

NIVA



REPORT SNO 4213-2000

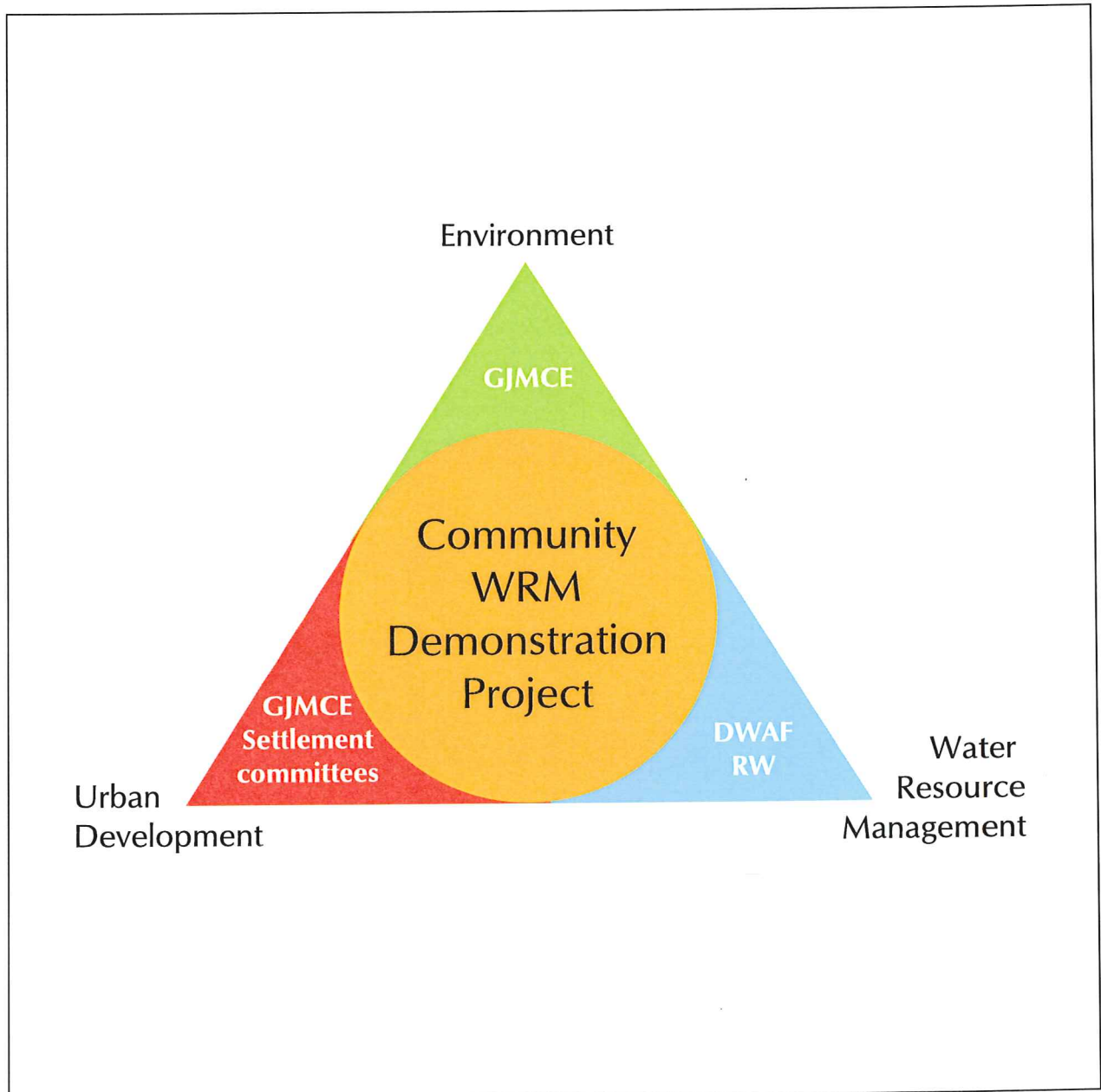
Managing Water for African Cities

Johannesburg City

Implementation Plan

Environmental Component

Appraisal Report



Main Office	Regional Office, Sørlandet	Regional Office, Østlandet	Regional Office, Vestlandet	Akvaplan-NIVA A/S
P.O. Box 173, Kjelsås N-0411 Oslo Norway Phone (47) 22 18 51 00 Telefax (47) 22 18 52 00 Internet: www.niva.no	Televeien 3 N-4879 Grimstad Norway Phone (47) 37 29 50 55 Telefax (47) 37 04 45 13	Sandvikaveien 41 N-2312 Ottestad Norway Phone (47) 62 57 64 00 Telefax (47) 62 57 66 53	Nordnesboder 5 N-5008 Bergen Norway Phone (47) 55 30 22 50 Telefax (47) 55 30 22 51	N-9005 Tromsø Norway Phone (47) 77 68 52 80 Telefax (47) 77 68 05 09

Title Managing Water for African Cities Johannesburg City Implementation Plan Environmental Component Appraisal Report	Serial No. 4213-2000	Date 2000.03.22
	Report No. Sub-No. O-99199	Pages 34 Price
Author(s) Damhaug, Torbjørn	Topic group 29	Distribution
	Geographical area UU- South Africa	Printed NIVA

Client(s) United Nations Centre for Human Settlements (Habitat)	Client ref. FS-RAF-8-S01-11.51 HA-99-00138
--	--

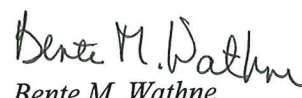
Abstract

This is an appraisal of the environmental component of the Johannesburg 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 South Africa's needs and to explore the availability of domestic resources (human, institutional, and financial) required for efficient project implementation. The environmental component will give priority to community-based sanitation and waste management interventions in informal settlements in the Klip River catchment. The proposed project interventions are a rapid survey and assessment of water quality impacts of urban settlements, development of strategy for water pollution control from urban settlements, planning and implementation of pollution control demonstration projects, enhancement of public awareness including involvement of schools, and participation in the Africa Regional Network. The appraisal report provides input for the revision of the City Plan document using the LFA method.

4 keywords, Norwegian	4 keywords, English
1. Habitat	1. Habitat
2. Vannressursforvaltning	2. Water Resource Management
3. Urbane områder	3. Urban settlements
4. South Africa	4. South Africa


Torbjørn Damhaug
Project manager


Jan Sørensen
Research manager


Bente M. Wathne
Head of research department

Managing Water for African Cities

Johannesburg 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 City Implementation Plan for Johannesburg has been reviewed by the undersigned in close collaboration with the concerned South African partner institutions assisted by Mr. André Dzikus, Programme Manager of Habitat Nairobi. I would like to express my thanks to all people met for their kind support and valuable contributions during the review mission. The report solely reflects the views of the undersigned, which do not necessarily correspond to either those of the Government of South Africa or those of HABITAT or other institutions mentioned herein.

Johannesburg, 28 February, 2000

Torbjørn Damhaug

Abbreviations

CMA	Catchment Management Agency
DANCED	Danish Co-operation on Environment and Development
DWAF	Department of Water Affairs and Forestry
ICLEI	International Council for Local Environmental Initiatives
GJMC	Greater Johannesburg Metropolitan Council
GWF	Gauteng Water Forum
LFA	Logical Framework Approach
MWAC	Managing Water for African Cities
NIVA	Norwegian Institute for Water Research
RW	Rand Water
UNCHS	United Nations Centre for Human Settlements
UNEP	United Nations Environmental Programme
WDM	Water Demand Management
WRM	Water Resource Management
WQMP	Water Quality Management Plan

