

MIDRAND STATE OF ENVIRONMENT REPORT

1999

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LIST OF ABBREVIATIONS

Airkem	Air Pollution Monitoring Committee on the East Rand
APPA	Atmospheric Pollution Prevention Act
CAPCO	Chief Air Pollution Control Officer
CBD	Central Business District
CEO	Chief Executive Officer
DANCED	Danish Corporation for Environment and Development
DEAT	Department of Environmental Affairs & Tourism
DFA	Development Facilitation Act
DPSIR	Driving forces- Pressures-State-Impacts-Responses
DWAF	Department of Water Affairs and Forestry
EA	Environmental Assessment
ECA	Environment Conservation Act
EHO	Environmental Health Officer
EIA	Environmental Impact Assessment
ESA	Environmental Sensitive Areas
ESKOM	Electricity supply commission (state-owned utility)
FINESSE	Financing Energy Services for Small-Scale Energy Users (programme)
GW/GWh	Gigawatt / Gigawatthours
KW/kWh	Kilowatt / Kilowatthours
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IT	Information Technology
IUCN	International Union for Conservation of Nature
LDO	Land Development Objectives
KMC	Kyalami Metropolitan Council
LDO	Land Development Objectives
LGTA	Local Government Transitional Act
LPG	Liquefied and Purified Gas
MDF	Midrand Development Framework
MIDDEV	Midrand Development Corporation
MMLC	Midrand Metropolitan Local Council
MW/MWh	Megawatt / Megawatthours
MEPC	Minerals and Energy Policy Centre
NEMA	National Environmental Management Act
NO _x	Nitrous oxides
PPA	Physical Planning Act
SAM	Soweto Air Monitoring
SDU	Sustainable Development Unit
SEA	Strategic Environmental Assessment
SEED	Sustainable Energy, Environment, and Development programme
SoER	State of Environment Report
SO _x	Sulphuroxides
SWH	Solar Water Heater
THE	Thermal Efficiency in Housing
UN	United Nations

1. INTRODUCTION

1.1 Outline and Objectives

The Midrand Metropolitan Local Council (MMLC) in partnership with the Danish Corporation for Environment and Development (DANCED), the local business community and residents in Midrand initiated a Midrand Green City Project. The vision of a Green City views Midrand as an ecosystem on its own, dependant and sustained by its own natural and human-made resources. The project, therefore, aims to investigate and implement activities to ensure that the development of Midrand is sustainable for both the social and biophysical environment. In the implementation of the Green City Project the State of Environment Report (SoER) was prepared to provide a useful tool to identify the key environmental issues and priorities in Midrand. The Sustainable Development Unit (SDU) of the MMLC initiated the SoER, the objectives of which were:

- provide an overview of the environmental situation in Midrand,
- serve as a background document for setting environmental priorities and formulating environmental policies and goals, and
- serve as a source of information for environmental awareness raising activities
- assist with the development of an environmental management system for Midrand

1.2 Consultants and Thematic Reports

The IUCN (World Conservation Union)-South Africa was appointed as the lead agency in preparing the SoER for Midrand. The work involved a multi-disciplinary team of experts drawn from various consultancies and firms. The following thematic reports and inputs were compiled:

- | | | |
|---------------------------------------|----------------|------------------|
| • Pollution (air, land, noise, water) | SRK Consulting | Mark Vendrig |
| • Waste Management | MEPC | Hesphina Rukato |
| • Energy | MEPC | Frank Hochmuth |
| • Biodiversity & Open Spaces | Eco-Logic | Derek Berliner |
| • Policy & Legal | Kagiso-COWI | Harrison Pienaar |
| • Water Concept of a Green City | Living Waters | Thomas Linders |
| • GIS Design and System | SRK Consulting | |

The final synthesis report encompassing and integrating all aspects covered by the above papers was compiled by the IUCN. The report is multi-disciplinary, and aimed at crosscutting the range of environmental issues and traditional administrative sectors and agencies involved in the development of Midrand. Linkages between the different sections of the report were emphasised to provide a holistic and integrative understanding in dealing with development challenges.

