

# SECTION 1: THE NATURAL ENVIRONMENT

## 1.3 THEME: HABITAT AND BIODIVERSITY

### OVERVIEW

Mogale City Local Municipality (MCLM) straddles two biomes, the Grassland and the Bushveld Biomes. Within these biomes two Vegetation Types dominate, the Mixed Bushveld (Type 18) and Rocky Highveld Grassland (Type 34) (DEAT, 1996). Owing to its variable topography and associated microclimates, a total of 9 ecozones occur within these broad vegetation types. Major threats to the biodiversity of MCLM are urbanisation, industrialisation, mining and to a lesser extent agriculture. Particular conservation support is required along the Magaliesburg Protected Natural Environment (MPNE). To ensure sustainable development, the ecological imperatives of conserving natural resources and the environment need to be balanced and integrated with the economic imperatives of the MCLM to maximise development and profit and social imperatives of providing basic needs (Pretoria Metro SOER, 1999).

**Biodiversity** is the variability among living organisms from all sources including *inter alia* terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are part, this includes diversity within species, between species and of ecosystems.

*White Paper on Conservation and Sustainable use of South Africa's Biological Diversity, 1997*

### WHAT ARE THE PRESSURES?

- Natural driving forces include *inter alia*:
  - Evolution;
  - Climate change;
  - Population dynamics; and
  - Ecological fluxes.
- Natural disturbances and catastrophes include *inter alia*, paleo-sinkhole formation, fire, drought, flooding, pestilence and communicable diseases.
- Human induced disturbance and catastrophes include *inter alia*:
  - Urbanisation (pressure on land and natural resources) encroaching the urban edge and dominating ridges;
  - Agricultural practice (cultivation and grazing);
  - Mining and industrial development;
  - Ecotourism (private game reserves prevent migration of game);
  - Informal settlement;



- Poaching and plant harvesting (for medicinal and food purposes);
- Uncontrolled veld fires;
- Wetland destruction (including peat mining);
- Water pollution due to mining, industry, inadequate sewage management, agriculture and waste disposal;
- Flooding (inadequate storm water management, erosion due to unstable soil structures and underlying geology, retention feature failure, urbanisation and the increased need for roads); and
- Alien vegetation invasion.
- Inappropriate land-use planning where development has been allowed to take place in close proximity to sensitive environments.
- Ongoing sub-division of agricultural land results in an exponential increase in the disturbance of the ecological footprint of that land, as residential density increases with sub-division (Draft IEM Strategy for MCLM, July 2002).

## **WHAT IS THE STATE?**

### Ecosystems and habitats

- Approximately 55% of the MCLM is dominated by the Rocky Highveld Grassland with the Mixed Bushveld comprising 17 %.
- A total of 1522 floral taxa were recorded.
- 2.4% of the taxa recorded are on the RDL.
- Of the floral taxa recorded, 1.2% are endemic, which can be considered as relatively high. There were 4 Endangered species, 4 Rare species, 6 Near Threatened species, 10 Data Deficient species, 3 Lower Risk species and 1 Vulnerable species.
- 10 % of the natural vegetation has been converted into urban areas.
- While much of the Mixed Bushveld Veld Type (35.3%) of the natural vegetation characteristic of MCLM has been conserved, (86.5%) of the Rocky Highveld Grassland vegetation remains unprotected. This is well below the intended 10% target of each vegetation type suggested by the Rio Convention to be set aside as officially protected areas (Table 1.3c).
- The Magaliesberg Protected Natural Environment (MPNE), which forms the northwestern boundary of the MCLM is administered by the Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (GDACEL).
- The Magaliesberg range was proclaimed as a PNE in 1994 in terms of the Environment Conservation Act, 1989 (Act 73 of 1989).
- The MPNE is considered to be almost 100 times older than Mount Everest and has unique geology, topography and biodiverse habitats as well as heritage features.
- The 1400 ha Krugersdorp Game Reserve is another important formally conserved area situated on the western side of MCLM and was opened in 1963. The Game Reserve is owned by the MCLM and is privately managed by African Bush Adventures.
- Table 2.4b confirms that the ridges are extremely biodiverse ecozones.
- A total of 565 ha of the ridge systems in MCLM have been transformed through development (agriculture, residential etc).
- Areas contributing to the conservation of biodiversity in the MCLM include:

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- Kings Kloof Natural Heritage Site;
- Cradle of Humankind World Heritage Site;
- Various conservancies;
- Kromdraai Conservancy;
- Various private game farms (e.g. Mohale Gate); and
- Blougat Nature Reserve.
- Paleo-sinkholes, characteristic of the area, are rich in biological diversity.
- The MCLM is considered to have an extremely high proportion of Red Data invertebrates:
  - One Critically Endangered beetle;
  - Five Data Deficient spiders, two of which are Highveld endemics;
  - Endemic and Data Deficient millipede and scorpion species; and
  - Three Red Data butterflies and four Lepidoptera species that are considered to be rare by local experts.
- MCLM has a wealth of faunal diversity (refer to Table 1.3d)

**Table 2: Red Data List (RDL) taxa as percentages of the total number of floral taxa recorded in MCLM**

Vegetation unit	VU (%)	DD (%)	LR (%)	NT (%)	ED (%)	EN (%)	R (%)
Alien forest clumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Indigenous bush clumps on ridges (north-facing)	0.07	0.07	0.00	0.00	0.40	0.00	0.07
Indigenous bush clumps on ridges (south-facing)	0.00	0.00	0.00	0.00	0.07	0.00	0.00
Natural grassland	0.00	0.50	0.13	0.33	0.50	0.07	0.07
Rocky grassland	0.00	0.33	0.07	0.30	0.80	0.10	0.07
Scattered bush clumps	0.07	0.50	0.07	0.33	0.70	0.13	0.30
Wetlands and bottomland	0.00	0.10	0.07	0.07	0.20	0.00	0.00

VU=Vulnerable, DD=Data Deficient, LR=Lower Risk, NT=Near threatened, ED=Endemic, EN=Endangered and R-Rare. Taxa represent species, subspecies, and varieties of plants.

Note that some taxa fall into "hybrid categories" due to uncertainties about the most appropriate category. Many taxa are also found in several ecozones.

**Table 3: Endemism and IUCN Red Data Status for the floral ecozones found in MCLM**

Ecozones	Total Species Recorded <sup>1</sup>	% Endemism	% Endangered	% Vulnerable
Natural grassland	675	0,4	0,4	0,1
Indigenous bush clumps associated with ridges (North facing)	18	0	0	0
Indigenous bush clumps associated with ridges (south facing)	7	0	0	0
Wetlands and bottomlands	214	0,9	0	0
Alien forest clumps	38	0	0	0
Rocky grassland	689	0,4	0,1	0,6

<sup>1</sup> National Botanical Institute

**Table 4: Conservation status of ecozones, showing the cover of each ecozone as a percentage of the total area of MCLM**

Ecozones	% Cover	% Conserved
Natural Grassland	26,09	13,6
Indigenous bush clumps associated with ridges (North facing)	9,57	26,2
Indigenous bush clumps associated with ridges (South facing)	7,02	42,8
Wetlands and bottomlands	6,71	23,6
Alien forest clumps	1,89	7,9
Scattered Bush clumps	6,31	41
Rocky Grassland	0,25	11,5

**Table 5: IUCN Red Data Status for the faunal taxonomic groups found in MCLM**

Faunal taxonomic group	Total Species Recorded <sup>2</sup>	# Threatened	# Near Threatened	# Low Risk	# Data Deficient
Mammals	102	8 (9%)	0	19 (19%)	1
Birds	387	30 (8%)	0	0	0
Reptiles	38	12 (50%)	0	0	0
Amphibians <sup>3</sup>	8	0	1 (12.5%)	0	0
Invertebrates	?	19 <sup>4</sup>	4	0	7