Contents

Summary	7
1. INTRODUCTION.....	8
1.1 MANAGING WATER FOR AFRICAN CITIES.....	8
1.2 APPRAISAL APPROACH.....	9
2. REVIEW OF THE ENVIRONMENTAL COMPONENT.....	10
2.1 OBJECTIVES	10
2.1.1 <i>The Plan is in agreement with the objectives of the Management of Water for African Cities and South Africa’s own priorities</i>	10
2.1.2 <i>More elaboration on goal and objectives for the environmental component needed</i>	10
2.2 ASSESSMENT OF PROJECT DESIGN	10
2.2.1 <i>The draft planning document reflects considerable concerted efforts</i>	10
2.2.2 <i>Clarify the interconnections between the environmental component and associated projects</i>	11
2.2.3 <i>Some amendments to the design of the environmental component suggested</i>	11
2.2.4 <i>Identify and select pilot communities for demonstration</i>	12
2.2.5 <i>Call for a consolidation and initiation workshop for the City Plan</i>	12
2.3 ECONOMIC AND FINANCIAL ASPECTS	13
2.3.1 <i>The environmental component accounts for 15 percent of the City Plan Budget</i>	13
2.3.2 <i>Seek for supplementary funding and partners</i>	13
2.4 INSTITUTIONAL SET-UP.....	14
2.4.1 <i>Overall Organigram</i>	14
2.4.2 <i>The organisation of the environmental component reflects the tripartition environment, WRM and urbanisation</i>	15
2.5 PROJECT SUSTAINABILITY	15
2.5.1 <i>South African commitment</i>	15
2.5.2 <i>Human resource limitations</i>	15
2.5.3 <i>Communities’ commitment to and ownership of the project</i>	15
3. INPUT TO THE DESIGN OF THE ENVIRONMENTAL COMPONENT.....	16
3.1 BACKGROUND AND JUSTIFICATION	16
3.1.1 <i>The water pollution challenges</i>	16
3.1.2 <i>Central and Local Government response to the challenges</i>	16
3.1.3 <i>Community involvement</i>	17
3.1.4 <i>Public Awareness Campaigns and involvement of schools</i>	17
3.2 GOALS AND OBJECTIVES	18
3.2.1 <i>Goal</i>	18
3.2.2 <i>Objectives</i>	18
3.2.3 <i>Target groups</i>	18
3.3 OUTPUTS	19
3.4 PROJECT ACTIVITIES.....	19
3.4.1 <i>Project Activities under Output I: Project Initiation and Rapid Survey and Assessment of Water Quality Impacts of Urban Settlements</i>	19
3.4.2 <i>Project Activities under Output II: Catchment management strategy for Klip River – Sub-strategy on water pollution from urban settlements</i>	20
3.4.3 <i>Project Activities under Output III: Planning and Execution of demonstration projects on pollution control from urban settlements</i>	20
3.4.4 <i>Project Activities under Output IV: Enhancement of public awareness including involvement of schools</i>	21
3.4.5 <i>Project Activities under Output V: Performance monitoring and participation in the Africa Regional Network</i>	21
3.5 INPUTS	22
3.5.1 <i>Personnel and technical assistance</i>	22

3.5.2 <i>Equipment and logistics</i>	22
3.6 ASSOCIATED PROJECTS.....	22
3.7 INDICATORS.....	22
3.8 ASSUMPTIONS.....	22
3.9 INSTITUTIONAL ARRANGEMENT OF THE ENVIRONMENTAL COMPONENT	23
3.9.1 <i>Project execution partners.</i>	23
3.9.2 <i>The environmental committee</i>	24
3.10 TIME SCHEDULE	24
4. APPENDICES	25
Appendix A. People Met	25
Appendix B. Approaches for Screening of Water Pollution threats from Urban Settlements.....	26
Appendix C. Overheads from the Wrap-up Meeting	28

Summary

1. The Government of the Republic of South Africa and UNCHS/HABITAT have signed a Memorandum of Understanding under the auspices of the project “Managing Water for African Cities”. This report is an appraisal of the environmental component as presented in the draft Johannesburg City Implementation Plan.
2. The review learned that the executing institutions for the environmental component have limited capacity to take on the responsibility for the implementation of this component of the City Plan. It is essential that the environmental component is properly organised, and it is suggested to explore the possibilities for temporary external assistance provided by UNCHS in executing the first phase of the Plan.
3. The implementation horizon is suggested to be four years in two phases, with a tentative budget of some US\$ 580.000 in the first phase. Out of this, the Government of South Africa and External Support agencies contribute 496,000 and the UNHCS provide US\$ 85000 for the first 2 years.
4. The proposed focal project interventions are: (i) Rapid survey and assessment of water quality impacts of urban settlements; (ii) Development of strategy for water pollution control from urban settlements; (iii) Planning and execution of pollution control demonstration projects in the Klip River catchment; (iv) Enhancement of public awareness including involvement of schools; (v) Performance monitoring and participation in the Africa Regional network.
5. The mission’s findings and recommendations were presented and discussed in the wrap-up meeting with members of the environmental committee. The overheads from this meeting is attached as Appendix C.
6. Upon request from the environmental committee, this appraisal report provides some specific input to the revision of the planning document using the structure of the Logical Framework Approach. The recommendations and project design contribution given in this appraisal report must, however, be critically examined the environmental sub-committee when preparing the revised planning document.
7. Revise the planning document and call for a consultative workshop with the environmental committee, the national committee, key stakeholders, funding agencies, and representatives of associated projects to fine-tune the Plan and establish lines of co-operation and arrangements for the implementation of the Plan.

1. INTRODUCTION

This report is a summary of findings and recommendations from an appraisal mission to Johannesburg, South Africa, from February 22 to 28, 2000. The appraisal was carried out by Torbjørn Damhaug, Technical Advisor from the Norwegian Institute for Water Research (NIVA) Oslo as requested by André Dzikus of HABITAT Nairobi. The undersigned met with a number of representatives of relevant authorities, institutions at the debriefing workshop February 25, and he was in phone contact with the Embassies of Denmark and Norway in Pretoria concerning their involvement relevant projects. As advised by the manager of the environmental component of the City Plan he participated in Jukskei River Water Quality Steering Committee Meeting on February 20, where i.a the process of establishing catchment management agencies was on the agenda. People met are listed in Appendix A. This appraisal report is meant to serve as an input to the revision of the planning document and the forthcoming city consultations to be organised by HABITAT.

1.1 Managing Water for African Cities

This review is carried out under the auspices of the initiative “Managing Water for African Cities”. The initiative is implemented and promoted jointly by UNHCS-HABITAT, UNEP and the United Nations Foundation for International Partnerships within the framework of the United Nations Systems-wide Initiative for Africa, and responds directly to the Cape Town Declaration¹ (1997) adopted by African Ministers.

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 responding to these objectives.

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

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

The city implementation plans as stated in the Project Implementation Strategy² and the associated Implementation Strategy for the Environmental Component³ is claimed to be the first comprehensive 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 Appraisal approach

The terms of reference for this external review of the environmental component of the Johannesburg 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 South Africa’s priorities and needs
- initially assess the available institutional and human resources capacity required for efficient project implementation

The main basis for this appraisal is the “Implementation Plan – Demonstration Project for Greater Johannesburg” prepared by the South African project team as an introduction to the City Plan. A new version with a revised environmental component was received during the mission. During the course of the visit, other background documents received from the environmental project committee were also examined and the mission met with the environmental committee and other project partners and stakeholders (Appendix A). A small wrap-up Worksop was arranged towards the end of the review to present and discuss issues, findings and recommendations with key stakeholders. Overheads from this event are attached in Appendix B. The final appraisal document has taken into accounts the points made by the workshop participants as well as comments from Habitat. This document will serve as an input to the process of finalising the planning document for the Johannesburg City Implementation Plan.

² 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.

³ Managing Water for African Cities: Project Implementation Strategy - Mitigating the Impact of Urbanisation on Freshwater Resources.

2. REVIEW OF THE ENVIRONMENTAL COMPONENT

2.1 Objectives

2.1.1 The Plan is in agreement with the objectives of the Management of Water for African Cities and South Africa's own priorities

The described City Implementation Plan is in keeping with the overall objective of "Managing Water for African Cities" aimed at mitigating the environmental impacts of urbanisation on freshwater resources and aquatic ecosystems. The Plan also corresponds well with the Government's goal to improve the quality of life for all South Africans. This goal, which guides all legislation, policies and strategies in the country, has also bearings on the City Implementation Plan. One relevant objective is to "prevent pollution and degradation of the ecological environment and secure ecologically sustainable development and use of natural resources while promoting justifiable and social development", which is being empowered under the Water Act and the Environmental Act.

