

### 3 BACKGROUND AND APPROACH TO STATE OF THE ENVIRONMENT REPORTING

#### 3.1 THE BASIS FOR STATE OF THE ENVIRONMENT REPORTING

Although there are no current, legislated requirements in SA for the compilation of State of the Environment (SoE) reports *per se*, there is a solid and logical basis for their compilation and use. This basis is founded upon the following:

- SoE reports are used as a management and performance monitoring tool in relation to sustainable development; and
- SoE reports are compiled to assist in giving effect to the legal requirements for granting access to environmental information, and education and awareness of environmental issues.

##### 3.1.1 Sustainable Development

Following the United Nations Conference on the Human Environment, held in Stockholm in 1972, which highlighted the urgent need for action against environmental deterioration, the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992, provided the fundamental principles and the programme of action for achieving sustainable development. One definition of sustainable development is: *“development that meets the needs of the present without compromising the ability of future generations to meet their own needs”* (WCED, 1987). In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it (United Nations, 1992). In the past, however, social and economic development and environmental and natural resource management programmes have largely been undertaken in isolation. The concept of sustainable development integrates these three equally important and inter-dependent components, and strives for the following:

- A healthy society;
- A stable economy; and
- Healthy ecosystems and ecological processes.

The New Partnership for Africa's Development (NEPAD) and the World Summit on Sustainable Development, held in Johannesburg in 2002, SA, reaffirmed the commitment to this integration.

Agenda 21, the action plan for sustainable development which emanated from the Rio conference, calls for, amongst other things, the improvement in the availability, quality and accessibility of information and data for decision-making, with particular reference to the developing world. Agenda 21 clearly identifies the need for the monitoring of performance in the economic, social and environmental spheres at various levels, ranging from global to local. Agenda 21 calls for the development of sustainable development indicators to provide a basis for decision-making, and performance monitoring. In response, international, national, provincial and local requirements for reporting have developed, while public and private sectors worldwide have embarked on sustainability-related reporting initiatives. Guidelines for reporting have been produced by many

organisations, for example the Global Reporting Initiative's Sustainability Reporting Guidelines, and the United Nations Division for Sustainable Development's Guidelines and Methodologies for Indicators of Sustainable Development. SoE Reporting, which developed in this context, is a comprehensive and integrated tool to address the above requirements.

### **3.1.2 Political and legal framework**

#### *3.1.2.1 The New Partnership for Africa's Development 2001 (NEPAD)*

NEPAD is a commitment by African leaders to the people of Africa. The primary objective is to eradicate poverty in Africa and to place African countries both individually and collectively on a path of sustainable growth and development. The subsidiary objective is to halt the marginalisation of Africa in the globalisation process (Department of Foreign Affairs, 2002). South Africa is one of the five initiating states of NEPAD, and this confirms the country's commitment to sustainable development. Through the Environmental Initiative, NEPAD recognises that a healthy and productive environment is core to NEPAD's success (NEPAD, 2001).

#### *3.1.2.2 African Charter on Human and People's Rights 1981*

The Charter entitles every individual to the "right to receive information" (Organisation for African Unity, 1981).

#### *3.1.2.3 Universal Declaration of Human Rights 1948*

This declaration entitles everyone in the Member States to "receive and impart information and ideas through any media," and to the "right of equal access to public service in his country" (United Nations, 1948).

#### *3.1.2.4 Aarhus Convention 1998*

This United Nations Economic Commission for Europe convention promotes access to information, public participation in decision-making and access to justice in environmental matters. Although SA is not party to this convention, the provisions echo the provisions made in the National Environmental Management Act (107 of 1998) (NEMA) in terms of the provision of information and its availability. Parties to the convention are obligated to compile a national report on the SoE.

#### *3.1.2.5 Agenda 21 and Local Agenda 21*

As a party to Agenda 21, SA is required to give individuals appropriate access to information regarding the environment, and to facilitate and encourage public awareness and participation by making information publicly available. Further, the state is required to develop sustainable development indicators to provide a basis for decision-making, and also performance monitoring. In this light Local Agenda 21 (LA21) is the process used around the world to translate Agenda 21

into actions at local level (Urquhart and Atkinson, 2000). Although EMM has not initiated a formal LA21 process, Environment and Tourism will integrate the LA21 process into the IDP process.

### 3.1.2.6 *Constitution of the Republic of South Africa No. 108 of 1996*

The environmental and access to information rights contained within the Bill of Rights in the Constitution create a logical context and requirement for SoE reporting. Section 24 states that *“Everyone has the right (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that*

- i. prevent pollution and ecological degradation;*
- ii. promote conservation; and*
- iii. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”*

Section 32(1) states that *“Everyone has the right of access to (a) any information held by the state; and (b) any information that is held by another person and that is required for the exercise or protection of any rights.*

### 3.1.2.7 *National Environmental Management Act No. 107 of 1998*

The NEMA details information requirements for the achievement of which SoE reporting may be an appropriate mechanism:

