MAPS

Annexure A	–	Locality map
Annexure B	–	Infrastructure map
Annexure C	–	Mining / mineral potential map
Annexure D	–	Soil Potential map
Annexure E	–	Drainage map
Annexure F	–	Map of veldt types
Annexure G	–	Sensitivity map
Annexure H	–	Environmental assessment process(es) required for IDP projects
Annexure I	–	Environmental Management Plan (EMP) for construction projects

GLOSSARY OF TERMS

- *Activities of local authorities:* The activities of local authorities can be divided into the following broad categories:

  - Governance (including environmentally related legislative and executive functions),
  - Rendering of services (including a development function),
  - Environmental conservation (including the natural, social and cultural environments), and
  - Own activities (such as administrative functions, human resources management, financial services, and others).

- *Development:* The act of altering or modifying resources in order to obtain potential benefits.

- *Desertification:* Described desert formation or expansion which occurs as a result of climate change, poor land use (e.g. overgrazing and intensive farming of arid land), repeated burning of natural vegetation, aggressive removal of trees or a combination of all these factors, together with other influences.

- *Endemics:* Plant or animal species that occur only in one very specific geographic area and nowhere else on earth. If these species are endangered, they should be consider as a conservation priority as they cannot be reintroduced from somewhere else once they have disappeared.

- *Environment:* Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation (ISO 14001: 1996).

- *Environmental Aspect:* Element of an organization's activities, products or services that can interact with the environment.

- *Environmental Health:* Factors of human health that are determined or affected by environmental influences. Typical environmental health concerns would be the health related aspects of water and air pollution, drinking water quality, sanitation, waste disposal, food quality and the presence of harmful chemicals.

- *Environmental Impact:* The degree of change in an environment resulting from the effect of an activity on the environment, whether desirable or undesirable. Impacts may be the direct consequence of an organsation's activities or may be indirectly caused by them.

- *Environmental Impact Assessment:* A process of examining the environmental effects of development.

- *Environmental Issue:* A concern felt by one or more parties about some existing, potential or perceived environmental impact.

- *Environmental Management System:* That part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.

- *Environmental Performance:* A measurable result of the environment management system, related to an organisaton's control of its environmental aspects, based on its environmental policy, objectives and targets.

- *Environmental Policy:* Statement by an organization of its intention and principles in relation to its overall environmental performance which provides a framework for action and the setting of its environmental objectives and targets.

- *Integrated Development Plan:* The principal strategic planning instrument which guides and informs all planning and development and all decisions with regard to planning, management and development in the municipality

- *Integrated Environmental Programme:* A programme with the purpose of contributing to a healthy environment by ensuring that urgent environmental issues are adequate addressed (in the IDP of a municipality) and that envisaged projects have no negative impact on the natural environment.

- *Issue clusters:* Impacts grouped into the following main categories; economic development and poverty; training, education and social facilities; health; safety and security; sport and recreation; transport; internal capacity of local authorities; rural settlements; housing; environment; infrastructure; land development and management and projects.

- *Key environmental aspect:* An “environmental aspect” is defined as an “element of an organisation’s activities, products or services that can interact with the environment”. A “significant environmental aspect” is an environmental aspect that has, or can have a significant environmental impact (i.e. bring about a change to the environment, either adverse or beneficial, resulting from an organisation’s activities, products or services).

- *Significant Impact:* An impact that, by its magnitude, duration or intensity alters and important aspect of the environment.

- *Sustainable Development:* Development which seeks to integrate environmental, social and economic concerns, now and in the future, and to keep within the carrying capacity. In the context of this study, the focus is to ensure that environmental sustainability, health and safety are not compromised, and that natural and cultural resources are not endangered. Sustainable development must ensure that the direction of investment, the orientation of technological developments and institutional mechanisms works together towards the goal of sustainable use of environmental resources in a way and at a rate that will meet present and future needs.

ABBREVIATIONS

DEAT- Department of Environmental Affairs and Tourism
DWAF- Department of Water Affairs and Forestry
EAP - Environmental Assessment Practitioner
EMS - Environmental Management System
EMF - Environmental Management Framework
EIP - Provincial Environmental Implementation Plan
ICLEI - International Council for Local Environmental Initiatives
IEM - Integrated Environmental Management
IEP - Integrated Environmental Programme
LA21 - Local Agenda 21
LDO - Land Development Objectives
NEMA - National Environmental Management Act
RHP - River Health Programme

1. INTRODUCTION

During 2008 the Molemole Local Municipality expressed the need for the development of an Integrated Environmental Management Plan & Framework (IEMP&F).

Typically a municipality's Integrated Environmental Management Plan forms part of the IDP. It furthermore provides a municipality with a decision support tool to evaluate the outcomes of the IDP Process in terms of its environmental implications.

All Local Authorities are required to formulate an Integrated Environmental Programme to ensure that environmental considerations are truly integrated with the outcomes of the IDP process (Chapter 5 of the Local Government: Municipal Systems Act (32/2000).

It is imperative that the Molemole Municipality has access to sufficient environmental information to allow for strategic and project level development planning. The IEP contributes towards sustainability and a healthy environment by ensuring the following;

- that strategic environmental issues are identified and that potential environmental requirements for future projects are taken into account during decision-making;
- that opportunities and limitations presented by the environment of a region it taken into account and that assessment current and planned activities from a regional perspective is under taken; and
- that a tool is provided to planners and managers that can be used to optimize all development strategies as far as environmental requirements are concerned.

2. GOALS AND OBJECTIVES OF THE STUDY

2.1 INTRODUCTION

In the past, several development plans ranging from structure plans and regional plans to Land Development Objectives have been formulated for municipal areas. However, almost all of these plans gave little consideration to the environment during their compilation. These plans did not consider;

- Public participation and inputs,
- Co-governance,
- Inputs from different departments in a municipality,

- Issues relating to environmental sustainability,
- Economic sustainability, etc.

With the formulating of the IDP a new dispensation was set in motion. An IDP is a workable planning document and should ideally also be a strategic planning instrument, which guides and informs all planning, budgeting, management and decision-making within a municipality. With the Integrated Environmental Management Plan & Framework (IEMP&F) as part of the IDP process, the environment is now also actively made part of the planning process.

2.2 PURPOSE OF THIS STUDY

The main purpose of the IEMP&F is to improve planning decisions by bringing environmental opportunities (assets) and constraints (problems and threats) into development planning at a regional and local level. Ideally it should be used during the early stages of development planning, before decisions about specific projects are made, with the purpose of influencing such decisions. Ongoing (current) activities, plans and potential projects are assessed by how they may cumulatively affect the ecology and human living conditions within the study area).

Perhaps the most important purpose of an IEMP&F is to analyze the environmental costs and benefits of major alternative strategy and development options and to recommend a course of action that will best achieve environmental sustainability.

Therefor, IEMP&F's offer opportunities for more comprehensive and realistic assessment of project alternatives and can help eliminate, at an early stage, those projects that might generate particularly adverse environmental impacts.

It is the ideal that the IEMP&F should be implemented in conjunction with a municipal wide development plan (e.g. the IDP), as it will help shape project priorities and activities at an early stage.

2.3 OBJECTIVES

The most important objective of the IEMP&F is to influence evolving strategies or plans (including projects) whilst having the environment as its main focus.

Other IEMP&F objectives include;

- to analyse the environmental costs and benefits of major alternative strategy and development options and recommends a course of action that will best achieve environmental sustainability.
- to assess current activities, plans and potential projects by how they may affect the ecology and human living conditions within the study area.
- to conduct a concise cumulative impact assessment of multiple projects and activities that are current, planned, or expected.
- to evaluate the environmental legal framework and to identify legal gaps.

The IEMP&F can be used in a proactive manner as a development planning tool by the municipality when taking decisions regarding development within the following issue clusters namely:

- economic development and poverty;
- training, education and social facilities;
- health;
- safety and security;
- sport and recreation;
- internal capacity of local authorities;
- rural settlements;
- housing;
- infrastructure;
- transport;
- land development and management, and
- environment.

2.4 PUBLIC CONSULTATION

The public participation process that will be followed as part of the process of compiling the IEMP&F will enable stakeholders as well as the general public to comment on and provide inputs into the study.

Written inputs received from stakeholders/interested/affected parties will be worked into the final document and also be attached as an Appendix to the final version of this document.

2.5 REVIEW PROCESS

As the municipality's IDP is updated annually, it is recommended that the IEMP&F should also be reviewed during the IDP review process (especially as new priorities & projects/interventions are identified).

2.6 CONCLUSION

Effectively used, this IEMP&F can provide a number of benefits, namely:

- It can eliminate decisions that might be environmentally harmful;
- It can assist the local authority in forming a long-term view of regional planning and to increase the transparency of the planning process (that it shows the reasoning behind development plans);
- It can provide a basis of environment legal framework relevant to the region;
- It collects and organises regional environmental data and in the process, identifies data gaps and needs at an early stage;
- It allows for comprehensive planning of region-wide environmental management and monitoring, and identifies broad institutional, resource and technological needs at an early stage;
- It provides a basis for collaboration and coordination across administrative boundaries and between sector-specific authorities and helps avoid contradictions in policy and planning while enhancing efficiencies; and
- It recommends criteria for environmental screening, analysis and review of proposed projects and setting standards and guidelines for project implementation.

3. STRATEGIC ENVIRONMENTAL GUIDELINES

The IDP Guide Packs require that IDP strategies take cognisance of certain key strategic environmental guidelines such as Agenda 21, NEMA Chapter 1 Principles and the relevant Provincial Environmental Implementation Plan (EIP). This section provides a short overview of the relevant Strategic Environmental Guidelines that has given direction to the environmental management in recent times.

3.1 LOCAL AGENDA 21

To achieve sustainable development, emphasis at local level is essential. The International Earth Summit held in Rio de Janeiro during 1992 highlighted the fact that no progress towards sustainable development will be achieved unless there is action at local level. Local Agenda 21 emerged as a product of the Summit. The slogan of ‘think globally act locally’ was accepted at this summit.

Since 1992 there have been numerous initiatives aimed at getting local authorities to become more environmentally conscious. South Africa was a signatory to the Rio Declaration and is therefore obliged to ensure that the spirit of Local Agenda 21 is pursued.

As part of the reconstruction and development process in South Africa, the nation's three largest cities (Johannesburg, Cape Town and the Durban Metropolitan Area) all initiated Local Agenda 21 programmes during 1994/1995 in compliance with the Local Agenda 21 mandate.

These early programmes catalysed a broad range of activity throughout the country resulting in other towns and cities such as Kimberly, Port Elizabeth, East London, Pretoria and Pietermaritzburg initiating their own Local Agenda 21 programmes.

At the provincial level, provinces such as KwaZulu-Natal and the Northern Province initiated provincial campaigns to encourage broadscale local authority involvement in Local Agenda 21 initiatives. In 1998, a National Local Agenda 21 Programme was launched by the Department of Envrionmental Affairs and Tourism in order to support, co-ordinate and network activities throughout the country.

What this means to South African municipalities is that they must;

- manage and improve their environmental performance,
- integrate sustainable development aims into the local authority’s policies and activities, and
- educate and raise awareness amongst its communities.

Chapter 28 of Agenda 21 requires local government to produce a "Local" Agenda 21 (LA21) and thus to make their contribution to Agenda 21. By doing this they limit their impact on the environment and in doing so, contribute to global sustainable development.

LA21 sets out the guidelines and actions that need to be undertaken in line with the set of principles that were agreed upon in the Rio Declaration.

Local Agenda 21 (LA21) is the guiding action plan for moving development towards sustainability and represents the community based (and therefore political) process for agreeing on guidelines, objectives and measures for sustainable development at local level (United Nations Environmental Programme, 2001: Chapter 4, p.5 of 13). Local Agenda 21 states that municipal environmental management consists of three dimensions namely:

- The community dimension
- The political dimension, and
- The administrative dimension.

These dimensions of local government impact on the ability of local authorities to bring about (execute) environmental management (United National Environmental Programme, 2001: Chapter 4, p.5 of 13).

As this will assist the reader in understanding the different forces (dimensions) within local authorities that impact on their ability (and success or failure) to set up and execute an environmental management system in a local authority, the writer will shortly allude to these three dimensions hereunder.

a) The community dimension

Local Agenda 21 is the result of consultation between the community, stakeholders and the local authority and should represent the wishes of the informed public as well as the knowledge of the local administration and stakeholders. It should therefor reflect the view of the public and how they would like to see their community develop (United Nations Environmental Programme, 2001:Chapter 4, p.5 of 13). It can therefor be said that LA21 is a guideline for the local community regarding its sustainable development.

It is formed through a public consultation process and should result in an action plan for local development.

b) The political dimension

The political dimension of environmental management (as advocated by LA21) aims at the inclusion of politicians and the interaction of administration and the municipal Council at all stages of environmental management. Typically political targets are set, which then become the responsibility of the “administrative component” to implement measures to achieve these targets (United Nations Environmental Programme, 2001:Chapter 5, p.3 of 18).

The involvement and commitment of democratically elected politicians and political committees is vital to the success of environmental management within a local authority. When targets, programmes and projects are agreed and legitimised by the municipal Council, these provide orientation for the day to day environmentally responsible behaviour (United Nations Environmental Programme, 2001:Chapter 5, p.3 of 18).

Top management needs to play a role in the following areas namely;

- visible commitment,
- sufficient allocation of resources,
- introduction and sustaining of change,
- displaying leadership,
- ensuring continual improvement.

(United Nations Environmental Programme, 2001:Chapter 8, p.3 of 17).

Without the commitment and leadership of top management, an environmental management will not succeed (or produce notable results). Those who are responsible for environmental management have to ensure that top management;

- understands what is required from them,
- is prepared to commit to the process, and
- show leadership.

The local authority needs to commit resources for performing environmental management functions - the following resources are needed;

- Human resources with specialised skills,
- Time,
- Finances, and
- Technological resources.

c) The administrative dimension

"Public management" refers to the central management of local authorities. It deals with the administrative structure, the organising of its work and the internal relationships within and between departments, and between departments and political bodies. It deals with the way in

which local authorities generate performance and services for the community. It also has the function of keeping operations within the boundaries of the financial budget (UNEP, Chapter 6, p.6 of 12). Public management is the way tasks are fulfilled and services are provided by the local authority.

Within public management there must be a relationship and communication between,

- the political component and the administrative component,
- between the administrative component and citizens, as well as
- within and between departments (UNEP, Chapter 6, p.3 of 12).

Generally there is an international shift in environmental governance, from a command and control approach, towards an innovative hybridisation of multiple (environmental management) instruments. According to the United Nations Environmental Programme (UNEP, Chapter 6, p.3 of 12), an integrated environmental management system can aid this integrated use of policy and instruments at the local level.

3.2 NEMA CHAPTER 1 PRINCIPLES

The National Environmental Management Act (107 of 1998) was promulgated in order to provide for co-operative environmental governance by establishing principles for decision making on matters affecting:

- the environment,
- institutions that will promote co-operative governance, and
- procedures for co-ordinating environmental functions exercised by organs of state.

The principles of NEMA apply to all actions of organs of state that may significantly affect the environment – in short, the broad overarching principles entail, amongst others, the following and need to be incorporated in decision-making on environmental strategies;

- Development must be socially, environmentally and economically sustainable.
- People's needs and interests must be placed first and their physical, psychological, developmental, cultural and social interests must be equitably served.
- Consider all relevant actions for sustainable development (e.g. avoid pollution, conserve natural heritage)
- The best practicable environmental option must be pursued i.e. the best environmental option with the finance available

The National Environment Management Principles as contained in Section 2 of the National Environmental Management Act, Act 107 of 1998 consist of a number of themes. To each of these themes a number of principles apply – these are listed below in Table 1.