The project document suggests that pollution of the two catchments of Greater Johannesburg has become a major problem. Some of the causes for this situation are the blockage of sewerage systems causing wastewater overflow, inadequate provision of sanitation systems for thousands of people living in poor areas, polluted storm water runoff, and mining activities. The environmental component of the Johannesburg City Implementation Plan is in line 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 More elaboration on goal and objectives for the environmental component needed

The focal areas of the Johannesburg City Plan, as it appears under general objective, is to promote water demand management and mitigate impacts of urbanisation on freshwater resources and aquatic ecosystems. This statement corresponds well to the focus of the "Managing Water for African Cities". The Immediate Objectives stated under C2 are merely mirroring the identified project activities in the subsequent chapters than being objectives. Therefore, it is suggested to strengthen the objectives of the environmental chapter in consultation with key stakeholders. A suggestion of goal and objective formulations for further consideration by the environmental committee has been made in Chapter 3.

2.2 Assessment of Project Design

2.2.1 The draft planning document reflects considerable concerted efforts

The project document is well written and logically structured using elements of the LFA method. However, the mission noted that the current draft version of the document has been inactive for a while although certain amendments are needed before the project is ready for implementation. It is suggested that the WDM and environmental components should be developed in two parallel sections in the document for better flow and readability. Apart from common development goals, the two components differ in substance, methodologies and approach. It was agreed to use the appraisal mission as an opportunity to amend the environmental component of the Plan in consultation with the environmental committee. In that connection, the content of the Environmental Component is suggested to be:

1. Background and justification
2. Goal and objectives
3. Outputs
4. Project Activities
5. Inputs
6. Associated Projects
7. Indicators
8. Assumptions
9. Institutional Arrangements
10. Time Schedule

Chapter 3 of this report suggests some input to the revised project plan along these lines on the basis of discussion with the environmental committee of the City Plan

2.2.2 Clarify the interconnections between the environmental component and associated projects

It is essential that the demonstration project under the MWAC is focused and defines its role and activities in relation to ongoing associated projects and initiatives. The various outputs of the environmental chapter mentions some highly relevant projects and initiatives taking place for instance by DANCED, ICLEI. It is, however, not always, clear as to which activities are to be carried out under the city plan and under each of the respective associated project. One example is the Klip River catchment management strategy (output 2.1) where the background information describes objectives and ongoing and planned activities, and some of these activities are repeated as project tasks. In order to facilitate such analysis, it is recommended to prepare a list of all associated projects including project briefs that shows their objectives, scope of activities, resource allocation and duration.

2.2.3 Some amendments to the design of the environmental component suggested

If it should be necessary to prioritise between the three environmental sub-projects, it is recommended to give highest priority to interventions supporting Output 2.1 and 2.3 as explained in the following.

- The Output 2.1 “Catchment development strategy for Klip River would provide an important strategic base for other interventions in the river basin. The establishment of a Catchment Management Agency (CMA) is a key strategic intervention. It is necessary that the City Plan’s involvement in this project tie in with the ongoing initiatives, such as those of DANCED and ICLEI. Hence, the project responsibilities and activities must also be defined in collaboration with these two key partner projects. It should be mentioned that the establishment of a CMA in the Jukske River is in progress, and that the Klip River initiative could gain from lessons learned in that neighbouring basin. It is recommended that the **focal area of the environmental component in relation to the catchment strategy is abatement of water pollution from informal settlement in the vicinity of the river**. It may be argued that there are many other groups of problems facing the river that are more important and significant (sewage treatment plant effluents, industrial, agricultural, mining etc). In response to this, one must keep in mind that these are polluting hot spots under rapid and uncontrolled development that need urgent attention and concerted support to be brought on the right track. Although there is lack of consistent data and knowledge to exactly quantify this problem, which is also the case for the other polluting activities in the river, the existing insight is sufficient to go for actions in this problem area with minor risks of missing one of the real targets. The mission examined the Executive Summary of the Klip River Catchment Situation Analysis⁴, which is meant to support the development of a Water Quality Management Plan for the Klip River, which will “take into account the needs of interested and

⁴ MWF: “Klip River Catchment Situation Analysis”. Final Report Executive Summary, August 1999.

affected parties located within the catchment and creates a knowledge base and platform from which the WQMP can be developed". The situation analysis report is a useful issue paper giving insight about the state of the art and challenges within the catchment. Hence this initiative and its proposed future follow-up activities will provide very constructive inputs to the implementation of the Klip River catchment development strategy.

- Regarding Output 2.2, focusing on monitoring systems and associated information tools, respond directly to some of the water information and modelling recommendations made in the Klip River Catchment Situation Analysis. This broad task will, however, need long-term involvement with substantial resource inputs and the wrap-up meeting discussed whether the bulk of this component should continue being an associated project rather than part of the environmental component. It was agreed that the involvement of the environmental in strengthening of knowledge and information services should be justified in supporting key project interventions. The focal area of the environmental part of the City Plan will be water pollution emerging from rapid and uncontrolled urban development taking place in the Klip River catchment, in particular in the middle-river segment. Therefore, the project activities related to information should be to make a **survey and assessment of the magnitude and causes of the emerging water quality problem, and identify hot spots and actions to be taken under the demonstration project**. The planning of this activity has to take place in close consultation with the DWAF (Situation Analysis) and other associated projects supported by DANCED and ICLEI. The Output 2 would continue as an associated project co-ordinated with the environmental component, recognising the importance of upgrading catchment wide monitoring and information services and decision-making tools for the future Catchment Management Agency. It is essential that the upgraded monitoring and information system cover all segments of the river basin.
- Regarding Output 2.3: Design and implementation of a community-based sanitation and waste management project in a selected pilot squatter area will tie nicely in with Output 2.1. The environmental component would be a demonstration project supporting the principles of community-oriented initiatives aimed at gender issues, awareness raising, reuse of wastewater, and improvement of water quality of the river. It is suggested that the contribution of the environmental component of the City Plan should be a **demonstration project on community-based sanitation, wastewater and storm water management guided by, and interacting with, the evolving catchment development strategy**. Close links will have to be established with the DANCED funded project on a "National strategy for water quality effects of dense settlements"⁵, and with the ICLEI funded initiative in Kliptown. The latter indicate opportunities to replicate their achievements in other communities of the Klip River catchment.

2.2.4 Identify and select pilot communities for demonstration

Possible pilot settlements in the Klip River catchment must be identified and sensitised before making final selection. The selected demonstration areas must be manageable in size, but big enough to give representative and credible results. The proposed survey of the project team has to seek advice from associated projects in the catchment like the DANCED and ICLEI initiatives.

2.2.5 Call for a consolidation and initiation workshop for the City Plan

Revise the planning document and call for a consultative workshop with the environmental committee, the national committee, key stakeholders, funding agencies, and representatives of associated projects to fine-tune the Plan and establish lines of co-operation and arrangements for the implementation of the Plan.

⁵ "Managing the Water Quality Effects of Densely Populated Settlements – Giving effects to the strategy in local government" Workshop Starter Document for Workshop 15 –16 July, 1999

2.3 Economic and Financial Aspects

2.3.1 The environmental component accounts for 15 percent of the City Plan Budget

In the project document the proposed funding of the environmental component is as follows:

Table 1. Existing Budget

	RSA/Donors	UNCHS/UNEP	Total US\$
Output 2.1	230,000	15,000	245,000
Output 2.2	176,000	30,000	206,000
Output 2.3	90,000	40,000	130,000
Total Output 2	496,000	85,000	581,000
Total Output 1 + 3	3,204,000	115,000	3,319,000
Grand total	3,700,000	200,000	3,900,000

The main donors are DANVED and ICLEI. The budget for the environmental component is about 15% of the total budget. The anticipated contribution from UNCHS/UNEP to the environmental budget is approximately 15%. If it is finally decided to prioritise Output 2.1 and 2.3 in the first phase, the 30,000 allocated for Output 2.2 should be split between the two other outputs.