- The principles of NEMA require that development must be conducted in a socially, environmentally and economically sustainable manner, and that decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.
- Section 24 (2)(e) requires that all organs of state responsible for controlling new and existing activities consider the sensitivity, extent, interrelationship and significance of environmental attributes, and that the Minister may compile descriptions of the environment in this regard.
- Section 26 requires the Minister to initiate an Annual Performance Report on Sustainable Development to meet the government’s commitment to Agenda 21. This involves an assembly of information sources, one of which may be SoE reports.
- The access to information clause (Section 31 (1)) is the most significant requirement for SoE reporting. This states that *“(a) every person is entitled to have access to information held by the State and organs of state which relates to the implementation of this Act and any other law affecting the environment, and to the SoE and actual and future threats to the environment, including any emissions to water, air or soil and the production, handling, transportation, treatment, storage and disposal of hazardous waste and substances; (b) organs of state are entitled to have access to information relating to the SoE and actual and future threats to the environment, including any emissions to water, air or soil and the production, handling, transportation, treatment, storage and disposal of hazardous waste held by any person where that information is necessary to enable such organs of state to carry out their duties in terms of the provisions of this Act or any other law concerned with the protection of the environment or the use of natural resources”.*

### 3.1.2.8 *The Promotion of Access to Information Act No. 2 of 2000*

Although the Act makes provisions and conditions specifically for right of access and application for access to information and records, Section 9 (e) states that an objective of the Act is “*to promote transparency, accountability and effective governance of all public and private bodies by, including, but not limited to, empowering and educating everyone*

*(i) to understand their rights in terms of this Act in order to exercise their rights in relation to public and private bodies;*

*(ii) to understand the functions and operation of public bodies; and*

*(iii) to effectively scrutinise, and participate in, decision-making by public bodies that affects their rights.”*

SoE reporting therefore falls within the ambit of this Act.

### 3.1.2.9 *Municipal Systems Act No. 32 of 2000*

The Act requires all municipalities to prepare an Integrated Development Plan (IDP) through an integrated development planning process, and through this process to allow for progress toward sustainable development specifically in terms of providing sustainable municipal services, and for the realisation of the rights contained within the Bill of Rights in the Constitution.

## **3.1.3 What has been done in South Africa**

The Department of Environmental Affairs and Tourism (DEAT) launched the first National SoER, together with that of Cape Town, Durban, Johannesburg and Pretoria, in 1999, and made these available on the internet. Several SoE reports had been compiled prior to this, for example for Gauteng in 1997. South Africa’s reporting initiative has been greatly expanded with several reports having been compiled at provincial and local level. Some of these are Year One reports, for example for EMM and for Mangaung Local Municipality, and others are updates of earlier reports, for example the City of Cape Town Year Four report. Sector specific reports have also been compiled, and include State of the Rivers Reports, State of Estuaries, and State of Human Settlements. Table 3.1 details the South African SoE reports currently available on the internet:

**Table 3.1 State of the Environment Reports available on the internet**

National	
National SoER	<a href="http://www.environment.gov.za/soer/nsoer/index.htm">http://www.environment.gov.za/soer/nsoer/index.htm</a>
State of the Rivers Reports: uMngeni; Letaba & Luvuvhu; Crocodile, Sabie-Sand & Olifants; Southern Gauteng; Modder; Hartenbos & Klein Brak	<a href="http://www.csir.co.za/rhp/state_of_rivers.html">http://www.csir.co.za/rhp/state_of_rivers.html</a>
State of the Estuaries	<a href="http://www.environment.gov.za/soer/soer/sector.htm#estuaries">http://www.environment.gov.za/soer/soer/sector.htm#estuaries</a>
Catchments	<a href="http://www.environment.gov.za/soer/estuary/index.html">http://www.environment.gov.za/soer/estuary/index.html</a>
Provincial	
North-West	<a href="http://www.environment.gov.za/soer/reports/northwest/main.html">http://www.environment.gov.za/soer/reports/northwest/main.html</a>
Mpumalanga	<a href="http://eia.csir.co.za/mpumalanga/">http://eia.csir.co.za/mpumalanga/</a>
Limpopo	<a href="http://www.environment.gov.za/soer/reports/limpopo.html">http://www.environment.gov.za/soer/reports/limpopo.html</a>
Metropolitan	
Cape Town	<a href="http://www.capetown.gov.za/soe/">http://www.capetown.gov.za/soe/</a>
Durban	<a href="http://www.ceroi.net/reports/durban/">http://www.ceroi.net/reports/durban/</a>
Johannesburg	<a href="http://www.ceroi.net/reports/johannesburg/csoe/default.htm">http://www.ceroi.net/reports/johannesburg/csoe/default.htm</a>
Pretoria	<a href="http://www.iclei.org/cities21/pretoria.pdf">http://www.iclei.org/cities21/pretoria.pdf</a>
Local	
Midrand	<a href="http://www.environment.gov.za/soer/reports/midrand_back.html">http://www.environment.gov.za/soer/reports/midrand_back.html</a>
Mogale	<a href="http://www.environment.gov.za/soer/reports/mogale.html">http://www.environment.gov.za/soer/reports/mogale.html</a>

## 3.2 APPROACH IN EKURHULENI

### 3.2.1 Objectives

The purpose of SoE reporting is to provide information on the condition of the environment to various stakeholders in the public and private sectors, in order for them to deal with and understand environmental problems. The provision of this information is intended to set the basis for the development of policy and strategies, allow the monitoring of progress and performance of implemented policy and programmes, and raise the public awareness of environmental issues.