1.3 Summary of Format for Thematic Reports

The format for the thematic papers serves as a guide for describing the environmental issues identified in Midrand in terms of the categories below. The format was based on the DIPSIR¹³ reporting system developed by the UN, but with a slight modifications to provide a useful analytical approach in examining particular issues around biophysical factors in the environment. The presentation of thematic papers used the following format: -

- Issues: identifying key issues of concern to the public and local government
- Causes: identifying major drivers and pressures acting on the resource
- Status: examines current state of the resource
- Impact: of pressures on resources and people
- Response: from society in terms of policy, legislation and institutions
- Future trends: based on the context of the status, issues and responses, conclusions can be drawn about possible trends in the future.
- Indicators: a set of indicators to measure change of a particular issue over time.
- Gaps: identifying gaps in knowledge and information in the current system.
- Recommendations: to MMLC for future investment and action to be taken.

The approach taken by the SoER is to provide an overview of the major environmental priorities facing Midrand so that a broad picture is painted to provide strategic direction as to where resources must be invested and action needs to be taken. This influences the proactive decisions to be taken by government and other parties.

The following section describes the underlying social and economic activities or driving forces in Midrand that lead to environmental change which could be positive or negative in nature.

¹³ DIPSIR stands for Driving forces- Pressures-State-Impacts-Responses

1.4 Background to Midrand

1.4.1 Situation and zoning

Midrand is strategically located approximately 25km north of Johannesburg CBD and approximately 28km south of Pretoria CBD. Midrand is 240 km square in size and stretches from the Allandale Interchange in the south to the Olifantsfontein Interchange in the north and from Kyalami in the west to Tembisa in the east. Midrand is divided into east and west Midrand by the N1 highway which runs through the centre of Midrand (see Topo cadastral data Map²).

Midrand is divided into eight functional zones characterised by different land use patterns (see Map: Functional Zones³ in Midrand):

Zone 1: *Bluehills* and *Diepsloot* - a mix of good farming land and rural residential land use.

Zone 2: *Kyalami*, *Barbeque* and *Crowthorn* - higher density than Zone 1 with nodes of commercial and retail activity.

Zone 3: *Erand*, *Vorna Valley* and *Waterval* – low residential land use pattern in transition to medium density suburbia with some high density townhouse and cluster house developments.

Zone 4: *Noordwyk* and *Country View*: medium density suburbs set in low density rural residential context with some randomly located high density town and cluster houses.

Zone 5: *Central Activity District* – strong commercial growth dominating all other land uses.

Zone 6: *Randjesfontein*, *Glen Austin* and *President Park* - low density rural residential area under pressure to densify.

Zone 7: *Olifantsfontein* and *Clayville* – four components, namely large areas of vacant land, medium density suburbs, heavy industrial and primary resource areas and a strip of retail and commercial use.

Zone 8: *Ivory Park*, *Rabie Ridge* and *Commercia* – high density residential use with poor services and poor integration within district and to adjacent areas.

The area described above falls under the jurisdiction of the Midrand Metropolitan Local Council (MMLC). The MMLC is one of the three local authorities that make up the Kyalami Metropolitan Council (KMC). The other two councils are the Kempton Park Metropolitan Local Council and the Lethabong Metropolitan Local Council.

1.4.2 Socio-economic Context

Population

The current population estimate is 240 000, with about 84% living in Midrand east. Approximately 80% of the population live in Ivory Park, which has the highest population density (in 1996) of 14.046 people per km² compared to the rest of Midrand (see Table 1). Population growth is estimated at 15% for Ivory Park, President Park and Clayville and 9% for rest of Midrand.

² Produced by SRK Consulting, Johannesburg

³ Source: Integrated Development Plan (IDP) 1999. Town Planning Department, MMLC.

Table 1: Population density (people/km²) and number of households in areas in Midrand⁴ (1996).