TABLE 1: THEMES AND PRINCIPLES OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998)

THEMES	NEMA PRINCIPLES
Sustainable development	• Development must be socially, environmentally and economically sustainable.
	• Pollution and degradation of the environment are avoided or where they cannot be altogether avoided, are minimised and remedied.
	• Waste is avoided, or where they cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner.
	• The use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource.
	• The development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised.
Environmental Justice and Equity	• Environmental management must place people and their needs at the forefront of its concern and serve their physical, psychological, developmental, cultural and social interest equitably.
	• The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.
	• The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's commen heritage.
	• Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.
	• Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.
	• Negative impacts on the environment and on peoples environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.
Participation, Empowerment & Transparency	• The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged peoples must be ensured.
	• Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.
	• Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.
	• Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.
	• The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.

t.p.o./. . . .

Cooperative Governance	• There must be inter governmental co-ordinance and policies legislation and actions relating to the government
	• Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures
	• Global and international responsibilities relating to the environment must be discharged in the national interest.
Ecological Integrity	• The disturbance of the ecosystem and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied.
	• The disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied.
	• The development, use and exploitation of renewable resources and the ecosystem of which they are part do not exceed the level beyond which their integrity are jeopardised.
	• Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, wetlands and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.
Integration of environmental considerations into decision-making	• Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environmental and all people in the environment by pursing the selection of the practicable environmental option.
	• Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.
	• The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.
	• A risk-averse and cautious approach is applied, which takes info account the limits of current knowledge about the consequences of decisions and actions.
	• The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.
	• Negative impacts on the environment and on peoples environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

(National Environmental Management Act, 1998)

3.3 PROVINCIAL ENVIRONMENTAL IMPLEMENTATION PLAN (EIP)

Section 16 of NEMA clearly states that the outcomes of the local IDPs should be in line with the Provincial EIP (which aims to develop a long term sustainable development policy, legislative and planning framework for the province), therefore the EIP for Limpopo Province should be taken into cognisance.

The output of the EIP should result in the alignment of policy, legislation, plans, programmes and decision making and thus, more effective and integrated co-operative governance of environmental management functions.

The Provincial Sustainable Development Framework is based on the national strategic vision of sustainable growth, which is, according to the Centre for Environmental Management, Potchefstroom University, supported by six strategic pillars that are all structured around a common resource base. The six strategic service pillars are (see Table 2 below);

- Economic,
- Physical,
- Social,
- Protective
- Human resource development, and
- Governance

TABLE 2: NATIONAL STRATEGIC SUSTAINABLE DEVELOPMENT PILLARS

NATIONAL STRATEGIC VISION OF SUSTAINABLE GROWTH PER ANNUM OF AT LEAST 6% BY 2020					
ECONOMIC DEVELOPMENT		**COMMUNITY DEVELOPMENT**		**GOVERNANCE**	
Pillar 1	Pillar 2	Pillar 3	Pillar 4	Pillar 5	Pillar 6
Economic Services	Physical Services	Social Services	Human Resource Development	Protective Services	Governance Services
Mining Agriculture Forestry Fisheries Manufacturing Commerce Tourism Financial Support Transport	Water Energy Sanitation Construction Postal Communication Municipal	Health Social Welfare Poverty	Education Training Arts & Culture Sport Recreation Religion	Police Judiciary Correctional Services Security Defence	International Multi-nationals Public Services Professional Academic Business Labour Community Based
NATIONAL RESOURCE BASE FOR SUSTAINABLE DEVELOPMENT (natural , human, capital, & knowledge)					

(Centre for Environmental Management, Potchefstroom University, Date unkown)

The provincial EIP calls for the formulation of a synchronised Framework Plan to guide and lead the provincial sector, spatial and organisation plans, programmes, budgets and projects. A monitoring and evaluation system must also be designed that will allow flexibility and review. The IEP for the Municipality should take cognisance of the Limpopo EIP and should ensure that the specific regional issues affecting the local municipality are incorporated and addressed by the provincial framework and that the Integrated Environmental Programme support (is not in conflict with), the provincial EIP.

3.4 OTHER GUIDELINES

Other strategic environmental guidelines include the following

- At international level the “Caring for the earth” principles launched in partnership by the World Conservation Union, the United Nations Environment Programme and the World Wide Fund for Nature should be considered. Nine principles for building a sustainable society have been proposed by the “Caring for the Earth”.

- At national level cognisance should also be taken of the Chapter 1 Principles contained in the Development Facilitation Act, (Act 67 of 1995) since the IDP outcomes will largely be evaluated against these principles.

- South Africa, as a responsible member of the international community, is a signatory to a variety of international agreements and conventions. Conventions are an important source of legislation as a result of an increasing need of cooperation across international borders.

- An agreement must first be effective before it can be binding, therefore no country is bound by the terms of such an agreement before it gave consent to become a party of such an agreement (normally by signing or ratification). Normally there is a condition that an agreement must be signed by a certain number of parties before it is effective.

- Applicable environmental conventions are listed below along with a short description:

  - Convention on Biological Diversity - to effect international cooperation in the conservation of biological diversity and to promote sustainable use of living resources.

  - Convention on Wetlands of International Importance especially as Water Fowl Habitat (Ramsar Convention) - to stem the loss, and to promote the wise use of all wetlands.

  - Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) - the protection of endangered species and the economic use of species, monitoring the status of species and control of illegal trade.

  - World Heritage Convention - the protection of the world's cultural and natural heritage.

- Convention on Migratory Species of Wild Animals (Bonn Convention) - the conservation of animals (terrestrial animals, reptiles, marine species and birds) that migrate across borders. Special attention is paid to endangered species.

- Man in the Biosphere Programme (Biosphere Reserves) - A typical biosphere reserve consists of three main zones (a core area, a buffer zone and a transitional area). The biosphere reserve concept forms part of UNESCO's programme that aims to provide a scientific basis for regional land use and land management.

- Convention on Desertification - to combat desertification in those countries experiencing serious drought and/or desertification, particularly in Africa.

- Protocol for the Protection of the Ozone Layer (Montreal Protocol) -aimed at ensuring measures to protect the ozone layer.

- Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposals (Basel Convention) - aimed at a reduction in the production of hazardous waste and the restriction of transboundary movement and disposal of such waste.

- Framework Convention on Climate Change (Kyoto Protocol) - addresses the threat of global climate change by urging government to reduce sources of greenhouse gasses.

- Lusaka Agreement – aims at the cooperative enforcement operations directed at illegal trade in wild fauna and flora.

4. LEGAL FRAMEWORK

The environmental responsibility and requirements of local authorities is reflected in different acts and policies. The IEMP of a municipality should ensure that the local authority adheres to its environmental responsibilities and requirements in terms of the following:

- Acts and policies.
- Requirements as stipulated by the IDP Guide Packs
- Requirements for evaluation of IDP's in terms of DEAT and Provincial requirements, e.g. "Indicators to ensure IDP compliance with Environmental Requirements" (2001/2002 Limpopo Province).

4.1 ACTS AND POLICIES

4.1.1 Local Government Municipal System Act

Chapter 5 of the Local Government: Municipal Systems Act (32/2000) requires all municipalities to adopt a single strategic plan for the development of their areas of jurisdiction – these plans are termed "Integrated Development Plans" (IDP's). The IDP is a strategic planning instrument, which guides and informs all planning, budgeting, management and decision-making in a municipality, for a five-year term. As the IDP is a legislative requirement, it has legal status and it supersedes all other plans that guide development at local government level (Department of Provincial and Local Government, guide 0: 6).

As part of the IDP various "sector plans" have to be generated e.g. water, housing, transport, environment, disaster management, waste management, AIDS, etc. During the IDP process the relevant issues per sector are identified and then translated into so-called "sector plans" during the Integration Phase of the IDP. Although environment is a specific sector plan requirement, it is evident that environmental issues are cross cutting through all other sector plans. The outcome of this report will subsequently address issues across all other sector plan boundaries.

All Local Councils are required to formulate an Integrated Environmental Programme to ensure that environmental considerations are truly integrated with the outcomes of the IDP process.

4.1.2 Other legislation

The Constitution (Act 108 of 1996) clearly sets out the responsibilities of local government with respect to sustainable development. These progressive measures indicate a commitment to sustainable development and environmental sustainability. The Constitution dictates that other laws and policies should adopt similar principles e.g;

- The Development Facilitation Act encourages "environmentally sustainable land development practices and processes".
- The Urban Development Framework has "sustainable settlements" as a key objective and specifically encourages local authorities to embark on Local Agenda 21 initiatives.
- The 1998 White Paper on Local Government sees environmental sustainability as an integral component of integrated development planning.
- The National Housing Code notes the need for low-cost housing to be designed for energy efficiency, with water conservation in mind.
- The Water Act only recognizes two guaranteed water rights – the environmental reserve and water for basic needs.

The National Environmental Management Act (NEMA) 1998 translates the policy principles of the 1997 White Paper on Environmental Management Policy into law. It is known as framework legislation, as it provides overarching principles for integrating environmental management into development activities. NEMA commits all state departments and local authorities to employ certain sustainable development principles to guide decision-making. These principles include:

- Sustainable and equitable use of natural and cultural resources.
- Development must be socially, economically and environmentally sustainable.
- Promote and facilitate public participation.
- Adopt a long-term timeframe for equity between generations.
- People and their needs are at the forefront of environmental management.
- A risk averse and cautious approach.
- Environmental justice.

It is clear that South Africa's policies and laws require integration of environmental concerns into strategic planning and decision making. In this regard the IEMP will serve as an instrument to achieve integration between environmental issues and developmental decision making.

4.2 IDP GUIDE PACK

4.2.1 Introduction

The IDP Process places great emphasis on responsible integrated development practice (which aims at sustainable outcomes). Various sector plans are required by the IDP Process to promote integrated planning. The IDP Process Guide Packs provide guidelines on the incorporation of environmental aspects into planning through the formulation of an Integrated Environmental Programme ("sector plan").

The IDP Guidelines state that integrated environmental programmes are not additional programmes besides the projects dealing with priority issues. It is intended to capture the environmental contributions from all the IDP projects in context. Thus it is a tool for mainstreaming, rather than being an add-on, of environmental issues.

The IDP Guidelines advise that integrated environmental programmes should include:

- a reference to the result of the environmental issues/priorities identified during the analysis phase;
- consideration of the localised strategic environmental guidelines;
- a statement of the projects and their activities that could significantly affect the environment;
- a description of the manner in which the municipality will ensure that its projects comply with the NEMA principles and national environmental norms and standards; and
- identification of those projects that require an EIA.

4.2.2 Integrated Development Plan vs. Integrated Environmental Programme

The IEP advocates 5 steps (all of which link to the different phases of the IDP Process);

- The ***first step*** entails the evaluation of environmental issues identified during Phase 1 of the IDP Process in terms of specialist review and input, procedural fit as well as legal conformance.
- The ***second step*** is to evaluate proposed IDP strategies in terms of their conformance to identified issues (Step1), conformance to overarching policy as well as legal and other strategic environmental guidelines such as:
  - Agenda 21
  - National Environmental Management Act Chapter 1 Principles

- Provincial Environmental Management Plan and Environmental Integrated Plan, and
- others.

- ***Step three*** involves the evaluation of identified projects for conformance to defined and proposed IDP strategies, their relevance and completeness as well as compliance to legal requirements.
- ***Step four*** involves the generation of an IEP status report that defines conformance and improvement opportunities for the Municipality's IDP Process.
- ***Step five*** culminates in the generation of an environmental performance assessment roadmap that will ensure that all the subsequent reviews of the IDP and IEP are in conformance to environmental parameters.

TABLE 3: IEP REQUIREMENTS IN TERMS OF THE IDP PROCESS

PHASE	**PHASE 1: ANALYSIS** "Being aware of environmental problems and threats" **ENVIRONMENTAL ANALYSIS** (PLANNING ACTIVITY: 1/4B)	**PHASE 2: STRATEGIES** "Local development in harmony with natural environment" **LOCALISED STRATEGIC ENVIRONMENTAL GUIDELINES** (PLANNING ACTIVITY: 2/3C)	**PHASE 4: INTEGRATION** "Cross-checking the overall environmental impact" **INTEGRATED ENVIRONMENTAL PROGRAMME** (PLANNING ACTIVITY: 4/10)
PURPOSE	To ensure that municipal development strategies & projects take cognizance of: • Existing environmental problems & threats; and • Environmental assets (which require protection or controlled management) into consideration.	To ensure that Chapter 1 Principles of the National Environmental Management Act of 1998 are applied when: • Strategies are designed; and • Projects planned.	To contribute to a healthy environment by ensuring that: • Urgent environmental issues are addressed; and • Envisaged projects have no negative impacts on the natural environment.
MINIMUM OUTPUT REQUIREMENTS	• A list of major existing environmental problems (with short description of each). • A list of major environmental threats & risks	A concise document that demonstrates the application of the NEMA- & Local Agenda 21 principles	A summary statement that includes: • A short reference to the results of the environmental issues identified in the Analysis Phase; • Consideration of the Strategic Guidelines on the Environment (2/3); • A statement of the projects and their activities that significantly effect the environment; • Description of the manner in which the municipality will ensure that its projects comply with the NEMA principles & the national environmental norms & standards; and • Identification of those projects that require an EIA.

* Phase 3 of the IDP Process does not indicate any specific environmental requirements and thus is not listed

5. STATUS QUO REGARDING THE ENVIRONMENT & ENVIRONMENTAL ISSUES

This section provides an overview of the general environmental attributes of the study area (i.e. the biophysical environment). Where applicable environmental issues (*Environmental Issue: A concern felt by one or more parties about some existing, potential or perceived environmental impact)*, are noted.

5.1 THE STUDY AREA

Molemole Local Municipality is located directly north of Polokwane (Limpopo Province). It is one of the five local municipalities that falls under Capricorn District which are Molemole, Aganang, Blouberg, Polokwane and Lepelle-Nkumpi. The N1 road which links Limpopo Province to Zimbabwe passes through the municipality area.

See Annexure A – Locality map.

The municipality consists of 13 wards. The Molemole Local Municipality comprise of 37 settlements which is located in a fragmented pattern throughout the area. The spatial pattern displays certain characteristics namely:

- The central area of the Municipal area is sparsely populated with no major settlements.
- The eastern sector of the Municipal area is characterized by 2 (two) major settlement areas, namely a) the Botlokwa area, which is located along the N1 between Polokwane and Makhado and, b) the Morebeng node which is located along the R36, between the N1 and Tzaneen. Between the Morebeng- and Botlokwa urban concentrations, the settlement area of Mokomene and Eisleben is located.
- The western section of the study area is characterized by the urban settlement areas of Mogwadi (Dendron) along the R521 Road between Polokwane and Alldays. Further eastwards there are a number of smaller fragmented settlements (Sakoleng, Ga-Manthata, Ga-Madikana, Mohodi, Wurthsdorp, etc).

5.2 PHYSIOGRAPHIC REGIONS

The main physiographic regions in the Capricorn District Municipality area are:

- the Great Escarpment
- the Transvaal Plateau Basin with the following sub regions a) the Waterberg Plateau, and b) the Pietersburg Plain
- the Basin floor
- the Limpopo-Sabi Depression
- the Eastern Plateau Slope (Lowveld marginal to the plateau).

The Molemole municipality predominantly lies within the Transvaal Plateau Basin (*Pietersburg Plain)* physiographic region.