As part of the five year IDP and SDF processes currently underway in the EMM, the EMM is required to draft and implement an Integrated Environmental Management Framework (IEMF), in order to build capacity within the EMM. This first year SoER forms an integral part of the IEMF and is the first stage in this process. The general objective of this SoER is to establish the condition and status of the environment. More specifically, the objectives are to:

- Collate available baseline information and data;
- Identify gaps in knowledge and data and through the identification of issues, make recommendations for closing the gaps;
- Present baseline descriptions of the following:
  - The human environment;
  - Cultural heritage resources;
  - Land use and capability, soils and agricultural potential and geology;

- Water resources;
- The atmosphere;
- Ecosystems and biodiversity;
- Pollution and waste; and
- Environmental management and governance;
- Make recommendations as to the indicators for future use; and
- Identify strategic priorities to be addressed in policy development.

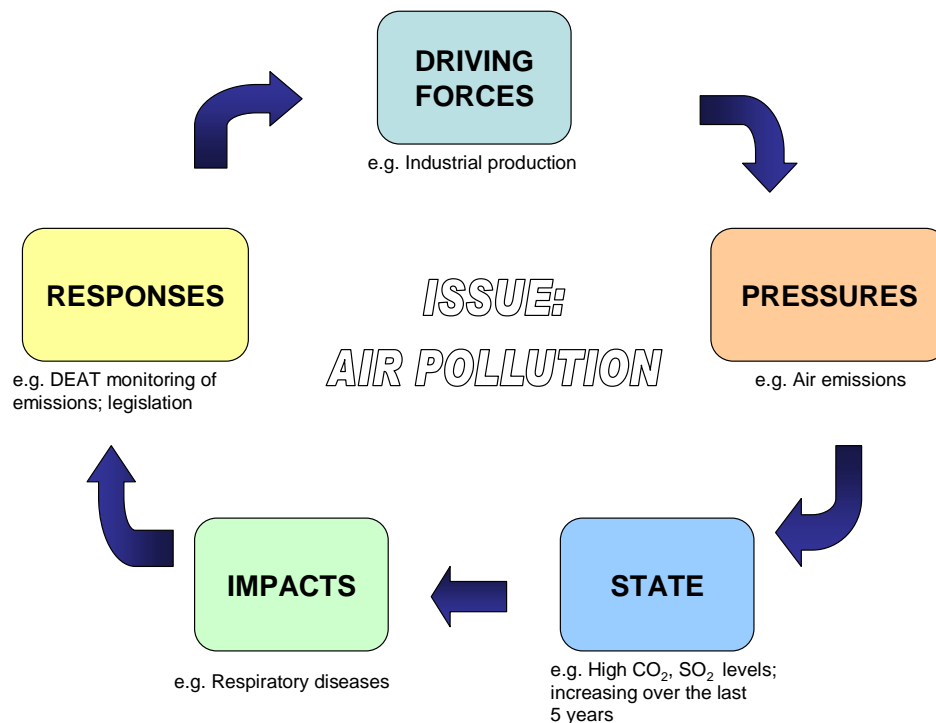
### 3.2.2 Structure of report

This report has been compiled in the conventional **Drivers-Pressures-State-Impacts-Responses** (DPSIR) reporting framework, according to the National SoE Reporting Guidelines (DEAT, 2002). Issues and descriptions have been presented according to environmental media, namely, air, water, land and soils, and ecosystems and biodiversity. The definitions of the components of this framework are presented in Table 3.2, while an example of the framework in terms of air pollution is shown in Figure 3.1.

**Table 3.2 DPSIR framework component definitions**

Driving forces	Are the human influences and activities that, when combined with environmental conditions, underpin environmental change. Indicators for driving forces describe the social, demographic and economic developments in societies and the corresponding changes in lifestyles, overall levels of consumption and production patterns (e.g. population growth, poverty, mining, and industry).
Pressures	These are the pressures acting on the environment which result from the human activities. (e.g. pollution of air, soil and water from industry, depletion of firewood through human consumption).
State	The state describes the condition of the environment including recent trends (e.g. level of air pollution)
Impacts	These are the consequences of the pressures on the environment. (e.g. loss of biodiversity and ecosystem functioning, poor human health)
Responses	These are the societal responses to reduce or prevent negative impacts, correct environmental damage, or conserve natural resources, and include legislation and policy, management strategies and programmes and initiatives

Source: DEAT 2002



**Figure 3.1. Example DPSIR framework for the issue of air pollution (modified from DEAT, 2002)**

The structure of this report is shown in Figure 3.2. A separate chapter for the human environment has been included, as it was deemed important to include this as a component of the environment, as opposed to only acting as a driver of the natural environment. This aims to emphasise the interlinkages between the anthropogenic and natural components of the environment. A conceptual model of the interlinkages is depicted in Figure 3.3.