<i>Zone</i>			<i>Population Density</i>			<i>No. of Households</i>		
<i>Bluehills</i>		<i>Diepsloot</i>	0.162		0.017	108		31
<i>Kyalami</i>	<i>Barbeque</i>	<i>Crowthorn</i>	0.155	0.004	0.171	390	20	100
<i>Erand</i>		<i>Vorna Valley</i>	0.272		2.127	450		2901
<i>Noordwyk</i>		<i>Country View</i>	2.087		0.645	1983		606
<i>Randjesfontein</i>	<i>Glen Austin</i>	<i>President Park</i>	0.141	0.257	0.252	228	620	407
<i>Olifantsfontein</i>		<i>Clayville</i>	0.006		0.762	86		890
<i>Ivory Park</i>		<i>Rabie Ridge</i>	14.046		2.295	31841		1000

Income

In 1995, approximately 65% of Midrand's population earned less than R800 a month compared to 21% nationally (see Table 2). The level of unemployment in Ivory Park and Rabie Ridge is currently 51% and 71% respectively.

Table 2: The household income distribution for Midrand compared to the SA National Distribution⁵ (1995).

<i>Household Income</i>	<i>< R800/month</i>	<i>R800 - R1500</i>	<i>R1500 – R3500</i>	<i>> R3500</i>
<i>Midrand Distribution</i>	65%	11%	4%	20%
<i>SA National Distribution</i>	21%	22%	20%	37%

Households

Of the total number of households occurring in Midrand, 57.2% are formal and 42.8% are informal housing (See Table 3). Of the total informal households occurring in Midrand, 85% occur in Ivory Park. Approximately 85% of the residents of Midrand are without basic services, housing and affordable access to economic opportunity. It is estimated that over a four year period at 15% growth (natural growth and influx), 25000 additional dwelling units will be required in the lower income housing areas. The average household size in Ivory Park was 4.7% compared to the average 3.5% for the whole of Midrand. The density of households (see Table 3) in Ivory Park may contribute more to the high population numbers than household size.

Table 3: Formal and informal households occurring in Midrand in 1996⁴.

<i>Area</i>	<i>Type</i>	<i>No.</i>	<i>% of Total</i>
<i>Formal Areas: Midrand excluding Ivory Park</i>	Formal	11208	24.4%
<i>Formal Areas: Ivory Park</i>	Formal	15054	32.8%
<i>Total formal</i>		26262	57.2%
<i>Non-residential stands: Ivory Park</i>	Informal	9269	20.2%
<i>Backyard shacks: Ivory Park</i>	Informal	7527	16.4%
<i>Informal areas: other</i>	Informal	2857	6.2%
<i>Total informal</i>		19644	42.8%
<i>Total no. of households</i>		45906	100%

⁴ Source: Town Planning Department, MMLC.

⁵ Source: Integrated Development Plan (IDP) 1999, Town Planning Department, MMLC.

Infrastructure and Services

Infrastructure and services provided in Midrand can be seen in Table 4 below.

Table 4: The level of services provided in Midrand in 1996, where level 0 is no service provision.

<i>Service</i>	<i>Level 0</i>	<i>Level 1</i>	<i>Level 2</i>	<i>Level 3</i>	<i>Total</i>
<i>Water</i>	23%	27% communal stand pipes	0% metered yard taps	50% house connections	100%
<i>Sanitation</i>	23%	27% aqua privies	0% simple waterborne	50% full waterborne	100%
<i>Electricity</i>	24%	0% 5 Amp supply	0% 20-30 Amp pre-paid	76% 60 Amp	100%
<i>Roads</i>	40%	18% 60% graded, 40% gravel; some paved bus routes	0% gravel, paved bus routes	41% paved	100%
<i>Stormwater</i>	40%	18% open channels, 60% unlined and 40% lined; lined along bus route	0%	41%	100%
<i>Solid waste (domestic)</i>	9%	0% entrepreneurial refuse removal	63% entrepreneurial refuse removal	28% MMLC refuse removal	100%

Land use, Recreation and Open Spaces

Rural residential and vacant (undeveloped) open spaces are the predominant land use types in Midrand (see Table 5).

Table 5: Land use in Midrand in 1996⁶.