2.3.2 Seek for supplementary funding and partners

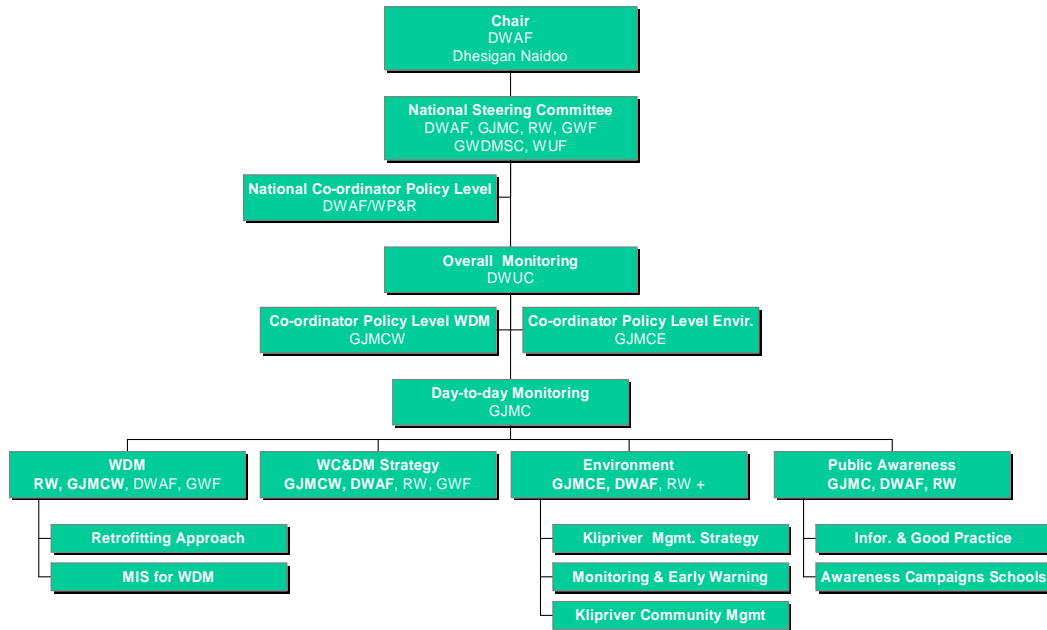
The environmental component of the Plan will need substantial additional investment programmes to multiply the recommendations of the demonstration projects. Hence, it is necessary to identify and attract new partners and funding opportunities for future investment programmes.

2.4 Institutional Set-up

2.4.1 Overall Organigram

As shown in the figure below, the national focal institution for the Johannesburg City Implementation Plan is the Department of Water and Forestry (DWAF).

Figure 1. Johannesburg City Implementation Plan – Anticipated Institutional Framework



DWAF:	Department of Water Affairs & Forestry
GJMC:	Greater Johannesburg Metropolitan Council
GJMCE:	GJMC Environment
GJMCW:	GJMC Water Demand Management
RW:	Rand Water
GWF:	Gauteng Water Forum
GWDMSC:	Gauteng Water Demand Management Strategy Committee
WC&DM:	Water Conservation & Demand Management
WUF:	Water Users Forum
WP&R:	Water Policy and Resources
DWUC:	Department of Water Use and Conservation

2.4.2 The organisation of the environmental component reflects the tripartition environment, WRM and urbanisation

The organisation for the environmental component of the plan responds to the tripartition structure necessary to balance the environmental, water resources and urbanisation concerns of the plan. The composition of the committee is given in Table 2, Chapter 3.

2.5 Project Sustainability

2.5.1 South African commitment

Johannesburg's challenges of mitigating the environmental impacts of urbanisation on rivers and aquatic ecosystems are more significant and complex than in most other African cities. The success of the City Plan heavily depends on South Africa's commitment to and ownership of it. Through the signing of the Memorandum of Agreement the City Plan has been endorsed politically. However, it remains to see if the commitment in terms of allocation of human resources to participate in the design and implementation of the demonstration projects, as well as in the replication of the results is in place. Although it was prepared some time ago, the draft plan reflects that considerable efforts have been put into project planning.

2.5.2 Human resource limitations

The mission noticed the project risk that key members of the executive committee have limited time for this Plan due to several other tasks and commitments. The participating governmental institutions and agencies are in the middle of a reform process with considerable impacts on legal framework, institutional responsibilities, economic policies, and shifting of staff. The mission was informed that during a transition period the institutional and human resources capacity for managing projects is severely constrained. For instance, only five officers manage the environmental management for the entire city, and the DWAF is also facing a stressed manning situation. Therefore, new projects have to be as much as possible be integrated in and complement ongoing projects to streamline project administration and management. It is equally important that the project design, objectives, interventions, and performance indicators are relevant and specific. This could possible contribute to lessen the administrative burden and be a motivating factor for the executing team members. One opportunity to help off the situation is that the UNCHS provides temporary reinforcement of the capacity environmental committee by providing external assistance, provided this person co-operates closely with the environmental committee members. This issue should be raised in connection with the finalisation of the City Implementation Plan.

2.5.3 Communities' commitment to and ownership of the project

The mission was informed that there are good examples of community involvement in similar projects. Most urban settlements are well equipped with committees and the project interventions should as far as possible be based on existing committees rather than making new structures. The community participation issues will be further explored under the proposed survey.

3. INPUT TO THE DESIGN OF THE ENVIRONMENTAL COMPONENT

3.1 Background and Justification

3.1.1 The water pollution challenges

Water pollution has become a major problem of the two catchments within Johannesburg's boundaries, the Jukskei and the Klip River. It has been decided to focus the demonstration projects on the Klip River catchment, and the selection of this catchment is well justified in the recent situation analysis. The Klip River flows south of the watershed in Johannesburg, through industrial, mining and residential areas before its confluence with the Vaal River. Within Greater Johannesburg, parts of the Klip River are a source of water for some riverine settlements. As it flows into the Vaal River, it also contributes to the water supply of the downstream villages and towns of Meyerton and Vereeniging. Three of Johannesburg southern Wastewater Treatment Works discharge effluent of acceptable water quality standard into the river. However, the quality of the river is poor due to the non point source pollution arising from sewage blockages causing untreated wastewater bypassing the treatment plants, polluted storm water runoff, and mining activities. Another source of negative impacts on freshwater and aquatic ecosystems is the rapidly and uncontrolled growth of informal settlements along the river. This is due to inadequate provision of sanitation systems, random collection and disposal of solid waste, overflowing septic tanks, oil spills from vehicle repair sites etc. Thus, storm water drainage systems and creeks have become open sewers leading untreated leachate and wastewater to the river system which are sources of water supply for downstream urban settlements and communities. It is anticipated that development of urban settlements will increase in the future, particularly in the middle segment of the Klip River catchment.

3.1.2 Central and Local Government response to the challenges

With rapid urbanisation, the already poor sanitation and waste management conditions will worsen if the authorities and communities do not take urgent and efficient actions to cope with the situation. The environmental component of the Johannesburg City Implementation Plan is in line with the Government strategy to resolve the serious deficiencies of water and sanitation services and in peri-urban areas and informal settlements, and resolving the associated water quality problems, as a priority issue.

According to the new Water Act, water resources should be managed at a catchment level and Catchment Management Agencies will need to be developed to perform various functions in the water management area. A process in both catchments is already under way to develop a water catchment strategy and to develop a business plan for the formation of the agencies. This process includes all the interested stakeholders including DWAF, RW and the Council. As mentioned, the Department of Water Affairs and Forestry (DWAF) has appointed consultants to carry out a Situation Analysis of the Klip River catchment as a first step towards integrated management of the water resources of the Klip River for the benefit all users of the river system. The next step is to prepare the strategy and business plan pursuing a broad range of actions. Among relevant initiatives in the Klip River catchment, ICLEI is funding an upgrading initiative in Klipspruit, focussing on river and environmental management project at Kliptown. Another important associated project is a DANCED funded initiative for the Klipspruit i.e. the upper reaches of the Klip River

3.1.3 Community involvement

While it is recognised that many of the primary causes of deteriorating water quality are beyond the direct control of communities, catchment management efforts are also hampered by a lack of understanding and awareness on the part of the community, decision-makers and technical groups. Increased understanding of the positive role played by watercourses, and of the potential benefits to local communities could result in greater community responsibility and co-operation in catchment management. The ongoing project on current ICLEI funded initiative in Kliptown is one example of a community-based initiative, but there are opportunities to replicate and broaden this to other communities associated with the Klip River catchment. An activity which can be used to enhance awareness in the “clean up campaign” where all sectors of the community members can participate. However the clean up campaign should not be a “one off” activity. It should be part of a process to improve the quality of the catchment and should aim at changing the attitude of the community towards waste and change their behaviour pattern.