## WHAT IS THE RESPONSE?

### International Conventions and Treaties

- Agenda 21, 1992
- The United Nations Convention on Biological Diversity (CBD)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Bonn Convention - Convention on the Conservation of Migratory Species of Wild Animals
- Framework Convention on Climate Change (UNFCCC)
- Ramsar Convention and the Amendment Protocol- Convention on Wetlands of International Importance specifically as Waterfowl Habitat
- Wetland Conservation Act, 1995
- Lusaka Agreement on Co-Operative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora

<sup>2</sup> SAISIS

<sup>3</sup> Currently under investigation

<sup>4</sup> Limited information sources

### National policy and legislation

- The Constitution, 1996 (Act 108 of 1996) – Section 24
- The National Environmental Management Act, 1998 (Act 107 of 1998)
- The National Water Act, 1998 (Act 36 of 1998)
- Environment Conservation Act, 1989 (Act 73 of 1989)
- Mountain Catchment Areas Act, 1976 (Act 63 of 1976)
- Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)
- National Forests Act, 1984 (Act 122 of 1984)
- National Policy on the Convention of Migrating Wild Animals
- Animals Protection Act, 1962 (Act 71 of 1962)
- Animal Diseases Act, 1962 (Act 71 of 1962)
- National Parks Act, 1976 (Act 57 of 1976)
- Development Facilitation Act, 1995 (Act 67 of 1995)
- Game Theft Act, 1991 (Act 105 of 1991)
- The White Paper on the Conservation and Sustainable Use of South Africa's Biodiversity (July, 1997)
- The White Paper on Integrated Pollution Control and Waste Management (IPCandWM) (1997)
- The White Paper on Science and Technology (1996)
- National Veld and Forest Fire Act
- Wetlands Conservation (Act 1995)

### Provincial ordinances

- Transvaal Nature Conservation Ordinance, 1983(12 of 1983)
- Cape Nature Conservation Ordinance, 1973 (19 of 1973)
- Cape Problem Animal Control Ordinance, 1984 (19 of 1984)

As the above ordinances were promulgated before 1994, their revision in line with the principles of the National Environmental Management Act, 1998 (Act 107 of 1998) is required.

### Management and Institutional Responses

- MCLM Risk and Vulnerability Assessment
- MCLM Disaster Management Plan
- MCLM Land Care Programme
- MCLM Draft Strategy: Integrated Environmental Management
- MCLM commitment to Bontle ke botho
- MCLM – SoER and EMF
- MCLM – Environmental Education Policy (this policy requires revision (MCLM, 2002)
- An LED spatial development strategy has been identified for future development
- GDACEL policy direction regarding the potential detrimental environmental impacts of and the resultants approach towards low density (high income) residential developments in Gauteng

- GDACEL EIA Administrative Guideline for the construction and upgrading of filling stations and associated tank installations
- GDACEL – Gauteng Open Space Project
- GDACEL - Draft Wetland Policy
- GDACEL - Draft buffer policy for Nature reserves
- GDACEL – Draft Ridge Policy
- GDACEL – Draft Red Data floral species policy
- GDACEL – Gauteng Biodiversity Gap Analysis project
- GDACEL – Draft Conservation Policy
- GDACEL – Draft Rehabilitation of indigenous wildlife
- GDACEL – Regulating the Export of Indigenous Plant Species from the Province of Gauteng to International Destinations
- Integrated Environmental Management (IEM)
- IUCN Red Data Book
- National WfW Programme (MCLM IEM–Draft strategy identifies that the wood harvested can be used for fuel)
- National policy on the rehabilitation of wildlife
- A Magaliesberg Advisory Committee (MAC) was established to control and manage the MPNE

## **WHAT ARE SOME OF OUR PROPOSED INDICATORS?**

1. *Loss of habitat and biodiversity*
2. *Threatened and Extinct species per ecozone*
3. *Endemic species per ecozone*
4. *Alien (non-indigenous species) per ecozone*
5. *Diversity of medicinal plants per ecozone*
6. *Number of designated conservation areas within Mogale Conservancies*
7. *(%) and Management of environmentally sensitive and/or, conservation areas (worthy and protected)*
8. *Environmental protection expenditure as (%) of gross city product*
9. *Increase in alien vegetation encroachment*