The Pietersburg Plain lies to the south of the Soutpansberg and to the east of the Waterberg plateau. The Pietersburg Plain is almost entirely a granite surface, similar in rock structure to the greater part of the Limpopo valley and the eastern Lowveld. It is separated from these areas, however, by the Waterberg features on the west and north and by the Great Escarpment on the east. The highest part is in the southern portion at the watershed between the Sand and Olifants River Systems, and lowest part is in the north where the Sand River cuts through the Soutpansberg, and where the Brak River flows through the great faulted gap between the Blouberg and Soutpansberg. Thus there are differences in height of nearly 1040m (Snell's Kop in the Woodbush over 1890m and Sand River Poort about 850m), but the surface declines gently to the north and few prominences break the even character of the surface.

The southern portion of the plain is highveld in nature and, largely on account of its higher rainfall and lower temperatures, is the best farming land of the plain. Even so, Polokwane has a rainfall of only about 508mm and the whole area suffers from its surface aspect, given by the down-slope to the north and west. This produces a rain-shadow effect, which condemns the greater part of the plain to a rainfall of less than 380mm. In the absence of rivers large enough to form important storage dams the plain is therefore suited for cultivation only in the southern portion, and even as pasture land the rest of the area is climatically handicapped.

5.3 TERRAIN MORPHOLOGY

The broad terrain morphological units/divisions of an area can typically be divided into the following morphological categories:

- Plains
- Plains and hills
- Lowlands with mountains

- Hills
- Low mountains
- High mountains

Plains and hills occur in the northern parts of the Capricorn District. Plains stretch Northwards from Blouberg mountain up to Alldays, and east of My Darling and north of Kalkbank up to Vivo. Moderately undulating plains is found at (Morebeng) Soekmekaar (in the eastern part of the Molemole municipality area). Slightly undulating plains is found at Mogwadi (Dendron) & Mara.

The terrain of the municipal area ranges in altitude from approximately 1300 m.a.s.l. to about 900 m.a.s.l.

5.4 GEOLOGY & SOILS

5.4.1 GEOLOGY

A large area of the Capricorn District Municipality area is covered by metamorphic rock. Metamorphic alteration of rocks is brought about by excessive heat and pressure, and by chemical changes resulting from the action of hot gases or liquids passing through the rock.

As such, metamorphism tends to be associated with igneous activity, since the intrusion of magma into the crust clearly results in considerable changes in the surrounding environment. The magma exerts a pressure upon the adjacent rock, it heats it and volatile substances escaping from the magma permeate the surrounding material. It is apparent that in many instances all three processes may operate together, and they may affect rocks over a large area.

Gneiss covers a big part of the Molemole municipality area. It stretches from north-west of Bandelierkop to the western side of Polokwane. The specific gneiss occurring in the study area covers a vast region from Pietersburg in the south to the Soutpansberg Mountain in the north, and is known as the Houtrivier Gneiss. These rocks are essentially granitic in composition and are typically medium to coarse-grained. Coarse-grained pegmatite veins are developed in places. The variation in mineralogical composition, textures and structures within the gneiss, causes the Houtriver Gneiss to vary from a solid, homogeneous granitic rock to a coarse-grained, highly weathered rock in places.

See Annexure C - Mining / mineral potential map.

The western part of the municipality area is underlain by basalt, and sandstone & conglomerate.

5.4.2 SOILS

5.4.2.1 Introduction

Human kind is dependant on soils – and to a certain extent good soils are dependent on human kind and the use of such soil. Soils are the natural bodies in which plants grow. It is the structural base of most terrestrial life on earth. Agriculture relies on soil as one the key inputs to production. Soils also underlies the foundations of houses and factories, they are used as beds for roads and influence the length of life of these structures.

The most important part of soil is the upper layers where the interaction between clay particles and decomposing biological matter create a nutrient base for plants. The protection of these layers is therefore important to ensure that the productive capacity of soils does not diminish over time. Erosion causes that the upper layers washes away and when this is lost there is very little to do to replace that layer. Plants are dependant on this layer for survival. No top layer – no vegetation – no grazing for cattle or game.

Soil is the product of the weathering of rocks. The type of soils that occur in the Molemole area is therefore related to the parent material, the surface character of the area in which it is deposited, climate, rainfall and hydrological systems. The soils are differentiated based on depth, the nature of diagnostic horizons and materials.

5.4.2.2 Soils occurring in the study area

Soils occurring in the study area have the following general characteristics and occur in the areas as indicated below:

- Plinthic catena: eutrophic; red soils not widespread, upland duplex and margalitic soils rare – NW P/burg, Soetdorings, Turfloop, Mara, Dendron.

- Red-yellow apedal, freely drained soils; red, high base status, > 300 mm deep – South Polokwane & Blouberg, Maleboch & Bewaarkloof & Bandelierkop Complex, Maakepansgat

- Glenrosa and/or Mispah forms, lime rare or absent – North Pietersburg, Moria, Soekmekaar areas.

5.4.2.3 Soil potential – agricultural (arable soils)

The agricultural potential of soils occurring in the study area and their location, is indicated on Annexure D - Soil Potential map.

The determination of arable soils is based on a combination of soil depth and slope angle with the broad soil group of each entry in each land type (see Table below). A land type must meet all three criteria (soil group, soil depth and slope) to qualify as arable. The classification excludes climate factors.

TABLE 4: CRITERIA FOR DETERMINING ARABLE POTENTIAL

Criterion	Arable	Marginal	Non-arable
Soil group *	1,2,3,4,5,6,12	7,8,9,10,11,13,14	15,16,17
Soil depth (mm)	≥ 500	300-500	< 300
Slope angle (%)	< 8	8 - 12	> 12

* Soil groups

1. Well drained soils with a humic topsoil horizon
2. Well drained apedal, weakly structured or red structured soils
3. Imperfectly drained apedal soils, usually plinthic
4. Well to imperfectly drained soils with an E horizon over an apedal or weakly structured horizon; also regic sand and stratified alluvium
5. Well to imperfectly drained dark clay soil; not strongly swelling
6. Well to imperfectly drained dark clay soils; strongly swelling
7. Imperfectly drained clay pan soils
8. Imperfectly to poorly drained soils, usually with an E horizon over plinthite, weathered rock or clay
9. Well to poorly drained podzols, usually sandy
10. Poorly drained dark clay soils, not strongly swelling
11. Poorly drained dark clay soils, strongly swelling
12. Well drained dark clay soils on rock
13. Well drained shallow soils on hard or weathered rock
14. Poorly drained clay pan soils
15. Wetland soils
16. Land classes (pans, erosion, dunes etc)
17. Rock

5.5 CLIMATE & PRECIPITATION

5.5.1 Introduction

The Molemole municipality area falls in the summer rainfall region. The western part of the municipality area is more prone to droughts. Winter temperatures rarely fall below 0°C, and summer maxima often exceed 35°C in certain parts. Winter throughout the municipality area is mild and mostly frost-free.

5.5.2 Rainfall

The study area is located in rainfall zone A7A (Midgley *et al*, 1994), in the summer rainfall area of the Republic of South Africa. The climatic N-value (Weinert, 1980) is between 3 and 4 -

therefore chemical decomposition, rather than mechanical disintegration, of the parent rocks is deemed the principal mode of weathering.

The municipality area has a low annual rainfall. Rainfall is strongly seasonal, and wet and dry seasons can be identified easily. The wet season from October to March contributes 86% of the annual rainfall.

The largest portion of of the study area has a mean annual rainfall of between 300 and 500mm. The eastern part gets more rain than the western part.

5.5.3 Evaporation

The process by which liquid water is transformed into vapour is tremendously important in that evaporation depletes available water. In fact, it is estimated that 91% of the mean annual precipitation is evaporated from free water surfaces and transpired from vegetation. Hence, in an area with limited water resources evaporation is critical in determining the amount of water available to users.

The evaporation pattern is similar to the rainfall pattern. The figures are higher for the eastern part of the municipality area than the western parts.

5.6 HYDROLOGY

5.6.1 Surface water

The central part of the study area falls within the Sand River catchment, which occupies a total area of 15 639 km^2. The headwaters of the Sand River catchment are in the hills south of Pietersburg, and extends north, through the Soutpansberg to the confluence of the Sand River with the Limpopo River. The Sand River's flow is non-perennial and intermittent during the wet season. The Sand rivers is dry for up to 9 months per year, with visible surface flow for approximately 3 months per year.

See Annexure E - Drainage map

The Sand River is fed by a number of tributaries, the two largest being the Hout River and the Brak River, both of which enter the Sand River from the west. From the east, the Sand River is fed by a number of smaller tributaries, the most important of which are the Diep, Dwars and Dorp rivers.

The Sand river has been identified as having low conservation status, but high conservation importance (DWAF, Vol. 4.3, 1992). The Sand River and its tributaries have deep alluvial deposits overlaying zones of deeply weathered rock which form extensive aquifers. Contrary to expectations, flow in the upper reaches of the catchment is higher than downstream possibly due to the high storage potential of the deep alluvial aquifers in the channels. (DWAF, Vol. 5.2, 1992).

The western part of the study area falls within the Hout River catchment and the extreme eastern parts of the study area falls within the Klein- & Middle Letaba River catchments.

In the central & western parts of the municipal area there is relatively little surface water due to a number of factors, viz:

- Low annual precipitation
- High evaporation
- High infiltration rates and corresponding low runoff.

As such, much of the channel flow is sub-surface. This sub-surface flow has been identified as the driving force in the hydrological system in the catchment (DWAF, vol. 4.3, 1992).

Values have been calculated by DWAF for both “naturalised” and denaturalised” flow in the region. “Naturalised” flow refers to virgin flow in an unimpacted situation. “Denaturalised” flow refers to the flows expected once the area has been unimpacted by development. Naturalised flow peaks occur in the January/February period. Dams in the catchment have been identified as being highly inefficient, (DWAF, Vol. 3.5, 1992)

Significant surface erosion was noted in the central parts of the study area (i.e. Matoks/ Batlokwa).

5.6.2 Groundwater

5.6.2.1 Aquifers

Two aquifer systems are commonly developed in the region:

- A seasonal, perched aquifer;
- A deeper fractured rock aquifer system.

The shallow perched water aquifer is commonly developed within the upper 2,0m of the weathered zone. The aquifer, comprising transported and residual soils as well as weathered bedrock, is unconfined and transient in nature, usually existing only during the rainy season. It may also be sustained or maintained by an artificial source of recharge.

Fractured rock aquifer system: Groundwater is retained within the fractures and joints of the rock. Collectively, these water-bearing fractures combine to form the fractured rock aquifer.

The depth to the fractured rock aquifer is variable and dependent on the degree of fracture frequency, transmissivity and continuity. Generally, the regional water table will also approximate the shape of the surface topography. Although naturally occurring joints/fractures typically tend to close with depth.

Groundwater is the main source of water in the catchment, with 88% of total water use being from groundwater, 10% imported and 2% from locally developed surface water source. (DWAF, Vol. 5.3, 1992).

5.6.2.2 Yield & quality

The Pietersburg/Seshego region has high groundwater potential, with the alluvial aquifer displaying a storage capacity of up to 20% of its total volume. The alluvial aquifers in the region have high transmissivities. Estimated recharge for A711 is 3.5% of MAR, and for A712, 3% of MAR. The extent of the aquifer, in conjunction with the three factors above make the groundwater a good source of water for the area.

The groundwater quality displays seasonal variations, with excellent quality during reasonable flow periods, with decreasing quality evident in the dry season.

The groundwater resource within the study area has been impacted on due to both historical anthropogenic activities, as well as more recent developments. The following factors have influenced groundwater:

- Overexploitation for irrigation (historically) and increasingly for domestic purposes has had two effects. The water table has dropped by an average of 2 m per year since 1981 up to 1992. This was also influenced by the severe drought experienced in the 1980's. In addition, the excessive abstraction of groundwater has resulted in the deterioration of the quality of the groundwater.

- Water quality has decreased due to contamination from domestic, sewage and industrial sources. Currently, neither the Perskebult nor Blood River settlements (NW of Seshego) have waterborne sewage, and the groundwater indicates severe contamination levels. Only 15% of the population in the catchment have access to waterborne sewage. The two current treatment works at Seshego and Pietersburg discharge $3.3x10^6$ m^3/yr and 4.6×10^6 m^3/yr respectively into the Blood and Sand Rivers.

5.6.2.3 The nature of groundwater flow

The subsurface of the earth is conventionally divided vertically into two zones: a *zone of aeration* – characterised by the presence of a mixture of water and air (also known as the *unsaturated zone*) – and a *zone of saturation*, that only contains water (also known as the *saturated zone*) (Botha, 1996). It is custom to refer to water in the unsaturated zone as *soil water* and water in the saturated zone as *groundwater*. The movement of soil water is referred to as *unsaturated flow*, while groundwater movement is referred to as *saturated flow*.

Although groundwater motion is a continuous process, the ability of the earth's geological formations to store water varies considerably from one geological formation to the next. For example, highly permeable formations are often bounded from below and/or above by less permeable formations. These *confined layers* are sometimes very thick and impermeable, while others may be thin and permeable. The flow of groundwater in geological formations is therefore often further subdivided into *confined*, *semi-confined* and *unconfined flow*. Physically, there is not really a difference between semi-confined and confined flow (Botha, 1996) and therefore, no distinction will be made between these types of flow. It is custom to refer to the aquifers characterised by these types of flow as *confined* or *unconfined aquifers*.

It is well known that groundwater can only flow along the interstices formed by the voids in the geological formation that contains the water. The size of these interstices varies considerably and range from huge solution caverns (in dolomites and limestones) to subcapillary openings in clays (Bear, 1979). The interstices of practical importance in groundwater flow are usually one of three types (Botha, 1996).

a) ***Porous interstices*** – these are interstices with dimensions so small that their boundaries restrict the flow of water in all three spatial directions. They are commonly found in consolidated and unconsolidated sands, and weathered igneous and metamorphic rocks.

b) ***Fractures*** – caused by stresses, to which the earth's mantle was subjected in the past, are found in igneous, metamorphic and sedimentary rocks. The sizes of these fractures

can vary from huge fissures, extending over hundreds of kilometres, to microscopic fractures. Flow in fracture therefore often resembles flow in porous interstices.

c) ***Solution caverns*** – caused by the dissolution of the surrounding geological formation, are mainly found in more soluble rocks, such as limestone and dolomite. These caverns usually have diameters ranging from micrometers to a hundred and more metres.

It follows from the preceding discussion that the sizes and distribution of interstices play an important role in the ability of a geological formation to transmit groundwater. This property allows one to divide subsurface flow into three basic types: *channel flow* (in solution caverns and fissures), *fracture flow* (in the fractures), and *porous flow* (in sedimentary and weathered rocks).

5.7 FLORA

5.7.1 Veld types & dominant species

According to Low and Rebelo's (1998) vegetation map of South Africa, most of the study area is dominated by the Mixed Bushveld vegetation type forming part of the Savanna Biome (typically observed on shallow, relatively coarse-grained, sandy soil overlying granite, quartzite or shale). The vegetation found here varies from dense short bushveld to a more open tree savanna. This vegetation type is found in areas where the rainfall varies between 350 and 650 mm/a and the altitude comprises low relief plains at an altitude range of 700 to 1000 m.a.s.l.

See Annexure F - Vegetation classification in the municipal area.

The northern & western parts of the municipal area is dominated by Mixed Bushveld (variation 2 of open Sclerocarya Veld) (Acocks, 1975). The eastern part of the study area comprises Sourish Mixed Bushveld (Acocks, 1988).