An initiative identified that will support the functions of the catchment management agencies and which is in line with the terms of reference of this project is the development of Water task teams using school children and women. The concept is to train a team of individuals who will monitor water quantity, quality and pollution levels in their project area and try and identify and influence if possible the source of pollution. The objectives of such a project are as follows:

- Create a level of responsibility, accountability and awareness amongst the youth
- Develop a continuous monitoring network of water pollution patterns and early warning system
- Develop a network and resources that can influence human behaviour within various communities in order to minimise pollution

Such a programme has already been initiated through the 2020 vision project which is co-ordinated through DWAF but the scope of the existing project does not allow for adequate resources to continuously liaison and work with the teams. In implementing this initiative every effort will be made to co-ordinate with the existing functions of the 2020 vision project.

3.1.4 Public Awareness Campaigns and involvement of schools

Various ongoing communication campaigns exist on water conservation that have been initiated by RW and DWAF. A more comprehensive water conservation campaign will also be developed as part of the regional demand a management strategy during 1999. Rather than duplicate the various campaigns Johannesburg will co-ordinate its functions with all the other key role players but will also implement specific communication campaigns in association to the various WDM initiatives that will result as part of the roll out process of the strategy that will be developed.

An initiative identified that will support the functions of the catchment management agencies and which is in line with the terms of reference of this project is the development of Water task teams using school children. The concept is to train a team of school children who will monitor water quantity, quality and pollution levels in their project area and try and identify and influence if possible the source of pollution. The objectives of such a project are as follows:

- Create a level of responsibility, accountability and awareness amongst the youth
- Develop a continuous monitoring network of water pollution patterns and early warning system
- Develop a network and resources that can influence human behaviour within various communities in order to minimise pollution

Such a programme has already been initiated through the 2020 vision project which is co-ordinated through DWAF but the scope of the existing project does not allow for adequate resources to continuously liaison and work with the teams.

3.2 Goals and Objectives

3.2.1 Goal

The overarching goals of the environmental component of the City Implementation Plan are to:

- Improve the water quality and aquatic ecosystems of the Klip River and other rivers affected by urbanisation.
- Alleviate poverty and improve the health and livelihood of underprivileged peri-urban populations of the project communities and other riverine settlements and users of the water from the river.

The second part of the goal has to do with motivating and enhancing the awareness and active participation of the urban settlements to improve their own sanitary situation as they automatically contribute to the second goal focusing on improved environmental conditions for the benefit of the larger society. This requires that the sanitation and waste management interventions are motivated in a broader environmental and urban development prospect.

3.2.2 Objectives

The immediate objectives related to the environmental component is suggested to be to:

1. Reinforce the catchment development strategy process through active co-operation with related Klip River initiatives and promote follow-up implementation programmes.
2. Improve sanitation and waste management practices in Klip River through implementation and multiplication of community based demonstration projects under the auspices of the evolving integrated catchment strategy.
3. Build capacity through project participation at community, city level and national levels.
4. Enhance public awareness with special emphasise on mobilising the educational systems
5. Contribute to the establishment of effective catchment level management policies, action plans and investments,
6. Promote the pan-African exchange of good practice experiences on urban water resource management

3.2.3 Target groups

Beneficiaries

- Underprivileged segments of the population in the selected urban communities
- Riverine populations and other water users, including farmers and fishermen, in the catchments affected by the Implementation Plan
- Water resources developers and water supply utilities such as RW

Stakeholders

- the beneficiaries
- Local Governments and chiefs
- Community committees
- Concerned government agencies and regulators, such as DWAF

- School Authorities, youth groups
- industrial and commercial associations, water vendors
- NGOs and donors

3.3 Outputs

The targeted results of the environmental component as a consequence of the activities can be summarised as follows:

- I. Carried out a rapid survey and assessment to identify and prioritise strategic catchment management issues that need to be addressed for the sustainable management of the Klip River, and established the relative water quality impacts of the urban settlements, collectively and individually.
- II. Developed sub-strategy on water pollution abatement from urban communities the Klip River in conjunction with the emerging integrated catchment management development strategy, in keeping with the broad “Water Quality Management Plan for the Klip River”
- III. Executed demonstration projects on participatory sanitation and pollution control from urban settlements based on an integrated approach to managing urban water resources focusing on the links between urban development and the environment.
- IV. Public awareness programmes carried out with particular focus on the mobilisation of the education systems and strengthened perception of community driven approaches at city among authorities at regional and national levels. Urban sanitation and environmental issues are introduced to the schools’ syllabus to enhance education and awareness. Public strategies and investment programmes on community-based sanitation and waste management as a water pollution control measure established within EPA, WRC and MLGRD.
- V. Monitoring, analysis and dissemination of achievements and active participation and substantial contributions South Africa to the Africa regional network of exchange of experience. The experiences from the City Plan will contribute to the development of good practices for pollution control and wastewater management in existing communities as well for future extension and improvement of the sanitation service coverage, including storm-water drainage and solid waste disposal. This project component will also involve cross-fertilisation among urban areas in South Africa and among other cities involved in the project “Water for African Cities”.

3.4 Project Activities

This section describes the required activities to meet the objectives and outputs of the environmental component.

3.4.1 Project Activities under Output I: Project Initiation and Rapid Survey and Assessment of Water Quality Impacts of Urban Settlements

This rapid survey and assessment is to establish a knowledge base to justify and prioritise strategic and practical project interventions. The analysis will comprise the location, magnitude and causes of the emerging water quality problem from fast growing urban settlements and identification of high priority communities and settlements (hot spots) as possible sites for the demonstration project. The focal points the survey will include issues of direct relevance for the City Plan including initial sensitisation of key beneficiaries and stakeholders. This activity will profit from the DWAF initiated

Klip River Catchment Situation Analysis and be carried out in close collaboration with other associated projects supported by DANCED and ICLEI. Particular activities will comprise:

- Initiate the project and prepare, administrative routines and schedules, ToRs and assignment of required consultants for project interventions in agreement with the National Steering Committee
- Liaise with major partner organisations and associated projects
- Make initial desk screening of communities in the catchment according to their threat to water quality (see Appendix B for approach principles)
- Carry out field visits for verification and complementary research.
- Collect key information about the essential urban communities and settlements
- Obtain and analyse information on their waste discharges and make pollution load estimates
- Identify high priority communities and settlements (hot spots) and give recommendations on demonstration project sites
- Evaluate the absolute and relative importance of the urban settlements on water pollution in the Klip River catchment.
- Discuss causes and mitigation actions to resolve water quality problem from urban settlements

3.4.2 Project Activities under Output II: Catchment management strategy for Klip River – Sub-strategy on water pollution from urban settlements

The evolving “Catchment development strategy for Klip River” will provide an important strategic base for all future interventions in the river basin where the establishment of a Catchment Management Agency (CMA) is a key strategic intervention. The key contribution of the environmental component to this integrated strategy is a sub-strategy specifically focusing on water pollution abatement from urban communities and settlement in the river catchment. It is necessary that the environmental component of the City Plan ties in with the ongoing initiatives, such as those of DANCED and ICLEI. Hence, the project responsibilities and activities must also be defined in collaboration with these two key partner projects. This will be in keeping with the broad “Water Quality Management Plan for the Klip River”, which takes into account the needs of stakeholders within the catchment and creates a knowledge base and platform from which the WQMP can be developed. The sub-strategy will adopt and further develop the key principles laid down in the DANCED funded project on a “National strategy for water quality effects of dense settlements”. The main project activities will include:

- Liaise with associated projects
- Participation in and contribution to the development process, consultations of the catchment management strategy initiative
- Conduct workshops with stakeholders
- Interpretation and translation of the results of the rapid survey and assessment (Output I), and of the subsequent demonstration projects (Output III) into strategic principles and interventions of the overall catchment management strategy
- Prepare business plan for implementing the strategy with stakeholders
- Explore possibilities for complementary funding

3.4.3 Project Activities under Output III: Planning and Execution of demonstration projects on pollution control from urban settlements

The activities under this output will be a demonstration in the field of an integrated approach to managing urban water resources focusing on the links between urban development and the environment.