<i>Land use</i>	<i>%</i>
<i>Residential</i>	3.52
<i>Ivory Park</i>	3.12
<i>Retail</i>	0.26
<i>Industrial</i>	3.56
<i>Vacant (undeveloped)</i>	40.94
<i>Education</i>	0.64
<i>Public open space</i>	1.41
<i>Commercial</i>	2.15
<i>Municipal</i>	1.05
<i>Health</i>	0.04
<i>Hotel</i>	0.01
<i>Entertainment</i>	0.05
<i>Rural residential</i>	40.13
<i>Institutional</i>	3.12
<i>Total</i>	100.00

⁶ Source: Town Planning Department, MMLC.

The most natural areas in Midrand are the rural agricultural areas due to low density of development. In the low-income areas like Ivory Park little attention has been given to the environment. Only 409 ha (or 1.41%) of the total \pm 19 100 ha (total area of Midrand) exists as municipal open space. The public open space requirement for Midrand is 1486 ha (based on a standard of 3,9ha/1000 population⁷). As the MMLC only owns 1.41% public open space, most of the open spaces in Midrand are privately owned.

1.4.3 Economic growth in Midrand

Economic growth in Midrand is occurring at a rapid rate of 20% per annum. In terms of the draft Vision 2025 document of the Kyalami Metropolitan Council, Midrand is identified as a key area for the future growth and development, especially in the areas of business complexes and high tech industries.

Industrial/Business/Residential Sectors

Between 1983 and 1992 R1 billion worth of investment in business buildings were made and today around R500 million in building plans is being approved annually. The estimated value of buildings completed in 1998 was R629 105 500 compared to R67 576 905 in 1985 (see Table 6). The total number of houses completed between 1989 and 1998 was 6500 township houses and 1096 rural houses.

Table 6: Value of Buildings completed (R) between 1985 - 1998⁸

<i>Year</i>	<i>Residential</i>	<i>Industrial</i>	<i>Businesses</i>	<i>Total</i>
1985	18 742 605	17938800	30 895 500	67 576 905
1990	99 597 000	5485000	80 649 100	196 697 480
1995	72 493 000	39 949 000	33 597 000	169 686 000
1998	237 990 000	68 250 500	259 805 500	629 105 500

Roads and Traffic

The road network covers approximately 706 kilometres. Of this, 21km is national, 81km is provincial, 347km are paved (local) and 257km are gravel/dirt (local). High levels of traffic congestion is experienced during the AM and PM peak periods. High volumes of traffic are experienced on N1 motorway, with substantial volumes at the Midrand interchanges, from the east (i.e. Ivory Park and Tembisa) and west (ie. Diepsloot) arterials, and from the south-west of Midrand. High congestion levels reflect that infrastructure growth rate cannot keep abreast of rapid development. The MMLC has plans to upgrade existing roads and construct new roads to integrate the areas of Midrand and to accommodate future growth.

⁷ Source: Land Development Objectives, Town Planning Department, MMLC

⁸ Source: Town Planning Department, MMLC.

1.5 Legal and Institutional Framework of Midrand

Introduction

The Midrand Metropolitan Local Council (MMLC) receives its powers from the Constitutional dispensation in which national, provincial and local governments are regarded as different spheres of government rather than tiers.

It is from the framework provided by the Constitution that local government, just like any other government agency, must fulfil certain obligations. Local government is generally regarded as being at the interface of things. Local government is more in touch with civil society than any other agency. While national and provincial government are often regarded as playing a more facilitatory and policy role, local government is regarded as institutions responsible for local level implementation and service delivery.

The Constitution lays out two sets of obligations in terms of the environmental mandate and responsibility of local government. The first is encapsulated in the Bill of Rights section, dealing with the fundamental right of every citizen to a healthy environment. Therefore, government in general has an obligation to put in place measures such as policies, laws and programmes to ensure that this right to a healthy environment is protected.