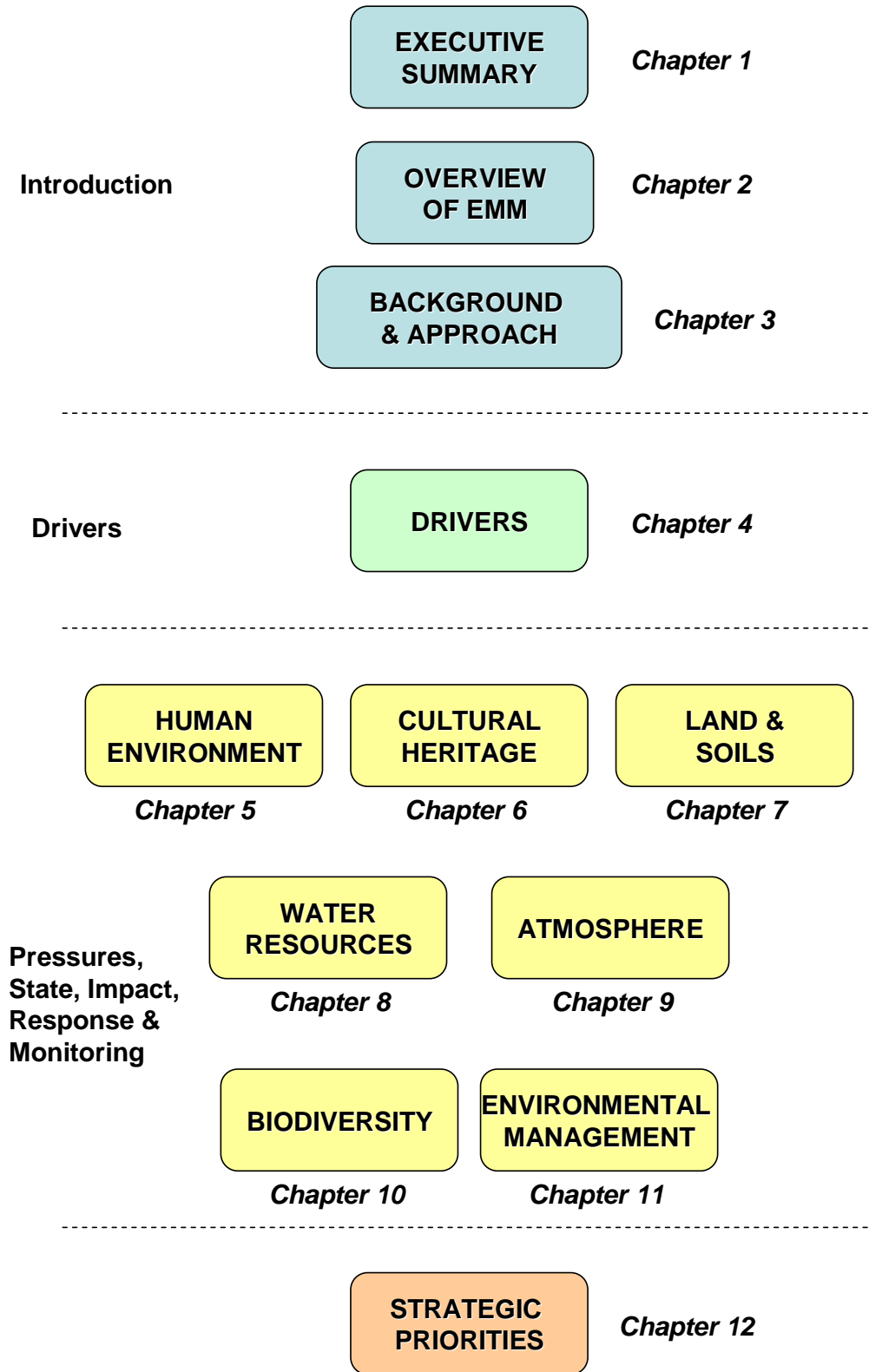
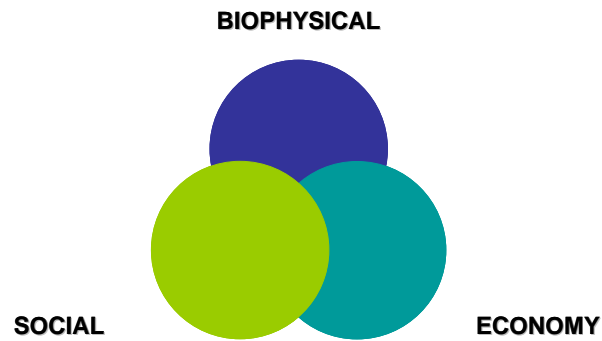


Figure 3.2 Report structure



**Figure 3.3. A conceptual model of interlinkages between the components of the "environment"**

### 3.2.3 Project process

The project process is depicted in Figure 3.4.

#### 3.2.3.1 Issues identification

The issues pertinent to environmental sustainability and management in the EMM were identified through:

- A review of various documents and information sources; and
- A stakeholder involvement process.