- Based on the recommendations of Output I, select relevant pilot communities with significant water quality impacts.
- Carry out a baseline investigation in selected settlements to verify current sanitary and discharge condition of the community and the status of the local recipients, as well as other critical factors and indicators. This task, which will benefit from the foregoing situation assessment, will serve as a benchmark for later project monitoring and review of achievements.
- Establish designs, plans and budgets for the implementation of demonstration projects in collaboration with community committees concerned and local government representatives. The project should preferably be linked to existing community management committees. The technical design should consider a range of proven technologies which address the needs of all segments of the pilot area population recognising resources constraints and paying due attention to willingness and capacity of users to pay for the improved services. This may lead to a mix of sanitation technologies at the various demonstration communities. Factor that will be decide the solution are housing densities, household income, subsidies, cultural factors and not at least the standard of sanitary, drainage and solid waste services provided by the city authorities and private operators.
- Seek co-operation with ongoing urban development programmes in the selected settlements in terms of funding opportunities and technical co-operation
- Organise implementation of planned physical interventions including the agreements on community involvement
- Arrange for professional assistance for procurement, labour contracts, supervision and co-ordination of the site activities according to common practice

3.4.4 Project Activities under Output IV: Enhancement of public awareness including involvement of schools

This activity will include public awareness programmes carried out with particular focus on the mobilisation of the education systems, better understanding of community driven approaches among authorities at city, regional, and national levels. Urban sanitation and environmental issues could for instance be introduced to the school syllabus to enhance education and awareness.

- The activities will include input from the environmental component to the joint awareness-raising programme of the City Plan including the Water Demand Management component. These are described in a common chapter.

3.4.5 Project Activities under Output V: Performance monitoring and participation in the Africa Regional Network

- Carry out periodic achievement monitoring and reporting on the environmental component of the City Plan to the steering committee, public awareness group of the City Plan, and to key external partners including the regional Africa co-operation. Monitoring entails checking and control of the Plan's achievements compared to the planned inputs, activities and outputs, using the developed indicators.
- Establish a format for monitoring and reporting that will be used throughout the life of the Implementation 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 Johannesburg 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.
- Participate in the Africa regional network of good practice exchange with substantial contributions from the achievements made in Johannesburg.

3.5 Inputs

The inputs that have to be in place for the implementation of the Plan comprise personnel, equipment & logistics and project funding. This section includes indicative inputs and estimates that have to be further elaborated upon.

3.5.1 Personnel and technical assistance

- Sufficient time allocated for the Task Manager and key project team members to perform
- Necessary technical assistance and guidance provided by Habitat

3.5.2 Equipment and logistics

It is expected that the South African project partners will provide transport needs PCs, office facilities etc.

Table 2. Environmental Impact Component - Tentative Budget (US\$)

OUTPUT	RSA/Donors	UNCHS/ UNEP	Total US\$
Output I: Project Initiation and Rapid Survey and Assessment Project Initiation and Rapid Survey and Assessment	90,000	15,000	105,000
Output II: Development of strategy for water pollution control from urban settlements	230,000	30,000	260,000
Output III: Planning and Execution of pollution control demonstration projects	176,000	40,000	216,000
Output IV: Enhancement of public awareness including involvement of schools			(under awareness)
Output V: Performance monitoring and participation in the Africa Regional Network			(under awareness)
Total Environment	496,000	85,000	581,000
Total WDM + Awareness	3,204,000	115,000	3,319,000
Grand total	3,700,000	200,000	3,900,000

3.6 Associated Projects

Include briefs in table form (title, objective, scope, executing agency, collaborating institutions, funding agencies, duration, etc) and links to the environmental component of the City Plan

3.7 Indicators

The project indicators are specific measure to be used to describe and assess achievement of objectives or inputs. The environmental project team and the environmental sub-committee will develop the indicators during the completion of the planning document. These shall be specific and appropriate in terms of quantity (number of households improved, reduced pollution etc), quality, time frame, and location and target group. The indicators should also be easily accessible information that can be achieved at reasonable cost.

3.8 Assumptions

The assumptions (or external factors) are events or decisions which are essential to project success, but which are largely or completely beyond the control of the project team. Some key assumptions are:

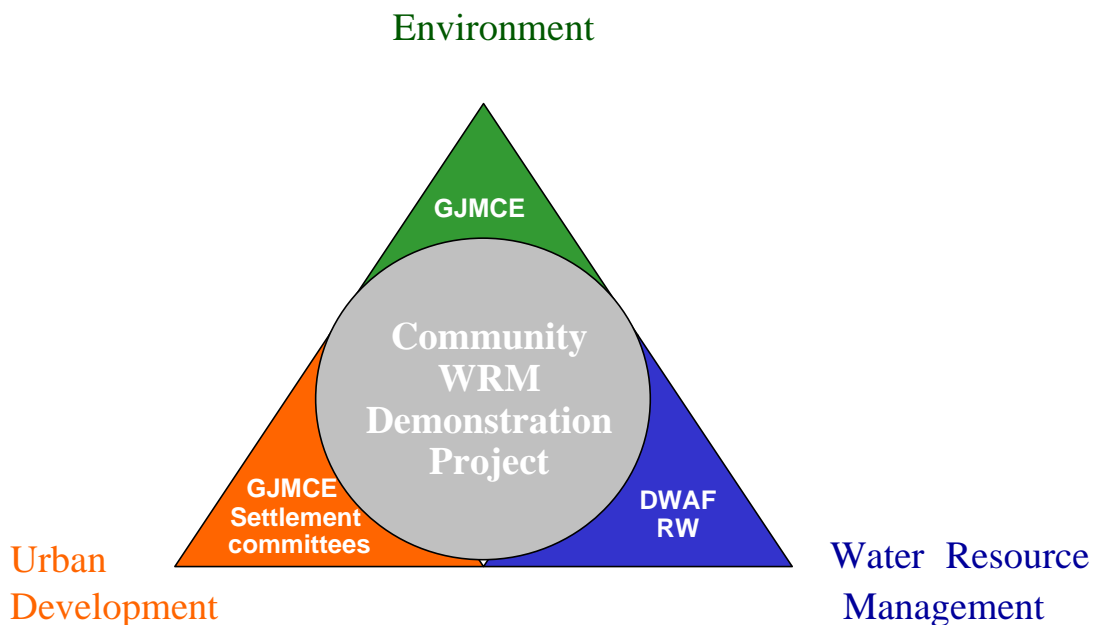
- Government ownership, commitment, and adequate resource allocation for the effective implementation of the Plan
- Local Government recognition and support to the demonstration project
- Local community and beneficiary ownership and efficient participation in the demonstration project
- Sufficient donor support in place

3.9 Institutional Arrangement of the Environmental Component

3.9.1 Project execution partners.

One of the unique attributes of the city plan initiative is the principle of promoting integrated urban water resource management and building local and national capacity paying attention to the links between water, urban development and the environment in the cities. The institutional arrangement of the environmental component reflects this triangular approach to managing urban water resources. The main implementing agencies are (i) GJMCE as project co-leader and responsible for the environmental and pollution control aspects of the demonstration project; (ii) DWAF in co-operation with RW on water resources management issues; and (iii) the GJMCE in co-operation with the local committees on urban community demonstration interventions.