The second obligation is a service obligation that is set out in part B of schedule 4 and 5 of the Constitution. The areas of competency or functional areas of local government (those applicable to Midrand only), as set out by the Constitution, are:

Functional Areas of Concurrent National and Provincial Legislative Competence	Functional Areas of Exclusive Provincial Legislative Competence
Air pollution, Building regulations, Child care facilities; Electricity and gas reticulation; Firefighting services; Local tourism; Municipal airports; Municipal planning; Municipal health services; Municipal public transport; Municipal public works; Stormwater management systems in build up areas; Trading regulations; Water and sanitation services limited to potable water supply systems and domestic waste-water and sewage disposal systems.	Billboards and the display of advertisements in public places; Cemeteries, funeral parlours and crematoria; Cleansing; Control of public nuisances; Control of undertakings that sell liquor to the public; Facilities for accommodation, care and burial of animals; Fencing and fences; Licensing of dogs; Licensing and control of undertakings that sell food to the public; Local amenities; Local sport facilities; Markets; Municipal abattoirs; Municipal parks and recreation; Municipal roads; Noise pollution; Pounds; Public places; Refuse removal, refuse dumps and solid waste disposal; Street trading; Street lighting; Traffic and parking.

In summary, the Constitution provides the framework, which sets out the responsibilities, duties, powers and areas where local government is supposed to play a role. The principle that the Constitution sets out for all spheres of government is that of co-operative governance, meaning that all difference spheres of government should work in the spirit of co-operation rather than competition.

Policy and Legislation

Generally, it is the responsibility of national government to set norms and standards for various environmental issues. These are set in consultation with the relevant public institutions and reviewed and commented through a public participation process. The passing of policy generally leads to the formulation of law. Policy and law gives effect to Constitutional responsibilities that have been conferred to the provincial and national governments. Presently, the Local Government Transition Act, Development Facilitation Act, and Local Government Ordinances serve to define the powers and functions of local government.

Environmental legislation may be found in national Acts of Parliament (statues), provincial ordinances, regulations or local authority by-laws.

Statues are those laws that are passed at national level by Parliament. They have general application to the whole country.

Provincial Ordinances were historically considered to be subordinate legislation. However, with the new Constitution, provinces are entitled to pass legislation in respect of certain matters that has application in that province.

Regulations are rules made in terms of existing legislation. They are often used to give content or detail to legislation. They are made in terms of provisions contained in legislation authorising the applicable person to do so. They may be made by provinces or national departments.

By-laws are sub-ordinate legislation, which are passed by local governments for application within their area of jurisdiction.

Regulations and By-laws

Regulations and by-laws are tools used by local authorities to govern within their jurisdictions. These can be created through national and provincial legislation, or through local by-laws. These laws and regulations can cover simple things as putting up signposts, or complex issues such as zoning plans for residential or industrial areas.

The general procedure for passing a by-law involves the approval by local authority, such as the council, and the publication of the by-laws for public comment. Since by-laws may not be in conflict with national or provincial laws, local authorities need to be familiar with national policies and laws. By-laws can be ‘tailor’ made to suit local conditions, but cannot contradict national norms and standards. For instance, if the MMLC wants to pass a by-law for air pollution control in Midrand it will have to adhere to national policy and law. It could set higher standards, but cannot go below the national provisions. In turn, they can also lobby for changes at national and provincial levels. Such lobbying is co-ordinated by the South African Local Government Association (SALGA), which is a body representing local government interests.

Presently, the most important pieces of policy and legislation that are important to the MMLC and touched on in the various theme areas of this SoER are:

- The National Environmental Management Act, 1998.

- The National Policy on Integrated Pollution and Waste Management, 1998
- The National Policy on Biodiversity, 1997
- The National Water Resources Act, 1997.
- Environmental Impact Assessment Regulations

These are all new policies and Acts, which will require that the Midrand Council make changes to its own by-laws, or pass new by-laws to give effect to these various laws.

One of the ways in which Midrand still needs to tackle environmental issues, before passing by-laws, is by developing an overall environmental policy for Midrand. Presently no such policy exists. The State of Environment Report is meant to assist with this. The MMLC is also obliged to consult the public on these issues.

A policy on environmental issues for Midrand is important for the following reasons:

- An Environmental Policy establishes the direction and steps that the MMLC will take in giving effect to the Constitutional rights and areas of responsibilities.
- Policy will guide the drafting and direction of future environmental legislation.
- It establishes environmental principles that guide decision-making.
- It will assist interpretation of law for decision-making and litigation.
- Policy provides a useful mechanism for streamlining and co-ordinating the plethora of legislation that currently exists.