Grasses:

The dominant grass species found in undisturbed and disturbed areas are listed in the table below:

TABLE 5: DOMINANT GRASS SPECIES

Undisturbed Areas	Disturbed Areas
Aristida congesta barbicollis	*Cynodon dactylon*
Aristida sciuris	*Enneapogon centroides*
Cymbopogon plurionodes	*Enneapogon scoparius*
Digitaria eriantha	*Melinis repens*
Eragrostis rigdior	*Pennisetum setaceum*
Eragrostis superba	*Stipagrostis uniplumis*
Heteropogon contortus	
Panicum coloratum	
Themedia triandra	
Tricholaena moachne	
Triraphis audropogonoides	

Trees:

The dominant tree species that are found in the area is listed in the table below:

TABLE 6: DOMINANT TREE SPECIES

Scientific Name	English Common Name
Acacia caffra	Common hook-thorn
Acacia karroo	Sweet thorn
Acacia nilotica	Scented thorn
Acacia tortilis	Umbrella thorn
Balanites maughamii	Green thorn
Bolusanthus speciosus	Tree wisteria
Boscia albitrunca	Shepherd's tree
Combretum apiculatum	Red bushwillow
Combretum hereroense	Russet bushwillow
Combretum molle	Velvet bushwillow
Combretum zeyheri	Large fruited bushwillow
Dichrostachys cinerea	Sickle bush
Kirkia wilmsii	Mountain seringa
Mundulea sericea	Cork bush
Ozoroa paniculosa	Common resin tree
Peltophorum africanum	Weeping wattle
Sclerocarya birrea	Marula
Strychnos madagascariensis	Black monkey orange
Vitex wilmsii	Hairy vitex
Ziziphus mucronata	Buffalo thorn

Shrubs:

Dominant shrubs in the area include:

TABLE 7: DOMINANT SHRUB SPECIES

Scientific Name	English Common Name
Catha transvaalensis	Transvaal Bushman's tea
Diospyros lycioides	Bluebush
Elephantorrhiza burkei	Sumach bean
Euclea crispa	Blue quarrie
Euclea undulate	Common quarrie
Grewia flava	Brandybush
Grewia vernicosa	
Psiadia puntulata	

5.7.2 Plants of medicinal and food value

Several plant species in the study area have medicinal and food value. The species that are most heavily used include *Euclea undulata* (purgative), *Sclerocarya birrea* (diarrhoea, dysentery, fruit) and *Peltophorum africanum* (colic, stomach disorders and sore eyes). The pods from *A. erioloba* are an excellent fodder for stock and the string wood is used in the construction of homesteads.

5.7.3 Endangered or rare species

Tree species that enjoy statutory protection under the Forest Act (No. 84 of 1998) are the Marula (*Sclerocarya birrea*) and Camel Thorn (*Acacia erioloba*). According to this Act these trees cannot be damaged or destroyed. Should such damage be unavoidable due motivation to the Department of Environmental Affairs and Tourism (DEAT)(Limpopo Province) will have to be provided on why damaging these specimens should be submitted – it is necessary to obtain a permit for their destruction.

5.7.4 Alien invasive species

Alien invasive species that have been observed in the study area include sweet prickly pear (*Opuntia ficus-indica*), queen of the night (*Cereus jamacaru*) and seringa (*Melia azedarach*) & bluegum.

5.8 FAUNA

Most of the large mammals found in the study area are herbivores – either browsers or grazers. None of the animals are considered dangerous. No large carnivores are found in the area, it is however possible that they can move between the farms and perhaps enter the area. Species that could move through the project area include Leopard and Cheetah.

Many small mammals, such as Mongooses, Porcupine, Chackma Baboon, Vervet Monkeys, etc may be found in the area. Small carnivores such as: African Wild Cat, Black Backed Jackal, Caracal, and Small-spotted Gennet. Brown Hyena and Leopard also occur.

The extent of disturbance in the areas immediately surrounding rural villages, is not conducive to the survival of fauna, particularly mammalian fauna, due to the presence of humans and domestic animals (e.g. dogs).

Common mammal species, that are known to exist in the study area, including their preferred habitat, are;

- *Aepyceros melampus* Impala - Savanna and woodland
- *Alcelaphus buselaphus* Red Hartebeest - Open savanna and grassy plains
- *Kobus ellipsiprymnus* Waterbuck - Open woodland and moist grassland
- *Oryx gazella* Gemsbok - Dry plains & open woodland
- *Phacochoerus aethiopicus* Warthog - Wide habitat tolerance, but prefer Savanna and woodland bush.
- *Raphicerus campestris* Steenbok - Wide habitat tolerance but prefers grassland
- *Sylvicapra grimmia* Common Duiker - Wide habitat tolerance
- *Tragelaphus scriptus* Bushbuck - Dense bush & riverine bush
- *Tragelaphus strepsiceros* Kudu - Dense bush and open woodland

5.9 SENSITIVE AREAS/LANDSCAPES

The overall ecological sensitivity of the various areas in the municipality are indicated on Annexure G - Sensitivity map.

In terms of the Department of Environmental Affairs and Tourism (DEAT) guidelines for Integrated Environmental Management (IEM) (DEAT, 1992), the term 'sensitive landscapes' is a broad one applying to:

- Nature conservation or ecologically sensitive areas – indigenous plant communities (particularly rare communities or forests), wetlands, rivers, river banks, lakes, islands, lagoon, estuaries, reefs, intertidal zones, beaches and habitats of rare animal species;
- Unstable physical environments – such as unstable soils and geotechnically unstable areas;
- Important nature reserves – river systems, groundwater systems, high potential agricultural land;
- Sites of special scientific interest;
- Sites of social significance or interest – including sites of archaeological, historic, cultural, spiritual or religious importance and burial sites;
- Green belts or public open space in municipal areas.

By identifying these sensitive areas, due action can be taken so as to ensure that environmental sustainability, health and safety are not compromised, and that natural and cultural resources (as well as economically viable resources), are not endangered.

5.10 ENVIRONMENTAL ISSUES

5.10.1 BACKGROUND

Identified ***Environmental Issues***[1] in respect of the Study area are listed in this section. These Issues have been identified in order to assist authorities and other role players in understanding which are the most important *environmental issues* within the study area that should receive attention. The intention is to provide a roadmap for the management of the environmental resources within the study area. This section also relates to impacts that might result from the development of these resources.

From the onset it is emphasized that consultation and collaboration with various regulatory authorities and sectors is pivotal for ensuring that the *environmental issues* within the study area receive proper attention.

[1] **Environmental Issue**: A concern felt by one or more parties about some existing, potential or perceived environmental impact.

The identified *environmental issues* will dictate which *"environmental strategies"* would have to be implemented. ***Environmental strategies*** constitute the bridge between where we are currently (status quo) and what ultimately wants to be achieved in the study area (sustainable development/sustainability). *Environmental strategies* can therefore be defined as actions which aim to manage/address the identified (prevailing) environmental issues.

The identified *environmental issues* were clustered together into ***"Issue clusters"*** – these are set out in Table 8 (below). The respective clusters into which the identified issues were categorized are;

- Issue cluster: Local economic development
- Issue cluster: Health
- Issue cluster: Internal capacity of local authority
- Issue cluster: Housing
- Issue cluster: Infrastructure
- Issue cluster: Land development and management
- Issue cluster: Environment

TABLE 8: IDENTIFIED ENVIRONMENTAL ISSUES

Ref	Environmental Issue	Status and Environmental impact
	Issue cluster: Local economic development	
1	- High unemployment rate	• Non-existence of a tourism development plan for the Municipal area • Under-utilisation of natural features / attributes in the Municipal by local residents to generate income from tourism • Reliance by local residents on natural resources due to inability to pay for technology advanced energy sources (e.g. wood vs. electricity) leads to environmental destruction
	Issue cluster: Health	
2	– Existing sanitation inadequate	• Groundwater pollution
3	– Lack of Waste Management facilities & refuse removal systems	• No formal waste disposal facilities are located within the study area. This leads to informal dumping of waste. Waste dumping often takes place within the individual household property
4	– Surface & groundwater water pollution	• The position of pit latrines near bore holes & surface water courses leads to pollution
	Issue cluster: Internal capacity of local authority	
5	– Insufficient environmental governance/management – Insufficient development / land use control measures	• Lack of internal capacity within the Municipality leads to destruction / degradation of environmental components. Unplanned (ad hoc) extension of villages can destroy ecological communities as well as heritage resources
	Issue cluster: Housing	
6	- Lack of stands & subsequent informal allocation of stands to residents	• Lack of informed (proper) planning of new residential stands leads to destruction and/or degradation of environmental components
	Issue cluster: Infrastructure	
7	– Development of new engineering infrastructure within study area	• Recent disturbances to the study area has resulted from the installation of engineering infrastructure within study area e.g. roads, electricity lines, water pipelines & community facilities, etc. • Increasing disturbance of natural & heritage resources occurs from the development of new engineering infrastructure in study area.
8	- Lack of tourism facilities	• Practically no facilities exist within the study area for the attraction of tourists.

t.p.o./ …….

	Issue cluster: Land development and management	
9	- Unplanned settlements	• Unplanned settlements have a major negative effect on the environment in that, through their establishment and existence whole ecological communities are destroyed (e.g. when erection of houses are undertaken)
	Issue cluster: Environment	
10	- Deforestation (major environmental problem affecting the study area. The magnitude of this problem is "high" - Destruction of heritage resources - Overgrazing - Erosion	Wood is still a main source of energy for household (leading to deforestation and subsequent erosion due to the denuding of vegetation). Destruction of heritage resources results from infrastructure development & extension of residential areas Overstocking by those practicing farming, especially on communal land in close proximity to settlements Erosion of soils resulting from overgrazing and deforestation especially by those who used wood as their source of energy

6. STATUS QUO REGARDING THE SOCIO-ECONOMIC ENVIRONMENT

The municipality consists of 13 wards.

According to census information (2001) of statistics South Africa, Molemole has a total population of 109 423 persons, with an average household size of 3,9 and a total of 27 889 households. In 2007 the Molemole Local Municipality undertook a survey with which estimated the population to be 107 620 people (see Table below). The majority of the population, about 52,7% comprise of children under the age of 20 and 6,6% is made up of the elderly.

TABLE 9: POPULATION PER WARD INCLUDING THE FARMING AREAS OF MOLEMOLE MUNICIPALITY

WARD	NUMBER OF HOUSE HOLDS	POPULATION
1	1 344	5 095
2	2 322	8 562
3	2 366	9 700
4	1 932	7 943
5	1 597	6 279
6	1 697	*7 559*
7	2 674	10 745
8	2 135	9 448
9	1428	6 033
10	1988	8 025
11	2373	10 709
12	2 307	10 407
13	1 827	7 115
TOTAL	**25 990**	**107 620**
FARMING AREAS	**4 400**	**11232**
GRAND TOTAL	**30 390**	**118 852**

Source: Molemole Municipality, Survey, 2007

The male/female ratio according to census 2001 indicates a high male absenteeism rate. This suggests that a significant number are working in other provinces such as Gauteng. This means that a significant proportion of the population is dependent on the income generated by others.

Approximately 54,6% of the total population are unemployed, according to Census 2001. The majority of the economically active persons, approximately 31% are employed in the Government and Community Services sector. Approximately 18% of economically active persons are working within households. The retail and trade sector employs 15% of such persons and the construction sector employs 11%. Agriculture employs 8% of the economically active

population, transport 5%, business & the financial sector 3%, electricity 3%, manufacturing 3% and mining 3%.

It is evident from the Molemole survey (2007) that approximately 46% of households have less that R1100 income per month. Approximately 50% of households in the municipality area qualify for municipal indigent services discounts (free basic services).

Approximately 76% of the population have access to water and infrastructure for water provision (within at least 200 meters from the dwelling units). The lack of reliable water sources within Molemole however makes it difficult to provide water on a sustainable basis. The municipality relies entirely in ground water for its water supply for primary and agricultural use. Only approximately 20% of the households have access to access to acceptable levels of sanitation or at least a VIP toilet on site. Approximately 83% of households do not have access to refuse removal. The majority of the Molemole Municipality population, approximately 75%, use electricity as a form of energy.

Approximately 88,9% of households in Molemole Municipality are housed in formal housing. Approximately 3,5% live in traditional housing units and 3,83% live in informal structures.

A fairly large part of Molemole Municipality has been subjected to land claims. Approximately 833 square kilometers of land is under claim, constituting 25% of the municipal area.

Molemole Municipality is characterized by three ***economic activity nodes*** located at Mogwadi, Botlokwa and Morebeng. These activity nodes provide for convenience shopping and can be classified as 2^{od} order retail activities with limited potential for industrial development.

There are also 3 prominent ***transportation corridors*** within the municipality viz;

- the N1 road to Musina (rans-Limpopo corridor)
- the R521 between Polokwane and Alldays
- the R36 road between Tzaneen and the N1 (Maputo corridor)

See Annexure B – Infrastructure map.

A large production of various farming products on commercial farms presents potential for the establishment of agro-processing industries (e.g. potatoes, cassava, jathropa and game farming).

7. PROPOSED ENVIRONMENTAL STRATEGIES/INTERVENTIONS FOR THE MOLEMOLE MUNICIPALITY

7.1 INTRODUCTION

According to the IDP Guide Pack 0 (Department of Provincial and Local Government, 2001: p17) after Environmental Strategies have been formulated, it should result in the identification of projects. This involves the following;

- drafting of implementable project proposals by becoming specific (in terms of funding, location and timeframe)
- contributing to an objectives-and-result-orientated-municipal-system (where one can trace the link between financial resources, activities undertaken with these resources, outputs provided and impact to be achieved)
- delegating tasks to small teams of specialists,
- involving those directly affected by the project (consult with the residents, communities and stakeholders interested in or affected by the project).

The IDP of municipality identifies very little (direct) environmentally related projects, due to the fact that the Integrated Environmental Management Plan (IEMP) had not been done at the time of the formulation of the IDP. Therefor, the aim in this chapter is to provide recommendations on interventions related to environmental management that should be implemented within the municipal area, so as to ensure that future development (comprising plans, projects, policies & programmes) integrates environmental concerns into their execution. These interventions can alternatively also be called objectives, strategies and projects.

The cited interventions not only includes capital projects but also recommendations on institutional/organisational & policy interventions that should be implemented. The interventions contained in this section are based on current environmental problems and threats, environmental aspects resulting from the activities of the local authority and environmental constraints (on development);

It was attempted to divide the identified interventions into the following issue clusters:

- economic development and poverty;
- training, education & social facilities;
- health;
- safety and security;

- sport and recreation;
- internal capacity of local authorities;
- rural settlements;
- housing;
- infrastructure;
- transport;
- land development and management, and
- environment.

