001-03
11	Expansion of the water supply system to the City of Lusaka.	LWSC		World B.?		2000
12	National Water Resources Master Plan	MEWD		JICA		-1995
13	Lusaka Groundwater Investigation	LCC?	CARE Scott & Wilson	DFID		1999-

### Project 1: LCC Care Project

To be seen in conjunction with project number 5.

### Project 2: LWSC-EU project

Specific information about this project not acquired.

### Project 3: Technical Assistance Project to the Environmental Council of Zambia. - Phase 2 Ground Water Sub-Project

The second phase of this technical assistance project is focusing on direct involvement in specific environmental management issues and by strengthening the technical capacity of the ECZ. One of the seven identified sub-projects is directly related to environmental assessment of the Lusaka aquifer. Detailed monitoring will be made in three hot-spot areas, Libale sanitary landfill, the Leopard Hills Cemetery, and the oil depots near Old Mumbwa rd. It will include drilling of additional observation boreholes, two sampling campaigns (dry and wet season), establishment of a pollution mobility model, creation of a vulnerability map of Lusaka, and training of ECZ staff.

### Project 4: Groundwater Development Project

This JICA funded project include borehole drilling and water supply systems in different compounds in Lusaka. More co-operation with the CARE projects is evolving.

### **Project 5: Prospect - Programme of Support for Poverty Elimination and Community Transformation**

The goal of the PROSPECT is to alleviate poverty in informal settlements in Lusaka and Livingstone. The purpose is to assist Area-Based Organisations (ABOs) to develop, manage and maintain basic infrastructures and other services with particular emphasis on vulnerable individuals. The project will extend over five years period to support project activities in 14 compounds, with 600,000 total beneficiaries. The project builds on the experience gained in the Project Urban Self-help (PUSH II: 1994-97) which involved 2,000 women from the lowest socio-economic strata in infrastructure improvements and empowerment. A large community-managed water project was implemented in Chipata compound for 44,000 people, and the project helped increase the participation of the George water project for 40,000 beneficiaries. PROSPECT seeks to ensure the long-term viability of the ABOs, and help Councils consolidate their capability to support them. The PROSPECT is considered one of the most relevant partner projects for the City Implementation Plan, taking into consideration its objectives to improve the services and livelihood for the underprivileged urban communities. It will also be an important partner in selecting communities for the demonstration project under the Plan.

### **Project 6: Sustainable Lusaka Programme (SLP)**

Sustainable Lusaka programme is part of the Sustainable Cities Programme being implemented globally by the Habitat. It aims to support a long term sustainable growth and development through an integration of environmental planning and management and project implementation at community level directed initially at disadvantaged communities in order to reduce poverty and enhance economic development. The programme involves communities and main stakeholders of strategies and action plans. A systematic effort is being made to institutionalise the programme within LCC to facilitate the implementation of environmental infrastructure and service improvements. The SLP approach is to build capacity within planning and management by working with a broader range of participants, such as the private and public sector, NGOs, community based organisations, and development agencies. It facilitates the strengthening and improving capacities in municipal authorities and their partners in public, private and community sectors.

### **Project 7: Development of a Strategy for Peri-Urban Water Supply and Sanitation**

The project sets out to improve water supply and sanitation services in the peri-urban areas of Zambian cities. A consultant has been engaged to elaborate on a national strategy for Peri-urban water supply and sanitation. The initiative is supervised by the Programme Co-ordination Unit (PCU) the inter-ministerial and inter-disciplinary committee for the water sector reform programme. A report describing the situation and critical issues has been prepared and a consultative meeting has been held.

### **Project 8: Water Resources Action Plan (WRAP)**

The WRAP (1999 – 2002) is a joint NORAD, World Bank and UNDP project that sets out to develop and implement strategies for integrated and decentralised water resources management, building awareness across society, and strengthen Zambia's capacity to manage and negotiate shared international water resources. The key guiding principles for the WRAP derived from the National Water Policy are to:

- ◆ Separate water resource management function from the service delivery function;
- ◆ Build institutional framework with capacity and integrity primarily designed to benefit the users;
- ◆ Promote decentralised WRM to facilitate management of water at the lowest appropriate level;
- ◆ Enhance public awareness and participation in WRM across civil society

Although the WRAP is a step-wise and long-term process, there are some crucial actions that will be urgently carried out to consolidate the Zambian ownership to the WRAP and give momentum the

process of change. This include amendment of the Water Act to i.a. facilitate groundwater regulation and creation of an autonomous WRM authority emerging from DWA and Water Board.

**Project 9: Environmental Support Program (ESP)**

The ESP is a long-term effort to strengthen Zambia's environmental capacities by: (i) strengthening of the regulatory framework for environmental protection and natural resources management, and (ii) enable communities to address the degradation of natural resources. The first stage of the ESP implementation the government will focus on reviewing and harmonising the legal framework, strengthening its capacity for environmental management, and launching a Community Environmental Management Program, which will be supported by a pilot Environmental Fund in some districts.