Figure 2. Project Organisation Structure



3.9.2 The environmental committee

The environmental committee that has been set up to manage the environmental part of the City Plan consists of the following members:

Table 3. Environmental committee members (to be completed)

Name	Position	Affiliation
Ms. Jean Eschen (Leader)	Laboratory Manager Strategic Executive Metro Planning, Economic Development and Environmental Management	GJMC Water Quality Laboratory
Mr. Ashley Ally	Executive Officer - Metropolitan Urban Policy and Strategy	Metropolitan Planning, Urbanisation & Environment Management
Mr. Chris Warner	Executive Officer Environment Southern Local Council	GJMC - Environment
Ms. Jane Eagle	Executive Officer Environment Northern Local Council	GJMC - Environment
Mr. Willie Nel	Executive Officer Environment Western Local Council	GJMC - Environment
Ms. Manda Hinsch	Deputy Director Water Quality Management	DWAF

3.10 Time Schedule

Figure 3 suggests an overall work plan of the environmental interventions of the City Implementation Plan. The environmental project team and sub-committee will prepare a more detailed time schedule for all activities.

Figure 3. Tentative Implementation Schedule of the Environmental Component

Activity	Year			
	1	2	3	4
I. Project Initiation and Rapid Survey and Assessment				
II. Strategy on water pollution from urban settlements				
III. Planning and Execution of community demonstr. projects				
IV. Public awareness raising and capacity building				
V. Performance Monitoring and Regional Info. Networking				

4. APPENDICES

Appendix A. People Met

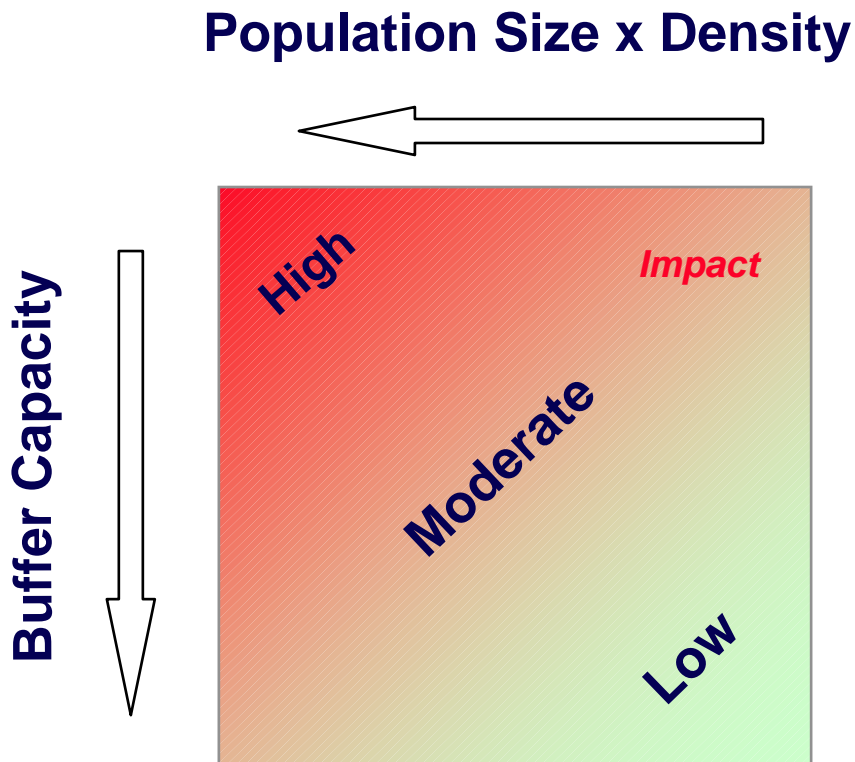
Name	Position	Affiliation
Mr. Ashley Ally	Executive Officer - Metropolitan Urban Policy and Strategy	Metropolitan Planning, Urbanisation & Environment Management
Ms. Jean Eschen	Laboratory Manager Leader of Envir. Committee	GJMC Water Quality Laboratory
Ms. Doris -----	Environmentalist Member of Envir. Committee	DWAF
Ms. Helle Biseth (by phone)	Senior Project Officer	Norwegian Embassy, Pretoria
Ms. Manda Hinsch (by phone & e-mail)	Senior Project Officer	Danish Embassy, Pretoria
Mr. Tim Hart	Principal Consultant Social Development	RDC Resources Development Consultants (Pty) Ltd

Appendix B. Approaches for Screening of Water Pollution threats from Urban Settlements

In screening of cities in terms of their water quality impacts, it is recommended to not only consider population sizes and densities, but the combined effect of this and the “buffer capacity” which incorporate all inhibiting factors in the buffer zone between a settlements and the water resource. The figure below is just a conceptual tool to have in mind when assessing the potential impacts of a given urban society. It is based on ideas that have been launched under the preparation of the Densely Populated Settlement Strategy⁶. This is applicable both for surface and groundwater resources. It is not only the population size that matters, but also the population density. Small densely populated communities may not have the critical mass to pose a threat to the environment, and so may be the case for large sparsely populated areas. A factor multiplying density and size may be an adequate parameter that captures these effects, as illustrated in the figure below. Another factor to be considered is the “buffer capacity”, which could be defined as a the collective effect of distance form sensitive water resources, topography, vegetation, run-off conditions, soil condition (infiltration and self-purification capacity) etc. The sensitivity (or Class) of the receiving water is an important factor in assessing the impacts of urbanisation on freshwater resources and identification of hot spots.

⁶“Managing the Water Quality Effects of Densly Populated Settlements – Giving effects to the strategy in local government” Workshop Starter Document for Workshop 15 –16 July, 1999

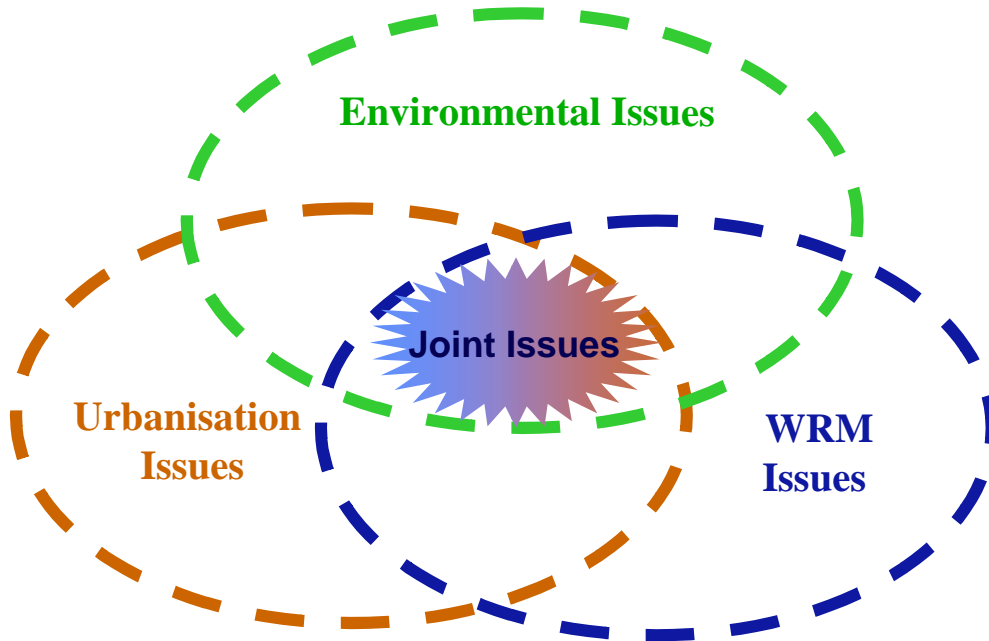
Figure 4. Screening of water pollution discharges of urban settlements



Buffer Capacity = f(distance from source, retention, self purification etc.)