The documents reviewed in determining the priority issues include the following:

- EMM Integrated Development Plan (2003);
- Spatial Development Framework (2003);
- Draft Master Plan for the Sports, Recreation, Arts and Culture Department (2003);
- A letter dated 25 February 2003 from Dr P.E. Hanekom, Head of the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs, to Ms Marthina Allers from the EMM, detailing comments on the IDP;
- A letter dated 6 May 2003 from Dr P.E. Hanekom, Head of the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs, to Mr Paul Maseko, EMM's City Manager, detailing comments on the environmental status quo as presented in the IDP;
- Environmental Indicators for National State of the Environment Reporting (2002); and
- National State of the Environment Report (1999) and other SoERs;

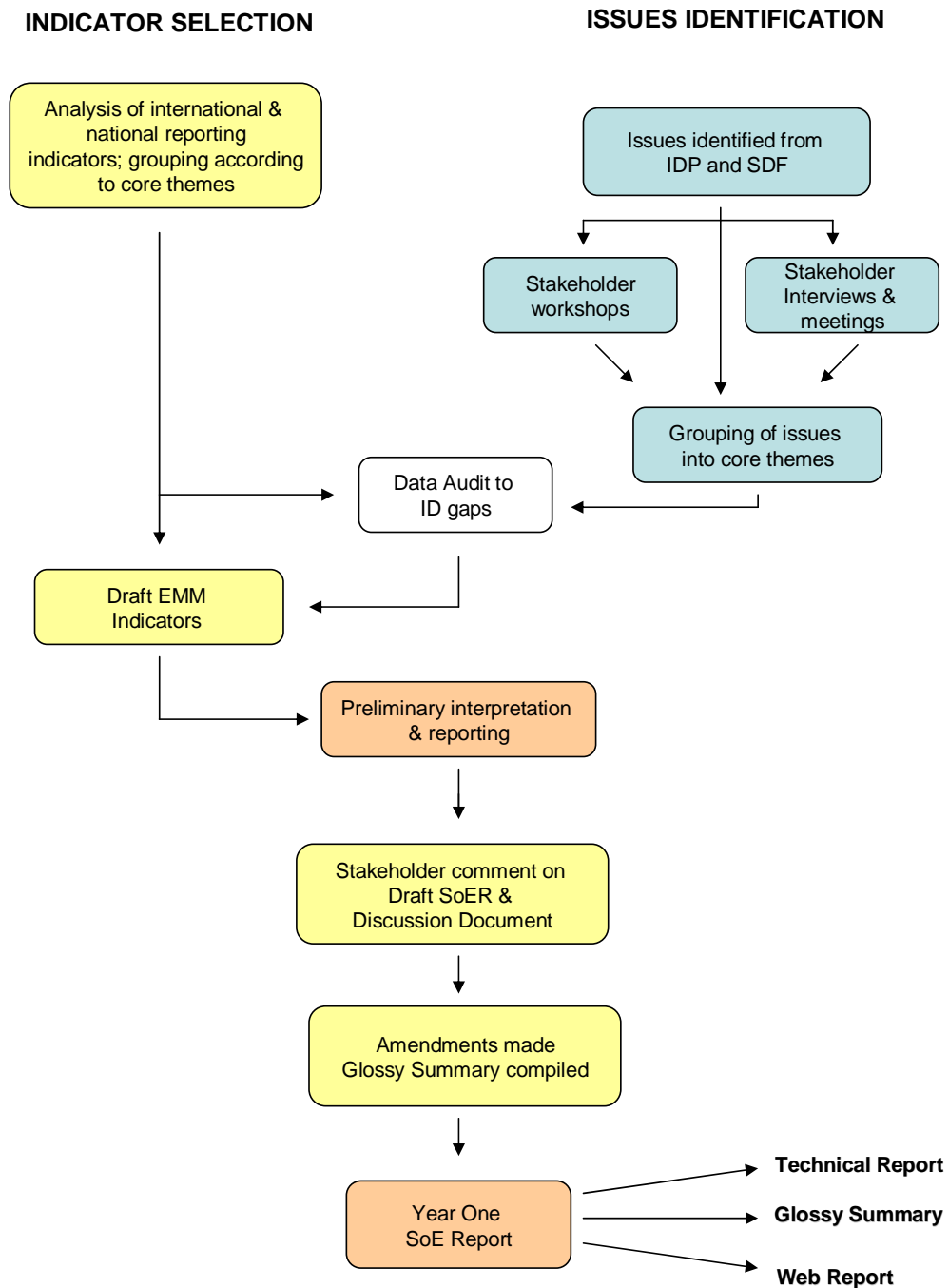


Figure 3.4 Flow diagram of the methodology used for SoE reporting

The stakeholder involvement process involved the following:

- An article requesting input on the project released in several local newspapers and placed on the EMM website;
- Two stakeholder workshops; and
- Various interviews, meetings and interactions with the public and private sector, and non-governmental organisations (NGOs).

The first workshop involved authority, business and political representatives, and was held on 25 June 2003. The second involved community and NGO representatives, and was held on 2 July 2003. Issues identified in the IDP were used as a basis for discussion, and additional issues and proposed responses to these issues were identified. In addition, various consultations and interviews with the national, provincial and local authorities and other stakeholders were conducted. A record of the public involvement process to date is included as Appendix C, including invitees, attendees and proceedings of the workshops.

This process resulted in a list of issues and proposed actions, which were grouped per reporting theme, and these are presented in Table 3.3 below. The issues identification served to identify the priority issues in the EMM, on which to base the data collection, and the subsequent descriptions and reporting. These issues will form the basis of the recommendations and strategic priorities for attention in the future policy development process.