7.2 PROPOSED INTERVENTIONS RELATED TO ENVIRONMENTAL MANAGEMENT

7.2.1 Relevant issue cluster(s): Health, Infrastructure

7.2.1.1 Environmental issue: Solid waste management

a) The effective and environmentally responsible disposal of solid waste is a process comprising storage, collection, transportation and landfilling. A breakdown or deficiency in any one or more of these operations can result in either a total or partial disruption of the service. Waste management must be carefully planned to curtail the risk associated with the handling and disposal of waste to the point where it is acceptable to man and the environment.

b) Solid waste management is a function that is overseen by the Capricorn District municipality (Community services department).

c) A concise account of the contents of the ***Molemole Integrated Waste Management Plan (MIWMP)*** is contained in Section 8.3 of this document. The Implementation/Action Plan as contained in the MIWMP document sets out the short, medium & long term waste management priorities of the municipality.

d) The Molemole municipality does not have any registered landfill within its area of jurisdiction. The existing landfills at Mogwadi and Morebeng are not licensed. These sites are not operated in accordance with the DWAF Minimum Requirements for waste disposal by landfill.

e) In terms of Section 20 of the Environment Conservation Act waste must be disposed of at a registered waste disposal facility. The issuing of a permit for a waste disposal facility is currently the responsibility of DEAT with inputs from DWAF. The municipality should ensure

that the landfill sites serving the settlement nodes within its area of jurisdiction are approved and registered under section 20 of Environment Conservation Act, 1989 (Act 73 of 1989).

f) Waste collection and transportation services are provided in Morebeng and Nthabiseng.

g) Medical waste from hospitals is collected weekly and transported to Gauteng for incineration by contracted service providers.

h) An analysis of the waste problems in the municipal area was done - common problems include the following;

- Poor management of landfill sites
- Poor maintenance & record keeping at landfill sites
- Lack of control over waste types
- Absence of strategies/provision for special waste
- Inadequate waste management facilities in rural villages
- Inadequate training of personnel
- Absence of monitoring boreholes at landfill sites
- Non-existence of Incident Reports and Complaints Registers
- Insufficient funds for effective waste management by the municipality
- Lack of air-quality monitoring (to control emissions from landfills)

i) The main source of waste within the study area is domestic waste (mainly plastic, paper as well as organic waste). Waste quantities generated within the municipality are unknown due to the non-existence of record keeping at municipal landfill sites.

j) There is a need to determine the demand for solid waste management services in order for the municipality to plan for future landfill facilities.

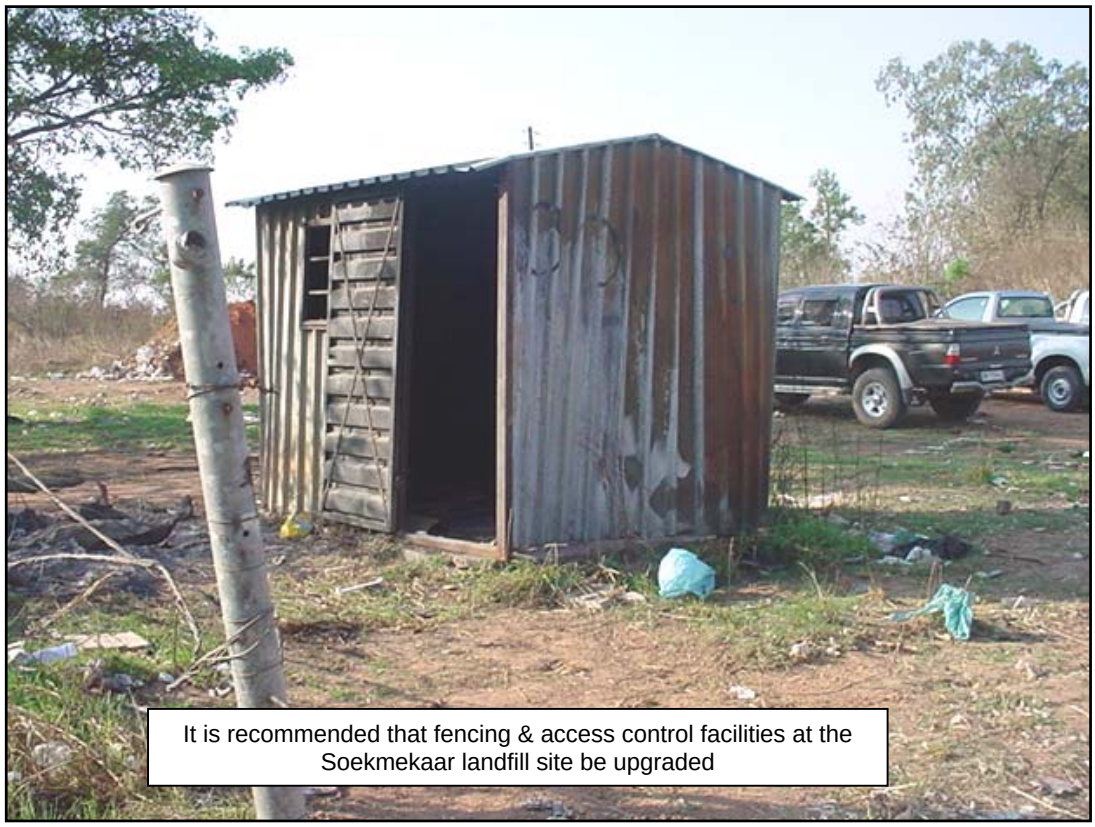
k) The permitting of existing and the closure of all illegal solid waste disposal sites, as well as the monitoring of these sites is required in accordance with the Minimum Requirements for Waste Disposal by Landfill (DWAF 1998a).

l) According to the technical department of the municipality none of the municipal landfill sites have permits.

m) A new waste disposal site is planned in the Batlokwa area (negotiations are underway with the local Traditional Authority to secure the land).

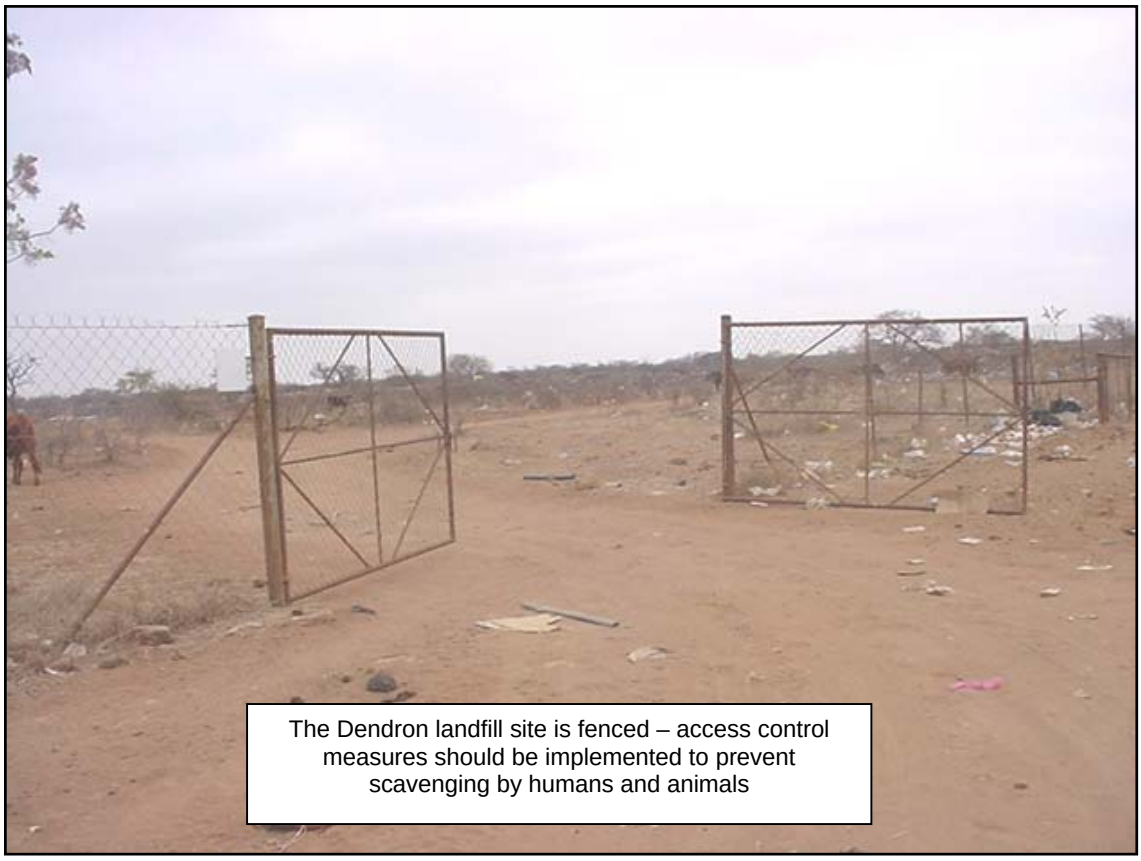
n) In future, once a municipal landfill has been permitted, the municipality should ensure compliance with the specifications of the permit of each registered landfills. Ongoing (regular) monitoring of landfill operations should be done (as a performance indicator). The extent and frequency of monitoring is dependent on the site classification and indicated in the permit issued by DWAF/DEAT.

o) Monitoring of the types of waste deposited at the municipality's landfill sites should be carried out. Monitoring is required in accordance with the Minimum Requirements for Waste Disposal by Landfill (DWAF 1998a).



It is recommended that fencing & access control facilities at the Soekmekaar landfill site be upgraded

The gate at the Dendron landfill site should be kept closed in order to minimize scavenging by humans and animals



The Dendron landfill site is fenced – access control measures should be implemented to prevent scavenging by humans and animals

The access road leading to the Dendron landfill site is in good condition

p) There is currently very limited recycling of waste taking place at the landfill sites within the municipality area. Waste separation and recycling should receive attention. The private sector (local residents) can potentially be involved in recycling efforts.

q) Closure and rehabilitation of unauthorised landfills should be undertaken. Rehabilitation of landfills should at least comprise;

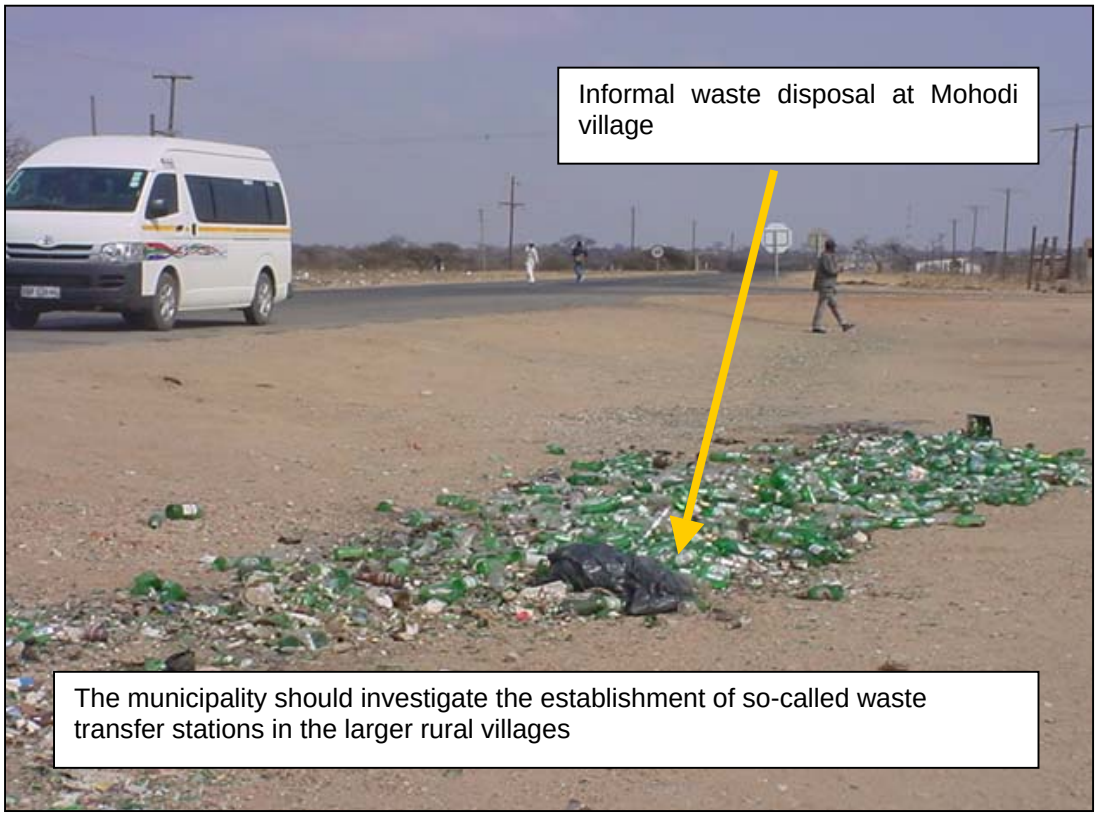
- Levelling with topsoil in preparation for revegetation
- Revegetation.

It is evident that the municipality needs to focus on waste as a key environmental issue affecting the study area – this should be done in spite of the fact that Solid waste management is a function that is overseen by the District municipality.

r) The municipality should investigate the establishment of so-called waste transfer stations close to the central business districts of towns & larger villages. The establishment of such transfer stations would make it easier for businesses to dispose of larger volumes of waste. From these transfer stations waste can then be transported to the municipal landfills.


Municipal bin
Large volume of waste disposed of at Soekmekaar taxi rank
The municipality should investigate the establishment of so-called waste transfer stations close to the central business areas of towns & larger villages.

The municipality should investigate the establishment of so-called waste transfer stations in the larger rural villages - waste can be disposed of at these transfer stations by residents from where the municipality can then transport it to the final landfill.



7.2.1.2 Environmental issue: Waste water (sewerage) management

a) The effective and environmentally responsible management of wastewater treatment facilities within the municipal area is a vital requirement in order curtail the risk associated with pollution from such facilities.

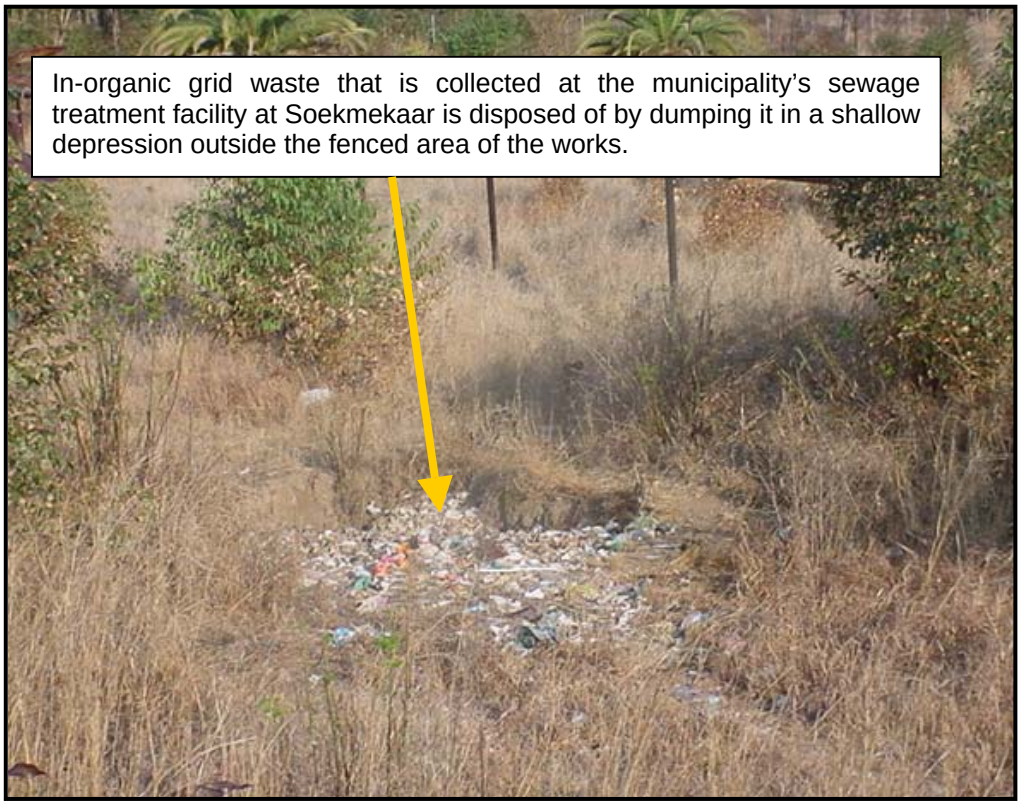
b) The Molemole municipality's sewage works facility at Mogwadi (Dendron) requires urgent attention, as current flows are exceeding the capacity of the existing oxidation ponds, thus resulting in extensive pollution (due to overflowing oxidation ponds). This facility has potential for significant (negative) health & safety impacts in terms of groundwater pollution.