Appendix C. Overheads from the Wrap-up Meeting

The Nexus of Environmental, Urbanisation and WRM Issues

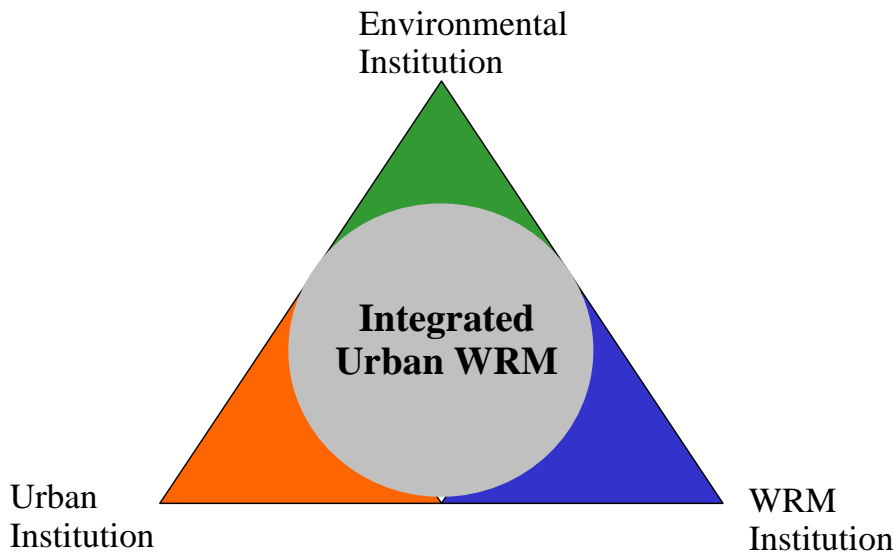


Threats to Water Quality

Example from Dansu River Basin, Ghana

Risk water quality	Low	Moderate	High
<i>Tree felling</i>	█		
<i>Mining</i>		█	
<i>Agriculture</i>			█
<i>Urbanisation</i>			█
<i>Industrialisation</i>		█	█

Core Institutional Framework



Goals and objectives

- The Plan is in agreement with the objectives of the Management of Water for African Cities and South Africa's own priorities
- More elaboration on development goal and objectives specifically for the environmental component
- Identify beneficiaries, and stakeholders
- Establish specific project indicators to be used to describe and assess achievements

Goal and Objectives

- **The Plan is in agreement with the objectives of the Management of Water for African Cities and South Africa's own priorities**
- **More elaboration on development goal and objectives structure of the environmental component, for example:**
 - Contribute to poverty alleviation and improvement of the livelihood of underprivileged peri-urban populations and rivrine settlements
 - Improve the environmental and ecological condition of the urban freshwater resources and aquatic ecosystems
- **Objectives of the environmental component in the long run., if completed successfully, to be mentioned along the lines of:**
 - improving the sanitation and waste management in peri-urban communities in a demand driven and participatory way
 - building institutional capacity at community, city and national levels
 - enhancement of public awareness with special emphasise on mobilising the educational systems
 - establishment of effective national policies, programmes and investments in the field,
 - promoting dissemination and exchange of information and best practices on urban water resource management

Project Design

- The three environmental sub-projects in themselves more than just demonstration projects?
- Suggest to prioritise output 2.1 and 2.3
 - Support Output 2.1 “Catchment development strategy for Klipriver” an important strategic base and demonstration at catchment level
 - Under Output 2.3: contribute with a community-based sanitation and waste management demonstration project in selected pilot communities
 - Output 2.2 about monitoring and information tools is an important associated project that the Klipriver strategy will benefit from
- Need overview of associated projects and the interconnections between the environmental component and these projects
- Identify, assess and select pilot communities for demonstration projects

Economic and Financial Aspects

- The environmental component accounts for 15 percent of the City Plan Budget:

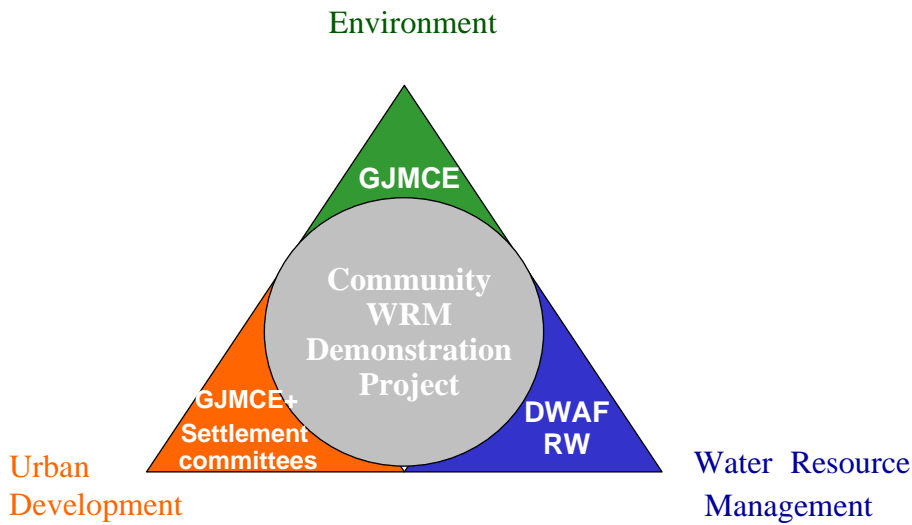
	RSA/Donors	UNCHS/UNEP	Total US\$
Output 2.1	230,000	15,000	245,000
Output 2.2	176,000	30,000	206,000
Output 2.3	90,000	40,000	130,000
Total Output 2	496,000	85,000	581,000
Total Output 1 + 3	3,204,000	115,000	3,319,000
Grand total	3,700,000	200,000	3,900,000

- Supplementary funding to be identified

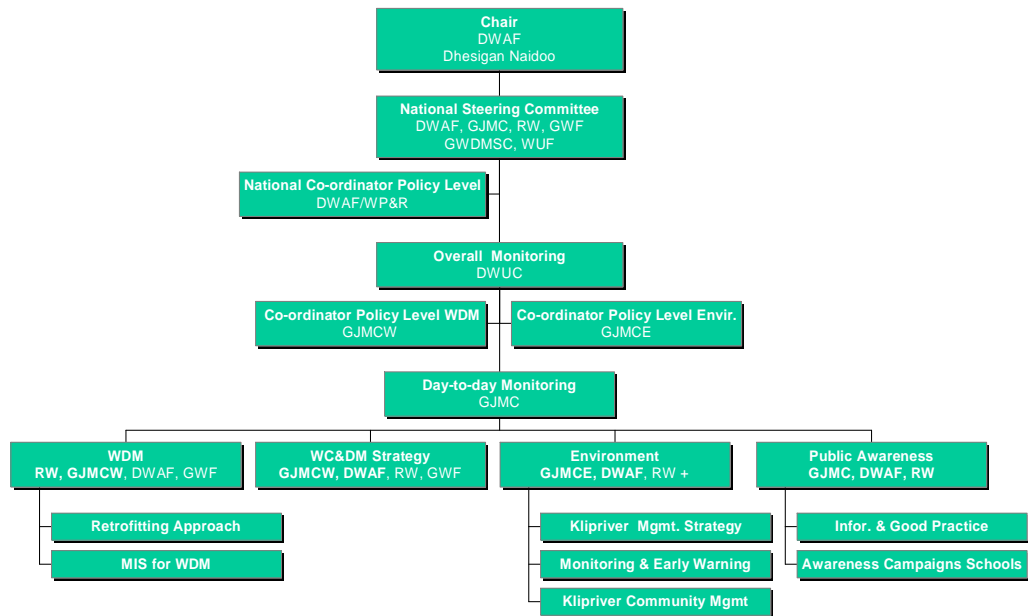
Institutional Aspects

- Need names and affiliation of environmental committee members
- Which partner institution link the demonstration project to the local communities?
- Institutional responsibility and capacity for follow-up interventions and community involvement after the demonstration studies?

Johannesburg City Implementation Plan Environmental Component - Implementing Institutions



Johannesburg City Implementation Plan - Organigram



DWAf:	Department of Water Affairs & Forestry
GJMC:	Greater Johannesburg Metropolitan Council
GJMCE:	GJMC Environment
GJMCW:	GJMC Water Demand Management
RW:	Rand Water
GWF:	Gauteng Water Forum
GWDMSC:	Gauteng Water Demand Management Strategy Committee
WC&DM:	Water Conservation & Demand Management
WUF:	Water Users Forum
WP&R:	Water Policy and Resources
DWUC:	Department of Water Use and Conservation

Sustainability

- Sufficient human resources capacity for project implementation?
- Institutional capacity and co-ordination for long term implementation, like local government?
- Funding for follow-up investment programmes in place?
- Affected communities' commitment to and ownership of the project?