**Project 10: Industrial Pollution Prevention Programme (IPPP)**

The programme, which is based on institutional co-operation between ECZ and the State Pollution Control Authority (SFT) Norway has five components: (i) cleaner production; (ii) water quality guidelines and industrial discharge licensing for pollution control; (iii) air pollution control; (iv) hazardous waste; and (v) environmental information system including database for licenses. The general strengthening of ECZ's tolls and routines discharge licensing and monitoring is expected to contribute positively to the City Implementation Plan for Lusaka.

**Project 11: Expansion of Water Supply System to the City of Lusaka - Increase of Water Production from the Kafue River**

This LWSC project is currently out for tender.

**Project 12: Lusaka groundwater investigation**

Terms of Reference have been prepared for an investigation on water quality and quantity covering all compounds under the CARE project. The main activities will be: (i) broad water source assessment; (ii) environmental appraisal; (iii) establish water supply options; (iv) borehole siting and testing; and (v) establish sanitation options.

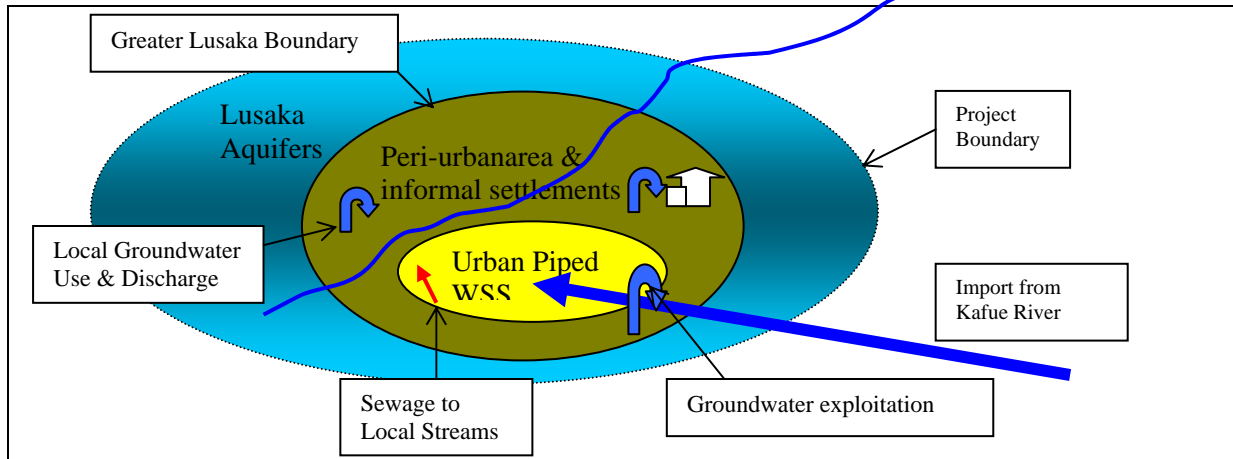
**Project 13: National Water Resources Master Plan**

The master plan, which was completed in 1995, provides comprehensive water information, also including the Lusaka aquifer.



## Appendix C. Illustration of Water Resource Issues of Lusaka

**Figure 4.** Water resource issues of Greater Lusaka



The location of the environmental component of the Plan is the whole area within the greater city of Lusaka. In principle, the service area for the LWSC is within the greater city of Lusaka including all the informal settlements. The challenge of providing piped water supply in all areas of Lusaka is however, overwhelming, and it is unlikely that the company will be able to substantially increase its service coverage in the next ten years. Local and private water supply solutions in the peri-urban and informal settlements are flourishing, ranging from buying from water vendors, hand-dug wells and collection from local surface waters.

## Appendix D. Visit to Libale Sanitary Landfill and the nearby Waterworks

The dumping of garbage in the Libale area started in the 80ies. The landfill is situated in a quarry area with a high aquifer with visible water in the filling areas. The volume of solid waste deposited at this site is limited in comparison to the size of the city. This is probably due to lack of transport and organised waste collection services. The waste is being set on fire. The landfill is in the vicinity of a groundwater production wellfield and related waterworks that were constructed in 1954. One of 6 pumps was operating at the time of the visit. The production boreholes are claimed to be in the order of 60 to 90 meters deep. Water samples are taken regularly from these production boreholes and analysed for water quality at the waterworks laboratory. The sampling program also includes samples from the private wells in the compounds surrounding the landfill. The analysis includes bacteriological and physical/chemical parameters including, pH, hardness, nitrogen compounds. So far the results suggest that the water quality is within acceptable limits, and do not indicate any contamination from the landfill.

The landfill area is situated within a vital area for abstraction of groundwater for Lusaka water supply. It is a typical “hot spot” that receives particular attention under the CIDA supported Technical Assistance to the ECZ. This support includes sinking of monitoring boreholes, sampling programme, water analysis capacity building, and modelling of propagation of pollutant in the ground. The observation wells will be drilled in the near future, and the sampling campaign will cover the forthcoming rainy season and the following dry season.

**Figure 5.** Photo from Libale sanitary landfill



## Appendix E. Location map Lusaka