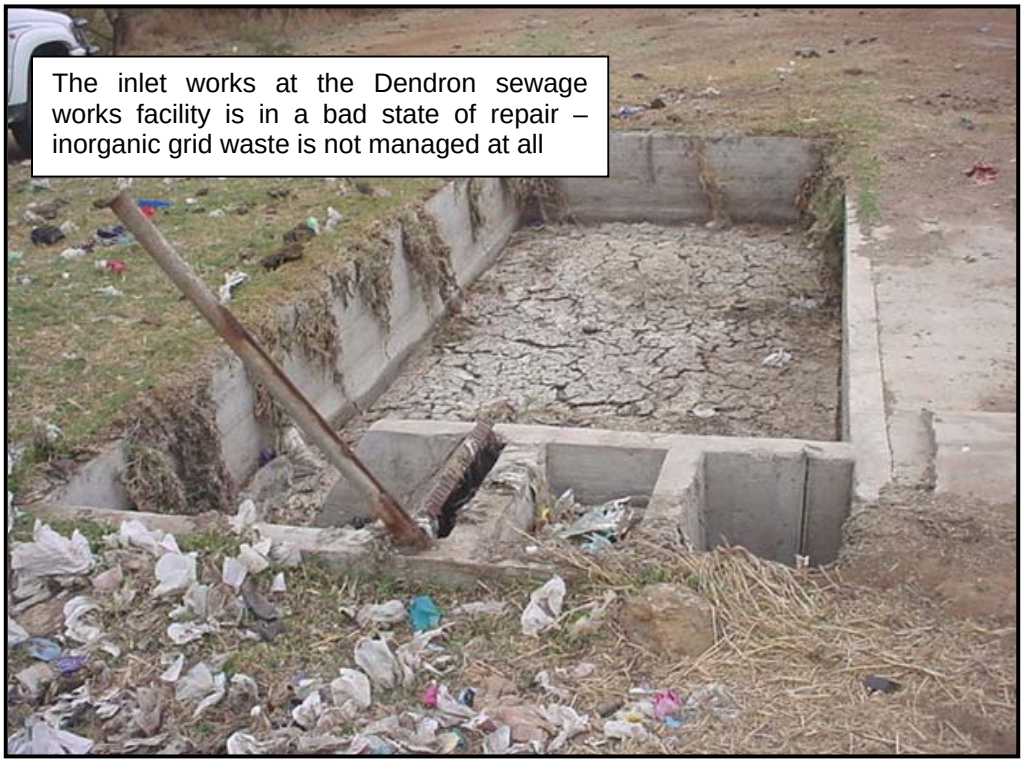
c) The Molemole municipality's sewerage works facility at Mogwadi (Dendron) does not have sufficient capacity to handle sewage flows emanating from the town. It is therefor

recommended that sufficient funding be made available for replacement of the works with a “conventional type” sewage works facility (new sewerage works facility). The most important criteria in planning and identifying the most suitable site for a new sewerage works facility include the following;

- availability and accessibility of land (taking into consideration the direction of future growth of the town)
- existing drainage areas and required gradients
- prevailing geo-technical (soil) and hydro-geological circumstances,
- potential environmental impacts,
- cost effectiveness and availability of engineering services (e.g. the location of existing bulk outfall sewers that are serving the town).

d) In terms of Section 20 of the Environment Conservation Act it is required that an Environmental Impact Assessment be conducted in respect of new (proposed) sewage Works facilities and its associated infrastructure.



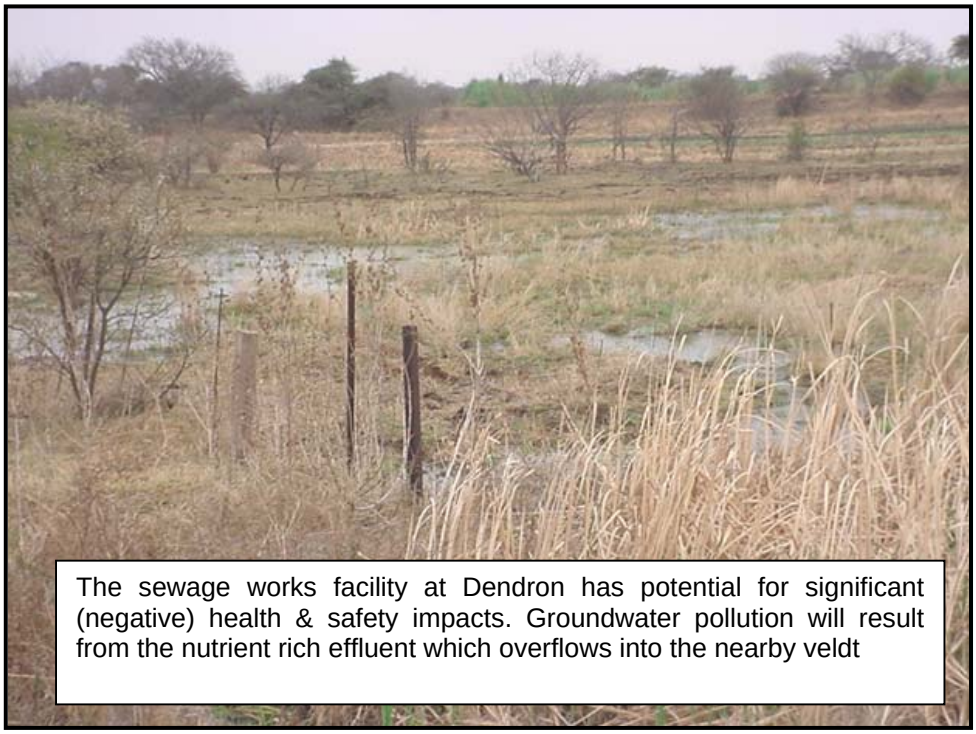


e) Due to the potential cumulative effects of groundwater pollution at the Mogwadi (Dendron) waste water treatment ponds, and the current lack of data and the existence of a number of boreholes in the area surrounding the site, the impact of decreasing the water quality is potentially highly significant. The effects of leachate on groundwater is potentially of high significance, as there could be implications for "reduced fitness for use" for irrigation in the area. The pollution resulting from the Mogwadi (Dendron) sewage facility has potential to develop into a "fatal flaw".

f) In-organic grid waste that is collected at the municipality's sewage treatment facility at Morebeng (Soekmekaar) is disposed of by dumping it in a shallow depression outside the fenced area of the works. In-organic grid waste that collects at the municipality's sewage treatment facilities, should ideally be incinerated. Where incineration is not economically feasible, suitable locations and methods for the disposal of inorganic (grid) waste should be identified by a geo-hydrological/geo-technical specialist.

g) Due to the potential cumulative effects of ground water pollution a monitoring programme should be implemented at all municipal sewage facilities (according to DWAF guidelines for groundwater monitoring).

h) It is imperative that at the measures contained in Table 10 below, be implemented at municipal sewage facilities, so as to minimise the potential for environmental pollution;



The sewage works facility at Dendron has potential for significant (negative) health & safety impacts. Groundwater pollution will result from the nutrient rich effluent which overflows into the nearby veldt

TABLE 10: MEASURES TO CONTROL/PREVENT POLLUTION AT SEWAGE TREATMENT FACILITIES

Environmental component	Reason / source of impact	Mitigation measures (control/prevention recommendations)
1. Surface and groundwater pollution	System failure	An operational, maintenance and emergency plan should be compiled for any system failures that may occur including at least: Down stream users should be notified of any system failures and non-compliance with the General Standard Daily records should be kept of significant events in the works. Significant events include perculiar color of water, failure of equipment, strange smell, recording the date and time at which this occurred.
	Leaking pipes	Pipes should be inspected on a regular basis and any leaks reported immediately. An emergency plan should be compiled for dealing with leaking pipes.
	Pump stations	Pump stations should be equipped with early warning systems to indicate any potential failures An emergency plan should be compiled for dealing with out of order pump station.
	Sludge disposal	Avoid stockpiles of sludge on sensitive zones Stockpiles to be covered to prevent water from entering. Storm water management measures in place Classify the sewage sludge Suitable alternative methods for sludge disposal should be investigated. Such disposal methods should be communicated with the Department of Water Affairs & Forestry – it shall only commence once the required statutory approval (licensing) has been obtained Soil analysis to be conducted before land application of sludge A Contract should be established between the applicant and the person/s utilizing the sludge.

Environmental component	Reason / source of impact	Mitigation measures (control/prevention recommendations)
2. Surface and groundwater pollution	General	Two sets of monitoring boreholes to be drilled up and down-gradient of the works (oxidation ponds), up and down-gradient of the irrigation area and between the fault zone and area of disposal/irrigation. Sampling of groundwater samples should be done on a quarterly basis according to the protocol compiled by Weaver et., al 1994 and analysed for the following parameters: Macro chemistry (pH, TDS, COD, NH4-N, TKN, PO4 and Cl) and microbial parameters (Total coliform and faecal coliform organisms). Data to be recorded Impact reports with trend analysis should be compiled on a bi-annual basis by a qualified person If and when contamination is detected in the monitoring wells, a rehabilitation plan must be compiled and executed.
	Irrigation of treated sewage effluent	No irrigation should take place below the 100 year flood line, or alternatively, more than 100 metres from the edge of a water resource or a borehole which is utilised for drinking water or stock watering. The quantity must be metered regularly and the quality monitored monthly by grab sampling at the point at which the wastewater enters the irrigation system and analysed for parameters detailed in the geohydrological report. The following should be prevented following acceptable construction, maintenance and operational practices: water logging of the soil and pooling of wastewater on the surface of the soil; nuisance conditions such as flies or mosquitoes, odour or secondary pollution; waste, or wastewater, entering any surface water resource; the unreasonable chemical or physical deterioration of, or any other damage to, the soil of the irrigation site; and the unauthorised use of the wastewater by members of the public. All reasonable measures must be taken to collect storm water runoff containing waste or wastewater emanating from the area under irrigation and to retain it for disposal.
	Solid non-organic waste	An appropriate site should be selected for the disposal of non biodegradable waste from the screens. No waste disposal outside the demarcated area. No waste allowed from other sources or individuals. Waste should be disposed of in plastic bags prior to burial. Trenches should be closed when filled. No waste shall be burned on site.

Environmental component	Reason / source of impact	Mitigation measures (control/prevention recommendations)
3. Operation and Maintenance	Preventative maintenance	Preventative maintenance includes detailed inspection, reasonability checking, cleaning, lubrication, replacement of defective parts and calibration where required. Maintenance includes the manufacturer's recommendations and the process controllers' experience acquired over a period of time.
4. Operation and Maintenance	Mechanical maintenance	Routine checks should be done on all mechanical instruments for problems such as leaks, overheating, vibration, noise or any other abnormalities. All equipment should be free of obstruction, be properly aligned and be moving at normal speed. Mechanical maintenance must be according to the manufacturer's instructions.
	Pump maintenance	Pumps should be checked for excessive noise, vibration, overheating and leaks. Lubrication of the pump should be in accordance with the manufacturer's instructions
	Electrical maintenance	The power should always be off when doing electrical maintenance. When restarting, a sequence start-up procedure should be in place. Motor control centre should be checked periodically, this inspection should include cleaning the equipment, checking for damages and loose leads. Electrical motors should be checked for unusual vibration and noise, speed of the motor and continuous sparking of brushes. Stand-by generators should be checked continuously.
	Lubrication	Lubrications should be in accordance with the manufacturer's instructions. Records of lubrication should be kept, the records should consist of the frequency lubrication was applied, the type and amount used. The lubricant should be chosen according to the operating conditions and material used
	Operational requirement	All flows meters in the plant should be read at fixed time each day and the flow should be recorded. Daily records should be kept of significant events in the works. Significant events includes peculiar colour of water, failure of equipment, strange smell, recording the date and time at which this occurred All analysis made on the sewerage must be properly recorded. Information of the influent flow, hydraulic loading, organic loading, sludge age, sludge blanket level, sludge settleablility, suspended solids, return sludge flow, waste sludge flow, waste sludge quantity, chemical dosage and digester gas production might be kept to evaluate the performance of the wastewater treatment plant. Additional information that should be recorded is sewerage temperature (inlet and outlet) and detail of plant running times.
5. Operation and Maintenance	Emergency events	A record of all significant emergency events should be kept. These reports should indicate the description, location and the time of the event, how the event affected the process, the time it took to get the process back to normal, action taken by personnel to respond to the emergency, process equipment and structures affected, description of repairs and replacement required, cost of repairs and replacements and emergency response plan in case of re-occurrence of similar events

7.2.2 Relevant issue cluster(s) : Economic development and poverty

7.2.2.1 Environmental issue: Optimisation of the LED potential of environmental attributes

a) An important function of local municipalities is the facilitation of local economic development. Such development should however occur within a sustainability framework to ensure long term benefits (where “sustainability” refers to: Economical, Environmental and Social sustainability).

b) The environmental attributes of the many game farms in the area present definite opportunities that can be linked to the *Local Economic Development strategy* of the municipality e.g. it could be considered to develop a “birding-cum-tree spotting route” within the municipality area.

c) A marketing strategy for facilities such as the Matumo Trading post & the Tropic of Capricorn should receive attention. Ideally these facilities shouldn’t be “stand alone” facilities – the exposure of these facilities could be increased substantially by developing facilities near or adjacent to the Matumo Trading post & the Tropic of Capricorn that will intercept passing traffic (e.g. filling stations, overnight facilities, etc.).

7.2.2.2 Environmental issue: Impacts on the environment resulting from agricultural activity

The following issues have been identified regarding agriculture in the municipality area.

a) The destruction of riparian vegetation during the clearing of farming plots is regarded as an environmental problem with a high “significance”.

b) There is no formal provincial programme in place to research, develop and promote water efficiency across all sectors of agriculture.

c) Ecosystem characteristics are often not considered in new projects.

d) There is little or no consideration of biodiversity aspects when undertaking agricultural projects/initiatives.

e) The use of poisons, pesticides, herbicides and fertilisers requires monitoring.

f) In order to ensure compliance with NEMA, a broader co-operation is required in the initial planning phase of projects between the municipality, Dept. of Agriculture and the Dept. of Environmental Management in the province.

7.2.3 Relevant issue cluster(s) : Environment

7.2.3.1 Environmental issue: Alien species control

a) The control of invaders/ alien plant species within the municipality area should receive attention.

b) Severe alien infestation has taken place in the stream channels bisecting Morebeng (Soekmekaar) town e.g. Bluegum & Wattle. The control of invading alien plants along stream channels is imperative. Impacts associated with invasive alien plants typically include;

- reduced surface water runoff and groundwater reserves,
- increased biomass and fire intensity,
- markedly reduced biodiversity, and
- a number of economic consequences.

c) Water use increases where natural vegetation is replaced by dense stands of invasive alien trees. Fuel loads at invaded sites are increased, thus increasing fire intensities and causing soil damage, increased erosion and decreased germination from indigenous seed pools.

d) An integrated approach involving the combined use of range of methods should be employed to control alien infestation. The various methods that are available are usually classified as follows:

- Mechanical methods (felling, removing of invading alien plants, often in conjunction with burning);
- Chemical methods (using environmentally safe herbicides);
- Biological control (using species-specific insects and diseases from the alien plant's country of origin).

e) Mechanical and chemical controls are short-term activities - rigorous and disciplined follow-up and rehabilitation are necessary in the medium term. Biological control can provide effective control in the short and medium term in some cases, and it is often the only really sustainable solution in the longer term.