Table 3.3 Priority Issues identified for Ekurhuleni

ISSUE	DESCRIPTION OF THE ISSUE	PROPOSED ACTIONS/RESPONSES
<b>HUMAN ENVIRONMENT</b>		
Health and safety	<ul style="list-style-type: none"> <li>• Unfenced wetlands pose safety hazard to surrounding communities</li> <li>• There is a concern regarding a vacant piece of land in Tembisa Extension 4, where the nearby wetland requires protection and poses a safety risk to the community</li> <li>• Mining occurs 30 m away from houses in some areas, so noise from blasting, lack of dust control and land and water contamination are major health and safety concerns</li> <li>• No primary health care facilities in some regions</li> <li>• Generation of dust on gravel roads which leads to health problems</li> <li>• Lack of proper dust control from open cast mining operations and old mine dumps causing health problems for neighbouring communities</li> <li>• Health problems due to poor practices of waste disposal of rotten food by food vendors (informal businesses)</li> <li>• Use of coal fires for cooking and heating resulting in fire and health problems, and ambient pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Fence off wetlands and danger signage</li>   <li>• Setting up of clinic in Kingsway is planned</li> </ul>
Influx of foreigners	<ul style="list-style-type: none"> <li>• Influx of foreigners into the area resulting in overpopulation, increased burden on basic services and crime</li> <li>• Foreigners lack of proper care for the environment because of no sense of belonging</li> </ul>	<ul style="list-style-type: none"> <li>• Government responsibility</li> <li>• More effective policing on SA borders</li> <li>• Neighbourhood watch e.g. NGOs acting as the eyes and ears of the EMM enforcement</li> </ul>
Lack of infrastructure and other basic services	<ul style="list-style-type: none"> <li>• Gravel roads difficult to travel on when raining</li> <li>• Lack of infrastructure and services such as water and electricity. Use coal fires because cheaper for heating and cooking</li> <li>• Lack of electricity in townships leads to illegal connections, which poses an electrocution risk to people</li> </ul>	<ul style="list-style-type: none"> <li>• Tarring of gravel roads</li>   <li>• Provide free basic services</li> <li>• Proper maintenance of infrastructure</li> <li>• Solar power and planting of trees should be considered in informal areas</li> </ul>
	<ul style="list-style-type: none"> <li>• Prolonged sewerage blockages results in health problems for the community</li> </ul>	
Crime	<ul style="list-style-type: none"> <li>• Increased crime rate in the EMM</li> </ul>	<ul style="list-style-type: none"> <li>• More effective and visible policing</li> </ul>
Unemployment	<ul style="list-style-type: none"> <li>• High unemployment rate and also people who have employment losing their jobs because of a lack of responsibility</li> </ul>	<ul style="list-style-type: none"> <li>• Performance appraisal for people with jobs encouraging a sense of responsibility</li> </ul>

ISSUE	DESCRIPTION OF THE ISSUE	PROPOSED ACTIONS/RESPONSES
Lack of community support	<ul style="list-style-type: none"> <li>Lack of support for community projects</li> </ul>	
Urbanisation	<ul style="list-style-type: none"> <li>Increased urbanisation</li> <li>Urban sprawl</li> </ul>	
<b>CULTURAL HERITAGE</b>		
Urban Decay	<ul style="list-style-type: none"> <li>Inner city buildings abandoned resulting in decay – infiltration by homeless</li> </ul>	
Degradation of archaeological resources	<ul style="list-style-type: none"> <li>Sites in the Meyersdal ridge being demolished by locals for use of materials for buildings/squatter homes</li> </ul>	<ul style="list-style-type: none"> <li>Enforcement of ridges and red data policies</li> </ul>
<b>LAND, SOILS AND GEOLOGY</b>		
Unsustainable utilisation of open spaces	<ul style="list-style-type: none"> <li>Loss of open spaces and unsustainable land uses existing</li> <li>Usage of open spaces not planned - EMM selling open spaces to businesses</li> <li>Lack of maintenance of open spaces</li> </ul>	<ul style="list-style-type: none"> <li>Public private partnership to increase renewable energy sources</li> <li>Proper planning in consultation with affected communities - Organic farming on open lands</li> </ul>
	<ul style="list-style-type: none"> <li>Areas of high agricultural potential being developed for other land use purposes</li> <li>Open spaces used for agricultural purposes which are used as hiding places for criminals</li> <li>Scarcity of land for community projects</li> <li>Proposed residential township developments in the Etwatwa area resulting in urban sprawl, loss of agricultural lands and lack of services and infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Areas with moderate to high agricultural potential need to be excluded from development</li> </ul>
Illegal developments	<ul style="list-style-type: none"> <li>Low cost housing and illegal settlements within sensitive and unhealthy areas</li> <li>Illegal warehouses and industries on most agricultural holdings</li> <li>Landfills and incinerators resulting in pollution</li> </ul>	
Significant impacts of mining	<ul style="list-style-type: none"> <li>Land and water degradation due to lack of rehabilitation and closure</li> <li>Illegal mining operations degrading area – both small and large scale</li> </ul>	<ul style="list-style-type: none"> <li>Environmental control of mines needs to be improved – co-operative governance and enforcement</li> </ul>