Planning and the Integration of Environmental Issues in the MMLC

The biggest challenge to ensuring that environmental issues are given consideration, and implemented, is to incorporate these into local government planning and economic development plans. Generally, environmental problems are a result of poor planning that have failed to incorporate environmental issues. So if the MMLC builds houses, does it take into account how the houses are built, and where they are built so that housing development have little environmental impacts.

Poor planning is often the result of a lack of awareness, fragmented legislation and institutional systems, poor management and delivery of services, or lack of public awareness about environmental issues. A good example of a lack of public awareness is the prevalence of litter and other forms of waste. In addition, if there is little or poor participation of the public or stakeholders in planning and policy, it is likely that the environmental issues will not be addressed adequately.

Since integrated planning is a key mechanism for introducing environmental issues on the local government agenda, there are two main mechanisms by which this can be done at the local government level. They are through Land Development Objectives (LDOs) as set out in the Development Facilitation Act (DFA), and the Integrated Development Plans (IDPs) as set out in the Local Government Transitional Act. In addition, allocation of land by a local authority for residential or other purposes, or even a creation of a green space, is done in accordance with the Town Planning Scheme.

The Use of IDPs

The key notion in an IDP is the idea of integration. Integration means thinking about undertaking activities in a holistic manner. Since local government deals with many sectors, such as housing, transport, water, energy and environment, the IDPs are meant to assist in thinking across sectors, and the implications and possible impacts upon each other. With integrated planning, each sector is meant to be supportive to the other, and to enhance the efforts of the other. So if housing is properly planned, there would be less environmental impacts and also energy efficiency. The main benefits of an IDP are:

- Sectoral co-ordination so as to avoid overlaps;
- Strategic thinking in focusing on priorities;
- Intergovernmental co-ordination so that policies are consistent;
- Institutional development by influencing organisation structure;
- Community participation especially in identifying needs; and
- Financial efficiency and planning.

It is through IDPs that the performance of a local government is assessed.

The use of LDOs

The LDOs are mandated through the DFA. All local authorities are required to complete an LDO, which are business plans for how land in that locality will be used to meet the development priorities of the area. LDOs require public participation and comment, as they set out the needs and priorities of people living within the jurisdiction of the local authority.

There are similarities between a LDO and an IDP, except that IDPs also deal with financial and institutional issues. Once LDOs have been approved they have a statutory power which local government must use to guide its own decisions in the different sectors. This is one way in which environmental issues can be established as part of the agenda of local government.

The MMLC's IDP and LDOs

A review of the MMLC's IDPs and LDOs show that in general planning and support to the integration of environmental issues is weak. A significant area that is neglected is the application of demand measures as a tool for environmental management. Demand management entails reduction in the amount of waste produced, the amount water and electricity that is used. For instance, environmental management can also provide innovative opportunities for job creation and small enterprise development, through recycling of waste or rehabilitation of degraded areas.

This weakness is reflected both in terms of establishing environmental priorities and the mechanisms to deal with these. With the result, and because of a poor focus of environmental issues in the IDPs, insufficient finances and human resources are allocated to undertake these tasks.

Making the MMLC work

To carry out its many obligations the MMLC has the following departments:

1. Office of the CEO and Deputy CEO

Responsible for administrative and financial management of the Council. The core functions are policy and strategic planning and implementation, specifically the implementation of an integrated development plan for Midrand. These offices oversee the functions of the various departments. Total number of staff is 11.

The Sustainable Development Unit (SDU)

The SDU is a temporary unit (July 1999 - July 2000) currently housed under the overall management of the Deputy-CEO. The MMLC is the overall Executing Agency and the key Implementing Agency of the Green City Project, but implementation is conducted through the SDU. The SDU is not a decision making body, its primary role is administrative, to facilitate the day-to-day management of the Green City Project, carrying out all duties required for implementation of the project

2. Town Treasury Department

Maintains and administers financial records of the MMLC through the following four sections:

- Expenditure
- Revenue
- Information Technology (IT): processes all data on council-related matters eg. payment of services.
- Financial Administration

The total number of staff is 104.