Severe alien infestation has taken place in the stream channels bisecting Soekmekaar town e.g. Bluegum

7.2.3.2 Environmental issue: Legal compliance

a) In order for the local municipality to function as a “green” local municipality it would have to comply with all environmental legislative requirements. Adherence will also ensure that the local authority would minimise the possibility of legal action from affected parties. The “green” city/ local authority concept serves as a strong marketing tool that needs to be backed up by responsible governance.

b) The municipality should ensure compliance with the EIA regulations when undertaking development project itself and/or taking recommending/considering applications for development projects.

c) In respect of the above, the following potential activities present opportunities for non-compliance;

- compliance with the EIA Regulations when undertaking or endorsing housing projects within the municipality area,
- require that EIAs be conducted for new incinerators that are to be installed,
- development on agricultural land where development includes large scale debushing,
- land reform projects,
- development that comprises the change from agricultural land to smaller units and/or resorts, without the overall impact on the environment being taken into account (the municipality needs to adopt a co-operative governance approach, to avoid conflict situations arising),
- development in tribal land areas,
- electricity and power lines,
- filling stations (especially when approving filling station applications).

d) The municipality should require that Water Use licensing be undertaken by developers, when recommending/considering their applications for development projects (i.e. a Water Use License in terms of Section 21 of the National Water Act, Act 36 of 1998).

e) In order to comply with the laws and regulations that apply to an organization, the organisation must first know what the rules are and how they affect what it does. The potential costs of non-compliance (possible damage to the environment, revenue loss and impact on public image, for example) can be very high.

f) A suitable service provider should be commissioned to undertake an Environmental Legal compliance audit within the municipality.

g) The primary purpose of an Environmental Legal compliance report/audit is to assist an organisation in getting a better understanding of the current environmental legal situation within the organisation. Such a report should review existing;

- processes,
- activities,
- responsibilities and
- obligations,

as well as

- document the potential areas of non-compliance, and
- determine potential improvements that can be made,

to ensure that the Municipality complies with all relevant environmental legislation thus ensuring a better living environment for all.

7.2.3.3 Environmental issue: Environmental management plans for physical development (construction) projects

a) The undertaking of physical development (construction) projects within the municipality area (e.g. water infrastructure provision, roads, sewerage infrastructure, LED related projects, etc.), have potential to impact negatively on the environment.

b) Ideally a standardised EMP should be incorporated into all tender and contract documentation relating to projects that will be undertaken within the municipality area. A standard (generic) Environmental Management Plan (EMP) for construction projects is therefor included in this document (see Annexure I).

c) The advantages of integrating the EMP into contract documents are:

- Contractor is made aware of EMP
- Contractor is able to cost for compliance with EMP
- Environmental information & controls are in familiar form & language
- Duplication & contradictions is eliminated

- EMP is legally binding within well-developed legal framework

d) In order to ensure that destruction of the heritage and natural resources of the municipality is minimised, it is recommended that it be required of all parties/bodies/agencies/departments that are of the intention to undertake any development within the study area, to appoint an Environmental Site Officer for the duration of the project's construction phase. The ESO will be responsible for monitoring, reviewing and verifying compliance with the EMP by the Contractor. An ESO will typically be required to monitor & report on the following for the duration of the new project:

- ensuring necessary environmental authorizations and permits have been obtained;
- monitoring and verifying that the Environmental Management Plan (EMP) relating to a specific project is adhered to at all times;
- taking action if the specifications of the EMP are not followed;
- monitoring and verifying that environmental impacts are kept to a minimum;
- assisting the Contractor in finding environmentally responsible solutions to problems;
- reporting on environmental issues at site meetings and other meetings that may be called regarding environmental matters;
- keeping records of all activities / incidents concerning the environment on site;
- inspecting the Site and surrounding areas regularly with regard to compliance with the EMP;
- keeping a register of complaints in the Site Office and recording and dealing with any community comments or issues;
- monitoring of environmental awareness training for all new personnel;
- advising on the removal of person(s) and/or equipment not complying with the EMP specifications;
- recommending the issuing of penalties for transgressions of site rules;
- ensuring that activities on site comply with legislation of relevance to the environment;
- recommending the issuing of penalties for contraventions of the EMP (e.g. damage to "no go" areas);
- completing start up, weekly, monthly and site closure reports;
- keeping a photographic record of progress on site from an environmental perspective; and
- undertaking a continual internal review of the EMP and submitting a report to the Employer.

7.2.3.4 Environmental issue: Urban greening

a) The greening of the municipal area could be achieved through the following:

- Launch of an anti littering campaign.
- Tree planting initiatives.
- Effective maintenance of open spaces, parks, nature reserves.
- Invader plant control e.g. in collaboration with the DWAF “working for water programme”.

b) In order to beautify the entrances to the main town & villages within the municipality area (especially Mogwadi (Dendron), Morebeng, Matoks/Batlokwa), the municipality should consider planting indigenous trees adjacent to entrances to the towns (so as to create a “boulevard” effect when driving into a town/village).

c) Such tree planting can also be used to obscure unsigthly urban components.

d) Indigenous (local) tree species should be used in order to ensure that newly established trees will be able to survive in the environment.

e) Species requiring high rainfall should not be planted, as the area typically has a fairly low annual rainfall. The timing that planting of trees takes place, as part of the “greening” project is important – ideally planting should not take place during the dry season.

f) Temporary irrigation/watering of plants should be done so as to help the plants to establish effectively.

Current situation

Tree planting along main access roads can beautify the entrance to the towns & villages

After proposed “tree boulevard” has been established

7.2.3.5 Environmental issue: Local authority bylaws & internal capacity

a) The Constitution and other legislation such as the Municipal Structures Act assign clear environmental functions to local authorities. It is important that the local municipality adhere to these functions.

b) Compliance to environmental legislative requirements are often not co-ordinated nor are definite functions assigned to departments within a municipality – this leads to ineffective environmental management and even legislative non-compliances.

c) The suitability and adequacy of existing municipal legislative measures such as bylaws relating to the environment should be investigated. Effective municipal bylaws (which relates to environmental management), will assist in the enforcement of environmental performance requirements within the municipality's area of jurisdiction.

d) Monitoring of environmental performance plays a pivotal role in effective environmental management. The issue of performance monitoring is directly linked to the availability of resources and formulation of management plans to ensure structure and capacity for effective environmental management. Compliance to the local municipality's developmental mandate on the one hand and its environmental compliance on the other needs to be monitored on a continuous basis by the municipality.

7.2.3.6 Environmental (Management) Policy for the municipality

a) An organisation's environmental policy forms the backbone and skeletal framework from which all other environmental components are hung (including environmental management systems, audits, assessments and reports). If the policy is flawed, then environmental management could be weakened and prevented from functioning effectively.

b) The importance of an organisation's environmental policy therefore cannot be overstated. The formulation of an Environmental Policy should form part of the initial actions during the formulation of the Framework for the Environmental Management of the Municipality.

c) It is recommended that the municipality formulate its own Environmental (Management) Policy. Such a policy will enable the Municipality;

- to serve as a basis for the implementation of an environmental management system,
- to set commitments, and
- to formulate environmental objectives and targets.

d) An environmental policy should contain the following three key commitments;

- a commitment to comply with relevant laws and legislation
- a commitment to pollution prevention
- a commitment to continual improvement (in terms of Environmental Performance)

e) The definition of an “environmental policy” (according to ISO14001) is as follows;

“ Statement by an organization of its intention and principles in relation to its overall environmental performance which provides a framework for action and the setting of its environmental objectives and targets”.

f) A draft environmental policy statement was generated as part of this study – see below. The municipality can either adopt this Policy Statement (as is) or the municipality can amend it and then adopt it.

DRAFT ENVIRONMENTAL POLICY

The Molemole Local Municipality hereby undertakes to continually improve its "environmental performance".

The Molemole Local Municipality hereby undertakes to consider environmental opportunities (assets) and constraints (problems and threats) during development planning, on a municipality wide level.

The Molemole Local Municipality hereby undertakes to ensure that development planning decisions and/or activities shall be in accordance with the environmental policy of the municipality.

The Molemole Local Municipality hereby undertakes to comply with all relevant environmental laws and legislation of South Africa..

The Molemole Local Municipality hereby commits to communicate its environmental policy to all its employees continually.

The Molemole Local Municipality hereby commits to provide leadership to ensure continually improving "environmental performance".

The Molemole Local Municipality hereby commits to setting a date from which onward, the environmental policy of the municipality will be implemented.

The Molemole Local Municipality hereby commits to monitoring/measuring of the environmental policy's efficacy on an ongoing basis.

7.2.4 Relevant issue cluster(s) : Land development and management

7.2.4.1 Environmental issue: Land development and management & environment

a) Land use management is an issue in so far as the control of incompatible land uses is concerned. This includes a wide range of possible conflict scenarios such as increasing pressure for development, densification of certain residential suburbs to provide adequate infrastructure and economic viable infrastructure, etc. Various other land uses needs to be provided or expanded such as cemeteries, garages, residential extensions, hawker facilities, etc. All these land uses impact on each other and on the environment - cumulative impacts of the different land uses should be quantified in order to establish whether sustainability parameters would be exceeded.

b) Ecosystem characteristics are often not considered when new development projects are planned.

c) The Municipality has to be in a position to advise developers regarding potentially sensitive components in its area of jurisdiction.

d) In terms of the Department of Environmental Affairs and Tourism (DEAT) guidelines for Integrated Environmental Management (IEM) (DEAT, 1992), the term 'sensitive landscapes' applies to:

- Nature conservation or ecologically sensitive areas – indigenous plant communities (particularly rare communities or forests), wetlands, rivers, river banks, lakes, islands, lagoon, estuaries, reefs, intertidal zones, beaches and habitats of rare animal species;
- Unstable physical environments – such as unstable soils and geotechnically unstable areas;
- Important nature reserves – river systems, groundwater systems, high potential agricultural land;
- Sites of special scientific interest;
- Sites of social significance or interest – including sites of archaeological, historic, cultural, spiritual or religious importance and burial sites;
- Green belts or public open space in municipal areas.

e) By ensuring that development does not take place within these sensitive areas, the municipality can be instrumental in ensuring that environmental sustainability, health and safety is not compromised, and that natural and cultural resources (as well as economically viable resources), are not endangered.

7.2.4.2 Environmental issue: Property planning, development and maintenance

a) Municipal policies and guidelines should be put into place to ensure that water and energy efficiency and integrated waste management are addressed in property planning & development (especially applications for new development projects).

b) Guidelines are required to be developed in order to ensure the integration of environmental issues (e.g. energy and water efficiency, waste and recycling) into new property development projects.

c) Such guidelines can be translated to conditions that new developments should adhere to. Where the municipality has to approve and/or comment on new development applications, such conditions can be included in the approval/comments by means of a standard "environmental clause" that is inserted. Typically such a clause should require new developments to implement measures to promote water efficiency.

7.2.5 Relevant issue cluster(s): Housing & health

7.2.5.1 Environmental issue: Informal settlements (squatters)

a) Environmental health relates to factors of human health that are determined or affected by environmental influences. Typical environmental health concerns include aspects related to water and air pollution, drinking water quality, sanitation, waste disposal, food quality, etc.

b) Interim basic services such as sanitation, potable water and waste disposal facilities should be provided to informal settlements (until such people are relocated or the areas redeveloped).

c) The municipality should provide at least provide (or facilitate the provision) of the following basic services to informal settlements within its area of jurisdiction, albeit on a temporary basis (until people residing at such areas are relocated or the areas redeveloped):

- Sanitation
- Potable water
- Waste disposal facilities.

d) The absence of such facilities in these settlements can lead to pollution and health risks.

e) Unplanned (informal) settlements have a major negative effect on the environment in that, through their existence trees and plants are often used by the inhabitants for firewood, building material, and shade/shelter and grazing (often resulting in the over-utilisation and/or the loss of natural resources and habitats).

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8. ENVIRONMENTAL ASPECTS IN THE MOLEMOLE MUNICIPALITY 2008/2009 - IDP REVIEW

8.1 ENVIRONMENTAL ASPECTS

The *MOLEMOLE MUNICIPALITY 2008/2009 IDP* document refers to "Environmental aspects" in various sections of the document. *(Definition: Environmental Aspect: Element of an organization's activities, products or services that can interact with the environment).*

In Section 2.8 of the IDP (ENVIRONMENTAL ANALYSIS) it is stated that the municipality has identified the following environmental problems;

- deforestation
- overgrazing
- unplanned settlements
- erosion

The IDP states the following regarding the above mentioned environmental problems;

"***Deforestation***

According to the statistics South Africa (Census 2001) 47.06% of the population within Molemole Municipality uses wood as their source of energy for cooking. Deforestation takes place throughout the municipality jurisdiction especially in non-urban areas. This aspect should be addressed by means of awareness campaign to Educate Communities about the importance of protecting environment (trees).

Overgrazing

The major factor in this regard is the overstocking by those practicing farming, especially on communal land in close proximity to settlements. As the land is communally used, no one takes responsibility on the piece of land they used for grazing.

Unplanned settlements

Only few of the settlements have been demarcated, surveyed and registered at the office of the surveyor general. This has an implication that although the occupants have a right to the land in terms of the Traditional Authority system, the sites are not legally registered in their names. Unplanned settlements have a major negative impact on the environment through the establishment of informal settlements, vegetation species are destroyed.

Erosion

The major causes in this regard are unplanned settlement conservation of indigenous plant species priority given the fact that alien species encroaches overgrazing and deforestation of vegetation especially by those who used wood as their source of energy. As a result, there are loss of productive topsoil and loose parent material due to the detachment of soil particles and their removal by water run-off".

In Section 3 of the IDP (STRATEGIC PHASE) it is stated that the municipality has the following municipal "developmental objectives" (environmental related objectives are underlined):

- *To improve revenue generation by 5% annually.*
- *To ensure increased community and stakeholders participation in municipal affairs*
- *To facilitate for the reduction and curbing of the crime levels.*
- *To facilitate the reduction of HIV/AIDS infection rate - campaign (awareness)*
- *To ensure employment and development of women, youth and disabled groups.*
- *To provide affordable, clean and portable water above RDP standards to 100% the population.*
- *To manage conservation and protection of the environment to ensure socio-economic development.*
- *Increase access to free basic water services by 10% per year*
- *Increase provision of sanitation service by 10% per year.*
- *To improve access to sports facilities to 70% of the population by 2010.*
- *To create and promote Local Economic Development initiatives in the SMME sector.*
- *To increase job creation by 10% on an annual basis.*
- *To provide electricity to 100% of the population by 2011.*
- *To have 10% of Molemole's access roads tarred by 2010*
- *To increase the level of communication within the municipal area in case of disaster.*

The *MOLEMOLE MUNICIPALITY 2008/2009 IDP* document also lists *"STRATEGIC ENVIRONMENTAL STRATEGIES"* – document states the following;

- *In broad terms the current use of natural resources within some areas in the Molemole Local Municipality are not sustainable.*
- *Because of the density of people and the quality of the land major soil erosion problems have developed within certain areas in Molemole municipality.*
- *Informal settlements have major negative impacts on water in adjacent rivers in the area. The density of development is generally so dense that formalization of services*

and in particular water supply, treatment and sanitation is the only in terms of management of impacts.

- *Ecological diversity within the area has been significantly impacted on by intensive agricultural practices in some areas. The lack of adequate conservation areas and strategic ecological links is probably leading to loss of species.*
- *The strategies are as follows:*
  - *Provide alternatives of support for rural/informal population in order to decrease dependence on environment and subsistence agriculture.*
  - *Research, protect and monitor strategic resources.*
  - *Make the most of existing resources and undertake and undertake enabling work for sustainability.*
  - *Control spread and provides services to dense informal settlements.*
  - *Enforce sustainable development planning*
  - *Ensure that all projects that might have impact on the environment must have Environmental Impact Assessment (EIA) undertaken as a pre-requisite.*

8.2 ENVIRONMENTAL INTERVENTIONS IDENTIFIED IN THE IDP

The MOLEMOLE MUNICIPALITY 2008/2009 IDP document has identified the need for the following “environmental management” interventions;

- the establishment of a landfill site (Batlokwa area), and
- establishment of a waste transfer station at Morebeng.