ISSUE	DESCRIPTION OF THE ISSUE	PROPOSED ACTIONS/RESPONSES
Geological instability	<ul style="list-style-type: none"> <li>Dolomitic areas posing an instability threat for building and future development – sinkhole development related to groundwater</li> </ul>	<ul style="list-style-type: none"> <li>Areas at risk need to be identified</li> </ul>
Poor land use practice - Illegal dumping	<ul style="list-style-type: none"> <li>Dumping of household, building rubble, industrial, agricultural and garden refuse</li> </ul>	<ul style="list-style-type: none"> <li>Prevention, penalisation &amp; rehabilitation</li> </ul>
<b>WATER RESOURCES</b>		
Water wastage	<ul style="list-style-type: none"> <li>Water becomes dirty when water supply disconnected. Taps have to run open for a long time to clear dirt from the pipes which leads to water wastage</li> <li>Leaking water pipes resulting in waste and exorbitant water bills</li> </ul>	<ul style="list-style-type: none"> <li>Proper maintenance of infrastructure and education</li> </ul>
Pollution - Poor water quality	<ul style="list-style-type: none"> <li>Illegal dumping into water sources in squatter camps</li> <li>Runoff and seepage from mining operations polluting water sources and wetlands</li> <li>Groundwater contamination from the illegal informal settlements and industrial developments e.g. the illegal informal settlement adjacent to the Bapsfontein Hotel</li> <li>Runoff from buildings, scrap metals and development within 1:50 yr floodlines</li> <li>Natalspruit has poor water quality and high conservation value</li> <li>Hennopsrivier and Centurion Lake polluted by Tembisa</li> </ul>	<ul style="list-style-type: none"> <li>Revision and enforcement of municipal by-laws</li> <li>As boreholes are the main source of water in this area and so bulk services need to be provided</li> </ul>
Degraded catchments	<ul style="list-style-type: none"> <li>The Kaalspruit catchment is degraded and needs to be rehabilitated</li> </ul>	<ul style="list-style-type: none"> <li>Rehabilitation programme</li> </ul>
High water consumption	<ul style="list-style-type: none"> <li>EMM has no plan in place to reduce water consumption</li> <li>Urban greening and food gardening affected by less and expensive water</li> <li>High density of alien invasive trees in mining areas resulting in drainage of wetlands</li> </ul>	<ul style="list-style-type: none"> <li>Alien management programme needed with attention to the conservation, recreation and tourism areas</li> </ul>
Increased stormwater runoff	<ul style="list-style-type: none"> <li>Building and development within 1:50 yr floodlines increasing flood hazards</li> </ul>	<ul style="list-style-type: none"> <li>Flood hazard assessment study required</li> </ul>
Groundwater infiltration	<ul style="list-style-type: none"> <li>Rising of the water table resulting in sinkhole development – mines lack the capacity to continue pumping</li> </ul>	
<b>ATMOSPHERE</b>		
Air pollution	<ul style="list-style-type: none"> <li>Increased air pollution due to rapid increase of motor vehicles, veldfires and cigarette smoking</li> <li>Air pollution from informal settlements using coal for heating and</li> </ul>	<ul style="list-style-type: none"> <li>Improved law enforcement with regards to unroadworthy vehicles</li> </ul>

ISSUE	DESCRIPTION OF THE ISSUE	PROPOSED ACTIONS/RESPONSES
Noise pollution	cooking <ul style="list-style-type: none"> <li>JIA is causing noise pollution in the surrounding residential areas especially Kempton Park – proposed residential developments here</li> <li>Increased noise pollution from highways</li> <li>Concern regarding the proposed agricultural village in the vicinity of the Sentrarand Shunting yard - Ambient noise levels may exceed levels permitted by Gauteng Noise Control Regulations</li> </ul>	<ul style="list-style-type: none"> <li>Change flight paths, conduct thorough planning exercises considering relevant environmental legislation</li> </ul>
<b>ECOSYSTEMS AND BIODIVERSITY</b>		
Degraded sensitive areas and wetlands	<ul style="list-style-type: none"> <li>Existing and proposed location of activities within sensitive areas (unhealthy areas, riverine areas, wetlands)</li> <li>Degradation of wetlands and water bodies due to mining, informal settlements – e.g. Bullfrog and Sandpan and other riparian areas being dammed and altered</li> <li>High density of alien invasive trees in mining areas resulting in drainage of wetlands</li> <li>Urban flood plains need to be rehabilitated</li> <li>Other riparian areas are degraded e.g. Natalspruit, Swartspruit and Juksei river</li> </ul>	
Degradation of Meyersdal Ridge	<ul style="list-style-type: none"> <li>Meyersdal ridge is being degraded by locals – hunting of small mammals and ground birds using traps and dogs, removal of red data flora, demolishing of archaeological sites</li> </ul>	<ul style="list-style-type: none"> <li>A method for its sustainable utilisation needs to be established for its preservation</li> </ul>
Mine water	<ul style="list-style-type: none"> <li>Impact of mine water especially on riparian habitat</li> </ul>	
<b>ENVIRONMENTAL MANAGEMENT AND GOVERNANCE</b>		
Waste management	<ul style="list-style-type: none"> <li>Lack of waste management</li> <li>Slow pollution spill response/monitoring</li> <li>No recycling except for Mondi</li> <li>Illegal landfills, incinerators and low number of recycling stations</li> </ul>	<ul style="list-style-type: none"> <li>More education and awareness</li> <li>Enforcement of legislation for recycling</li> <li>Establishment of an environmental law enforcement section</li> <li>Hotline for environmental matters</li> </ul>
Governance	<ul style="list-style-type: none"> <li>Co-operative governance between various spheres of government is needed urgently, specifically related to mining</li> <li>NEMA principles have not been considered in development planning (IDP and SDF)</li> <li>Lack of knowledge of legislation by officials</li> </ul>	<ul style="list-style-type: none"> <li>Change of mindset</li> <li>Need to consider NEMA and other environmental legislation and principles thereof in the IDP, and all development planning</li> </ul>