3. Town Planning Department

The Town Planning provides a planning service to all sectors of the community which entails:

- Planning is implemented and controlled
- Crucial development issues are managed
- Direction is provided for future development
- A dynamic and integrated information service is provided.

Town planning is responsible for preparation of the IDPs, and LDOs. It is responsible for ensuring that environmental impacts of development are minimised. Current environment related projects are: Integrated Development Plan, Integrated development for Ivory Park, Ivory Gate, Midrand Town Centre and Midrand development indicators. Total number of staff is 20.

4. Human Resources Management

Involved in human resource development aspects of the MMLC (staff total = 1200+). Main functions/sections include:

- Personnel administration
- Welfare
- Training & development
- Organisation and work studies
- Recruitment & selection
- Labour relations
- Occupational health

This department is not involved directly with any environmental issues. Indirectly, if certain environmental hazards are affecting employees, then HRM will conduct a study and propose corrective action. Training and development could be a key department with regards to staff training on environmental issues.

5. Community Services Department

The main functions are fulfilled by the four sections of the department:

- Social Development: such as job creation, skills training, youth development, empowerment of women, sports and recreation, community education.
- Waste Management: Industrial, commercial and domestic refuse removal, street cleaning, vector control, mini dump provision.
- Environmental Health Services: identification, evaluation and control of environmental health hazards, as determined by factors in the environment.
- Personal Health Services: provision of primary health care services eg. clinics

Staff number is approximately 160.

6. Public Safety Department

Co-ordinates services in emergency situations, particularly with regard to fire, policing, traffic and licensing. The department has four main divisions:

- Traffic
- Fire
- Crisis Control
- Security

Fire prevention and disaster management is a sub-division of the fire division. They respond to and stabilise life threatening environmental situations such as hazardous chemical pollution. The department is authorised to issue summons, though greater authority is required by officials to implement legislation effectively. Total number of staff is 250.

7. Town Engineers

Responsible for rendering the following civil engineering services:

- roads
- stormwater and transportation
- water, sewer collection and purification
- building control

Planning and development form an integral part of all these core functions. The total number of staff is 400+, with most working with roads (70%) and water (25%).

8. Town Secretary

The two key performance areas are:

- legal section: manages and controls all legal matters, and
- administration section: provides typing services, administrative services, and storage of archives.

Total number of staff is about 56.

9. Environment and Recreation Management

The key functions of this department are:

- development and implementation of an open space plan and maintenance of open spaces and parks.
- improved access to safe, sustainable recreational and sport facilities.
- library services
- cemetery management
- history, arts and culture (this department was directly involved with archaeological excavations in Midrand)
- protection of the environment - an Environmental Superintendent and a Development and Environmental Control Officer ensure that all new developments are subject to environmental legislation eg. that the necessary Scoping or Environmental Impact Assessments be done prior to final approval of developments. These developments include township establishments, rezonings etc.

Capital projects currently being implemented are the following:

- Sports Precinct in Ivory Park
- Reconstruction of Country View Dam
- Expanding the Midrand cemetery
- Upgrading the Ivory Park Sports Stadium
- Construction of a swimming pool in Rabie Ridge
- Development of the Kaalspruit

The total number of staff is 120.

10. Town Electrical Engineer

Responsible for the sustainable supply and provision of energy to the Midrand community. Total staff number is 132. The following are the main functions of the department:

- distribution of electricity
- two-way radio maintenance
- robot intersection maintenance
- provision and maintenance of streetlights
- maintenance of mechanical workshop for vehicles of the Council.

Institutional Constraints and Challenges facing the MMLC

The major institutional challenges facing the MMLC with regard to environmental integration and implementation are the following:

- Integrating environmental policy and regulations in economic policy issues, strategy development, and policy implementation;
- Achieving greater co-ordination between existing departments;
- To provide career and other professional incentives to encourage participation;
- Designating staff from the existing department of environment and recreation to participate in environmental strategy development in all departments and invite staff from those departments to working groups in the 'new' department of environment on relevant environmental issues;
- Ensuring that by-laws are consistent with national policy and legislation, which is still a weakness; and
- There is generally a lack of capacity and resources to carry out most of the environmental obligations, in particular enforcing legislation. More can be done if more resources are available.