The MOLEMOLE MUNICIPALITY 2008/2009 IDP document (Section 4.2 Sector Plans) indicates that it is in the process of compiling an Environmental Management Plan (in order to comply with IDP requirements for municipalities). The following so-called “sector plans” have already been developed;

- Spatial Development Framework
- Indigent Policy
- Disaster Management Plan
- Policy on HIV/Aids
- Infrastructure Investment Plan
- Customer Care and Client Services
- Service Standard
- Integrated Waste Management Plan
- Employment Equity Plan

- Skills Development Plan
- Credit Control and debt Collection Policy
- Procurement Policy

8.3 INTEGRATED WASTE MANAGEMENT PLAN

The ***Integrated Waste Management Plan*** of the municipality is contained in Section 4.2.2 of the IDP document. The Implementation/Action Plan in the mentioned document addresses the short, medium & long term waste management priorities.

A account of the recommended actions related to waste management (as contained in the municipality's IDP), is provided in the table below;

TABLE 11: RECOMMENDED ACTIONS RELATED TO WASTE MANAGEMENT (IDP, 2008/2009)

Waste management Services Needs	Description of recommended action	Period / Duration
Improving existing waste management services	• The 2002-2007 IDP does not list waste management as one of the Key Performance Area. • Management and handing of Health Care Waste is not properly undertaken, but since the responsible authority is the Department of Health, Addressing the situation is undertaken at Provincial level. The role and responsibility of the municipality is to provide support and assistance to the responsible authority. • Two landfill sites existing in the municipality are located in Mogwadi and Morebeng. These sites are not operated in accordance with the Minimum Requirements for waste disposal by landfill. • The sites should be upgraded to ensure to compliance with the permitting conditions. • Waste collection and transportation services are provided in Morebeng and Nthabiseng. The current services need to be reviewed for efficiency and effectiveness. • Development of Waste and Environmental Organizational Structure and appointment of the relevant personnel. • Review of the current tariff structure and updating the service point database. Where required, waste generators should be provided with storage facilities. • Initiation of the necessary institutional requirements (i.e. SOP, BY/LAWS, Operating procedure, Health and safety plans etc.) • Initiation and monitoring a revenue collection system for waste management.	0-5

Implementing new waste management services and Public Information and awareness creation	• Initiation of litter picking in Mogwadi and Morebeng. • Currently municipality is providing waste collection and transportation services in Nthabiseng and Morebeng - these services should be outsourced, and services provided to all communities. • Create a database of all recyclers in the municipality. • Settlement patterns in the municipality are scattered. This poses a challenge when implementing waste management services. The formation of Waste Clusters/Zones, comprising of different wards, is thus recommended. Two(2) Waste cluster/Zones are proposed for municipality. • The Municipality does not require new disposal facilities, as the capacity of the existing facilities (Mogwadi and Morebeng landfill sites) is adequate. • But three (3) - transfer stations are required in order to reduce the distance between generation and disposal.	5-10
	• For a waste system to be sustainable waste generators should be identified and a service point database created. The service points should then be issued with temporary waste storage facilities before collection takes place. The following is recommended for MLM: – Households - 85 litre bags – Schools and creches, Hospitals, Business, Police stations , administration offices - 240 bins and bags – Establishment of a waste management tariff structure (i.e. different payments for services by waste generator)	
	• Development of waste management, minimisation and prevention strategies, by encouraging and supporting entrepreneurial re-cycling and composting projects. • Appointment of waste site and transfer sites operators • The successful implementation of any system depends on the buying and support of the consumers. Public information and awareness creation are instruments required to ensure buy-in and support by communities in the municipality. The following are proposed: • Outsourcing of waste collection and transportation functions. • Ensure Environmental Impact Assessment and Public Participation for all infrastructural development in the municipality. • Initiate and encourage schools participation on environmental and waste aspects quiz. • Participate in the National Cleanest town competition with support by Capricorn District Municipality. Beginning with Municipality cleanest Waste Cluster/Zone. • Establish community waste and environmental forums, headed by WC/Z officials.	

9. MUNICIPAL I.D.P. PROJECTS THAT REQUIRE ENVIRONMENTAL ASSESSMENTS

In the IDP the Municipality has identified a number of projects for implementation. Annexure H provides a list of all projects as identified by the municipality. Annexure H also indicates the required environmental assessment process(es) to be followed for each project.

This was done in view of the fact that, in April 2006 the Minister of Environmental Affairs and Tourism passed environmental impact assessment regulations (the Regulations) in terms of Chapter 5 of the National Environmental Management Act, 1998 (NEMA). The Regulations replace the environmental impact assessment (EIA) regulations which were promulgated in terms of the Environment Conservation Act, 1989 in 1997. In terms of these regulations the Minister has identified a number of *activities* which may impact negatively on the environment. Before such activities can be undertaken, authorisation has to be obtained by the party intending to undertake/initiate these activities.

All applications for environmental authorisation must be supported by an assessment. The Regulations provide for two types of assessment processes i.e. the *basic assessment process* and the *scoping and EIA process*.

- The purpose of *basic assessment* is to provide a mechanism for the complete but concise assessment of activities.
- A *scoping and environmental impact assessment* process is reserved for activities which have the potential to result in significant impacts, and which are complex to assess. Scoping and environmental impact assessment accordingly provides a mechanism for the comprehensive assessment of activities that are likely to have more significant environmental impacts.

An environmental authorisation must be obtained in order to undertake any activity listed in Government Notices R. 386 and R. 387 of 21 April 2006. Lawfully environmental authorisations will also be required for any activity that has been identified by the Minister or an MEC in terms of section 24(2)(a),(b) or(d) of NEMA and published in a government gazette. If there is uncertainty as to whether authorisation is required, advice should be obtained from the relevant competent authority before the activity is undertaken.

An application for environmental authorisation must be made before the activity commences. An activity may not commence until an environmental authorisation has been obtained as it is illegal in terms of NEMA and the Regulations to start an activity without an environmental authorisation.

In order to provide guidance to the municipality of whether environmental authorisation need to be obtained for the Projects that have been identified, Annexure H indicates whether it is necessary to obtain environmental authorisation – if it is necessary, the table also indicates which of the two types of assessment processes should be followed (i.e. ***basic assessment process*** or ***scoping and EIA process***). Where a municipal project is not an identified ***activity***, the row in the table has been left open.

Due to the fact that the exact scope of each project is not totally defined yet, a situation could arise where the table below indicates that a basic assessment would be necessary, but due to the scope of the project being quite large, a scoping process might have to be undertaken (and vice versa). There may be instances where an application may be particularly complex and it will be difficult for a competent authority to make a decision based on a basic assessment report. In these cases, the applicant may apply to the competent authority for permission to apply scoping instead of basic assessment.

10. SUMMARY OF ENVIRONMENTAL MANAGEMENT INTERVENTIONS (PROJECTS)

10.1 INTRODUCTION

According to the IDP Guide Pack 0 (Department of Provincial and Local Government, 2001: p17) after Environmental Strategies have been formulated, it should result in the identification of projects. This involves the following;

- drafting of implementable project proposals by becoming specific (in terms of funding, location and timeframe)
- contributing to an objectives-and-result-orientated-municipal-system (where one can trace the link between financial resources, activities undertaken with these resources, outputs provided and impact to be achieved)
- delegating tasks to small teams of specialists,
- involving those directly affected by the project (consult with the residents, communities and stakeholders interested in or affected by the project).

The aim of this chapter is to relate the different environmental strategies of the municipality and the findings of this study into actual projects that can be implemented by the municipality.

10.2 PROPOSED ENVIRONMENTAL PROJECTS

A summary of all proposed projects is given in Table 12 below. It is recommended that these projects be incorporated into the IDP during the annual review of the IDP. Implementation of these projects should be linked to the IDP process, as the Local Government: Municipal Systems Act (32/2000), requires municipalities to “review their performance” so as to bring about continual improvement.

TABLE 12: PROPOSED ENVIRONMENTAL PROJECTS/INTERVENTIONS

No.	PROJECT DESCRIPTION
1.	Review the Integrated Environmental Programme (IEP) during the annual IDP review process (as new projects are being identified)
2.	Facilitate the pernitting/licencing all landfills under the jurisdiction of the municipality
3.	Ensure & monitor compliance with the specifications of the permits of each registered landfill
4.	Implement measures for the monitoring of the types of waste deposited at the municipality's landfill sites
5.	The municipality should investigate the establishment of so-called waste transfer stations close to the central business districts of towns & larger villages. The establishment of such transfer stations would make it easier for businesses to dispose of larger volumes of waste. From these transfer stations waste can then be transported to the municipal landfills.
6.	Refuse removal and disposal measures should be designed and implemented for the rural villages within the municipality. The municipality should investigate the establishment of so-called waste transfer stations in the larger rural villages - waste can be disposed of at these transfer stations by residents from where the municipality can then transport it to the final landfill.
7.	Facilitate recycling of waste at landfill sites. Local residents to be involved as an LED project.
8.	Facilitate the closure and rehabilitation of unauthorised landfills.
9.	Align the municipality's LED strategy with the outcomes of the District Integrated Waste Management Plan (IWMP)
10.	Launch awareness campaigns on the importance of conserving the environment
11.	The Molemole municipality's sewage works facility at Mogwadi (Dendron) requires urgent attention, as current flows are exceeding the capacity of the existing oxidation ponds, thus resulting in extensive pollution. The pollution resulting from the Mogwadi sewage facility has potential to develop into a "fatal flaw". A new sewage works facility is urgently required. Commission the services of suitable consulting firms to commence with feasibility studies for replacement of the Mogwadi Sewage Works with a "conventional" sewage works facility. Commence with the obtaining of the necessary approvals to relocate the works to a new site.
12.	It is recommended that fencing & access control facilities at the Soekmekaar landfill site be upgraded
13.	In-organic grid waste that collects at the municipality's sewage treatment facilities, should ideally be incinerated. Where incineration is not economically feasible, suitable locations and methods for the disposal of inorganic (grid) waste should be identified by a geo-hydrological/geo-technical specialist.
14.	A marketing strategy for facilities such as the Matumo Trading post & the Tropic of Capricorn should receive attention. Ideally these facilities shouldn't be "stand alone" facilities – the exposure of these facilities could be increased substantially by developing facilities near or adjacent to the Matumo Trading post & the Tropic of Capricorn that will intercept passing traffic (e.g. filling stations, overnight facilities, etc.).
15.	The control of invaders/ alien plant species within the municipality area should receive attention. Severe alien infestation has taken place in the stream channels bisecting Morebeng (Soekmekaar) town e.g. Bluegum & Wattle. The control of invading alien plants along stream channels is imperative
16.	Compile an environmental legal compliance register with associated action plan to ensure ongoing legal compliance within the municipality. Commission service provider to undertake an Environmental Legal compliance audit within the municipality.
17.	A standardised EMP should be incorporated into all tender and contract documentation relating to projects that will be undertaken within the municipality area. A standard (generic) Environmental Management Plan (EMP) for construction projects is included in this document (see Annexure I).
18.	Undertake urban greening project(s) viz; • Launch of an anti littering campaign

	• Tree planting initiatives at entrances to towns & larger villages - beautify the entrances to the towns by planting indigenous trees • Effective maintenance of open spaces & parks should be done • Invader plant control e.g. in collaboration with the DWAF "working for water programme"
19.	The suitability and adequacy of existing municipal legislative measures such as bylaws relating to the environment should be investigated. Conduct a needs analysis in terms on the need for new or expanded environmental bylaws and policy and generate such bylaws
20.	Formulate an environmental policy setting out the municipality's commitment to the environment (taking into account the principles of NEMA). • The policy should be the basis/foundation of the Environmental Management approach of the municipality. • The policy should contain the following three key commitments, – Compliance with relevant laws and legislation (taking into account the principles of NEMA) – Pollution prevention – Continual improvement • The policy should be the basis (foundation) for the setting of future environmental objectives and targets. • The municipality should devise a means on how to communicate its environmental policy to all its employees.
21.	Assign direct responsibility for "integrated environmental management" to a designated section/person within the municipality – this person(s) should be indicated in the organogram of the municipality.
22.	Provide adequate infrastructure/resources for the municipality's environmental manager
23.	Guidelines should be developed in order to ensure the integration of environmental issues (e.g. energy and water efficiency, waste and recycling) into new property development projects. Such guidelines should be translated into conditions that new developments should adhere to.
24.	Installation of energy efficient street lighting in urbanised areas (municipality should prioritize areas).
25.	Investigate all energy saving options (as part of the municipalitiy's contribution to a Climate Control Program) programme with special reference to: • Energy efficient lighting • Fuel efficiency – vehicles The municipality should make effective use of electricity at the municipality main office & satellite offices. "Day/night" switches which automatically reduces electricity usage should be installed so as to ensure efficient use of electricity at the municipality's offices. An electrical engineering company can be consulted for guidance.
26.	Assessment of training needs for officials and councillors in "Integrated Environmental Management" and the subsequent design and implementation of a training programme
27.	Environmental education for the broader resident communities through awareness raising initiatives, such as • Heritage day • Water week • Environment week • Promotion of Heritage day • Introduce municipality's environmental strategies to the media • Environmental awareness campaigns and education around specific issues such as littering, around general environmental concerns and land use management to resident communities (e.g. on erosion control, control of alien plant species, prevention of overgrazing, etc.) • Assist communities to manage their cultural and natural resources effectively

28.	Identification and survey of; • All natural and cultural resources that are under threat in the municipality area. • Compile a cultural heritage register of local cultural heritage sites i.t.o. the National Heritage Resources Act, 1999 • Identify natural and cultural resources that could provide long term sustainable development and tourism benefits in the municipal area.
29.	Require the appointment of Environmental Control Officers during construction of municipal construction projects (especially in sensitive areas)

11. CONCLUSION

South Africa's laws require integration of environmental concerns into strategic planning and decision making. In this regard this IEMP document will serve as an instrument to achieve integration between environmental issues and developmental decision making.

The IDP Process places great emphasis on responsible integrated development practice (which aims at sustainable outcomes). Various sector plans are required by the IDP Process to promote integrated planning. It is stated that a municipality's Integrated Environmental Programme should ensure that ***environmental aspects*** are incorporated into planning.

The South African IDP Guidelines also state that *Integrated Environmental Programmes* are not additional programmes (besides the IDP projects dealing with priority issues). In fact, it is intended to capture the environmental contributions from all the IDP projects in context. Thus it is a tool for mainstreaming, rather than being an add-on, of environmental issues.

It is imperative that the Molemole municipality has access to sufficient environmental information to allow for strategic and project level development planning. The formulation of this ***Integrated Environmental Management Plan*** provides the municipality with a decision support tool to evaluate the outcomes of the IDP Process in terms of its environmental implications. The IEMP contributes to a healthy environment by ensuring the following;

- that strategic environmental issues are identified and that potential environmental requirements for future projects are taken into account during decision-making;
- that opportunities and limitations presented by the environment of a region is taken into account and that assessment current and planned activities from a regional perspective is under taken; and
- that a tool is provided to planners and managers that can be used to optimize all development strategies as far as environmental requirements are concerned.

It is recommended that the projects/interventions contained in Table 12 of this document be incorporated into the Molemole IDP during the annual review of the IDP.

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