## **WHAT CAN YOU DO?**

- Support local reserves and conservation areas.
- Plant indigenous trees in your garden.
- Local schools should assist in managing reserves administered by the MCLM.
- Take part in environmental education programmes.
- Be aware of alien invasive species and assist your local authority in removing these species.
- Familiarise yourself with regard to the Red Data species in your area and take part in the protection of these species and their habitats.
- Owners of land on ridges can protect their properties through formal legislation. Communities can form conservancies to protect and manage ridges in their

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neighbourhoods. The public should play a watchdog role by objecting to development proposals on ridges, bringing insensitive development proposals to the attention of local media and requesting that their local councils implement the policy fully (Urban Green File, Volume No 7: No 4, Sept/Oct 2002).

### **LINKS WITH OTHER THEMES**

- Land use *inter alia* in terms of the vulnerability of quartzite and the need for erosion control
- Environmental Management
- Open Space
- Tourism
- Local Economy



### **Magaliesberg Advisory Committee (MAC):**

The Magaliesberg mountain range stretches 125 km over two provinces, from Pretoria in the east (Gauteng Province) to Rustenburg in the west (North West Province). It is a very unique mountain range of great ecological, geological and cultural importance and value. In order to preserve this uniqueness of the mountain, a section of the Magaliesberg was proclaimed a Protected Natural Environment (PNE) in Administrator's Notice 126 of 4 May 1994 in accordance with section 16 of the Environment Conservation Act, 1989 (Act 73 of 1989).

Currently the two provincial departments responsible for controlling and managing the MPNE, North West Department of Agriculture, Conservation and Environment (NW-DACE) and Gauteng Department of Agriculture, Conservation, Environment and Land Affairs (GDACEL), do not have the capacity to effectively monitor and enforce the PNE and other applicable environmental legislation. The two MEC's of the relevant provincial departments, therefore, came to an agreement that a Management Advisory Committee (MAC) will be established for the MPNE to advise them regarding the control and management of the area. As 32 120 ha of the MPNE falls within the North West Province and only 5 789 ha of the MPNE in Gauteng, a mandate was given from the MEC of GDACEL to the MEC of NW-DACE to establish and manage the Magaliesberg Advisory Committee, as well as to take the lead in the overall management of the MPNE.

### **Responsibilities of the MAC:**

To promote the preservation of specific ecological processes, natural systems, natural beauty of species of indigenous wildlife or the preservation of biotic diversity in general of the MPNE.

Without limiting the foregoing, the Committee will carry out its mandate in the following manner:

1. To assist in the development of a Strategic Master Plan and a Management Plan for the Magaliesberg, its Protected Natural Environment and the associated peripheral areas, as well as the regular updating / reviewing of the Management Plan.
2. To assist in defining the management criteria for the MPNE and its surroundings and their ongoing application.
3. To advise the MEC of the North West Department of Agriculture, Conservation and Environment (NW-DACE) on matters of policy with regard to the environmental management and protection of the MPNE.
4. To assist in the development of appropriate legislation and by-laws where necessary so as to enable effective management and implementation of the Strategic Master Plan and the Management Plan.
5. To advise on the evaluation of development proposals for change of land use developments or subdivisions within the MPNE and its immediate environs to ensure that they conform to the requirements of the Strategic Master Plan and the Management Plan.
6. To oversee the monitoring process of the MPNE and its immediate environs for conformance to the requirements of the Strategic Master Plan and advise the MEC for NW-DACE accordingly.
7. To advise on action to be taken against contraventions of the environmental statutes governing the MPNE and to monitor the progress and effect these have in achieving the goals of the Strategic Master Plan and the Management Plan.
8. To ensure alignment of municipal IDP's with the provisions of the MPNE Management Plan.

MCLM Directotote: Waste, Environment and Parks. 2002