1.6 The Green City Concept

As South Africa increasingly becomes urbanised, people living in cities will have to import from the hinterlands, food, water, energy, and a range of other resources whether they be raw, or finished products. Cities globally consume 75% of its resources and produce most of the waste. Cities can be the cesspool of unhealthy habitation, encourage a life alienated from nature, and can be soulless and grey in character. To a large extent, the blame for unsustainable life in cities which lacks character and spirit, is to be directed at unimaginative town planning, engineering, and location of people and industry, all of which create the setting for a unsustainable living. But, cities can be changed and improved, and there are enough international examples to show this. In addition, the UN through the International Council for Local Environmental Initiatives (ICLEI), has also been promoting Local Agenda 21 initiatives to encourage local authorities to take greater strides in greening their cities and towns.

Midrand as a growing city, and given that it is still in its infancy has the grand opportunity to change things around. It is for this reason that the Sustainable Green Cities project has been launched with the generous support of the Danish government. For long people have recognised that cities if not managed well can become unsustainable and not the best of places to live in. Perhaps the first originator of the Green City concept was a person by the name of Ebenezer Howard who lived in London, around 1890. He developed the idea of a Garden City, as a way out of pollution and overcrowding. He envisaged a set of self-sufficient towns, built in the countryside, and surrounded by agricultural belts which would supply inhabitants of these towns. Decades later his idea was picked up by others, but underlying all of their philosophies was the idea of opening up more green spaces, and designing a systematic order to habitation by segregating living areas from work, leisure and sport. While other theories propound the idea of compact cities to reduce on the use of cars by making work and other needs accessible within walking distance from home, and ensure that people will have more cost effective services and maintain a healthy social and family life without travelling great distances to work. This idea is well-established and showing great benefits in a city like Stockholm.

While Green Cities are a lot about design and good planning, taking on Green issues within the context of the city also helps to mobilise people living in these cities to take responsibility for their city and its future. For instance, some cities overseas have got their citizens to engage in 'adopt a river programme' as a way to reclaim and rehabilitate deteriorating rivers. This is something Midrand can also do.

Midrand has chosen water to be the central theme underlying the Green City concept. This theme has been chosen as water is the lifeblood of the earth itself. It is an essential part of nature as it sustains life and provides countless millions of organisms with nourishment all the time. This implies that water has to undergo continuous regeneration processes to maintain its functions. These processes have to do with movement as this occurs in the whole cyclic pattern of nature. The idea is to restore the natural power and nature of water, and by so doing also sustain many other environmental functions and attributes associated with water. Water is also chosen because it has linkages with other aspects of our natural environment through the hydrological cycle, such as its links with plants, soils, and air. By understanding the water cycle, one is drawn into the importance and linkages of other ecological processes. For instance the removal of vegetation affects precipitation, and hence rainfall, and also increases soil erosion, which also leads to changes in the quality and character of water.

To assist Midrand with the development of approaches to managing water as an integral component of a Green City Concept a background and concept paper was produced: *Water Concept of a Green City*, by Thomas Linders, which contains many new novel ideas on the management and use of water. The basic premise is to harness and take advantage of the natural properties of water. The concept document provides both theoretical and alternative practical ways by which water can be used. The ideas range from filtration ditches which can be used as artificial wetlands, retention of rain water in households for washing, designing new ways of managing storm water, and the idea of green roofs in industrial complexes which will help to clean rain water before it is used in gardens, or fed into groundwater recharge systems.

Key Attributes of a Green City

Establishing green public transport by reducing dependency on cars

Decentralising power-as greener projects are more likely to succeed with greater community control

Self-building by creating eco-jobs

Recycling-some cities have shown you can recycle 75% of household waste

Installing solar -power-solar energy is getting cheaper and therefore affordable to many people

Building ecologically by using environmentally sensitive material and conservation of energy

Green accounting to incorporate the benefits of ecological programmes by attaching rands and cents to these.

Eco-monitoring to establish both local and global impacts of city activities

Communicating with each other so as to increase learning

Source: The New Internationalist, June 1999