ISSUE	DESCRIPTION OF THE ISSUE	PROPOSED ACTIONS/RESPONSES
	<ul style="list-style-type: none"> <li>• Lack of capacity within EMM</li> <li>• Multiple jurisdiction amongst many levels of authority, leading to fragmentation and lack of accountability</li> <li>• No effective IDP implementation and environmental plans</li> </ul>	
Community awareness	<ul style="list-style-type: none"> <li>• Ineffective public participation</li> <li>• There is poor communication from EMM to communities</li> <li>• No EMM environmental forum</li> </ul>	<ul style="list-style-type: none"> <li>• Production of an EMM newsletter</li> </ul>

### 3.2.3.2 Data gathering

As SoE reporting is a tool to compile, assess and disseminate information and identify gaps, data gathering is an important component. In the EMM, due to its recent formulation, data is fragmented and scarce, and so a data identification and collation exercise was undertaken. A review of indicators used worldwide for SoE and other reporting initiatives was conducted in terms of which indicators would be suitable for use in the EMM. These were based partly on the issues identified in the issues identification process, and the need to present a comprehensive description of the environment. We then attempted to source data for these identified indicators from various organisations within and external to the EMM. The reliance on existing data sets and information is a primary limitation of this study, such that data availability has been the dominant influence on the actual indicators reported on (see below). An important outcome of this study is to identify the data gaps and make recommendations for the most cost effective indicators and data for succeeding updates of the SoER. Metadata for used spatial data sets is provided in Appendix D.

### 3.2.3.3 Indicator selection

#### 3.2.3.3.1 Background to indicators

The word “indicate” is defined as “to make known” or “to point out” (Allen 1984), and an indicator is therefore an entity that gives information about something. Common examples are:

- Temperature and rainfall are indicators of weather conditions;
- Body temperature is an indicator of health;
- Gross Domestic Product (GDP) is an economic indicator; and
- The Dow Jones Sustainability World Indexes are indicators of financial performance of sustainability-driven companies.

In terms of SoE reporting, indicators are simple measurements that are used to communicate specific information regarding the environment and progress towards sustainable development to the public and decision makers. In this context, SoE indicators are used to describe all components of the environment as depicted in Figure 3.3. Indicators serve the following purposes:

- Indicators provide simplified information to stakeholders;
- They act as a means to monitor and assess conditions and trends;
- They allow temporal and spatial comparisons to be made;
- They assess progress towards sustainable development relative to benchmarks and goals;
- They assess effectiveness of legislation, policy and projects;
- They track changes in public attitude and behaviour; and
- They provide early warning information.

The limitations of the use of indicators involve the reliability and accuracy of the data being used, and the interpretation thereof (DEAT 2002). Indicators, to be useful, should therefore:

- Have an agreed, scientifically sound meaning;

- Represent an issue important to society;
- Be easily understood;
- Have a sound and practical measurement process;
- Help focus information to answer important questions;
- Assist decision-making by being effective and cost-efficient to use;
- Provide a representative picture of environmental conditions, pressures and society's responses;
- Be responsive to change;
- Be able to show trends over time; and
- Provide a basis for comparisons with other areas, and at other scales.

### 3.2.3.3.2 Indicators in Ekurhuleni

As this is the Year One SoE report for the EMM, the report functions to provide an extensive description and establish the baseline conditions of the environment in the EMM. Less emphasis has been placed on using a defined set of indicators, as would have been the case for a follow-up report. This said, the selection process, which is shown in Figure 3.4, was based on the following:

- An analysis of previous international and national, provincial and local reporting initiatives was undertaken. A list of indicators for each theme (themes were taken from the core set of National indicators) was compiled from these documents, and as far as possible, the same indicators, appropriate for local level reporting, were selected. The compiled list is presented in Appendix E.
- Consideration of issues of international, national, provincial and local importance was taken.

Recommendations of indicators for use in the Year Two report are made for each theme. The Year Two report will need to incorporate a more extensive indicator selection process, and will need to be incorporated with the current indicator development process for the EMM IDP. The core set of local environmental indicators will be complete by Year Two, and these will need to be taken into account.

### 3.2.4 References

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