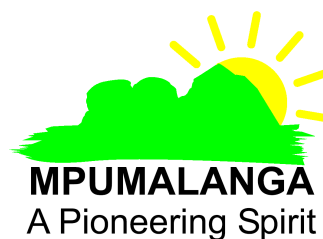


EMAKHAZENI LOCAL MUNICIPALITY ENVIRONMENTAL MANAGEMENT FRAMEWORK

INTEGRATED SUMMARY REPORT



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Full reports and the GIS data and viewer are available on the Emakhazeni project CD, and are listed as follows:

Volume I: Status Quo

- APPENDIX 1: Town and Regional Planning Status Quo
- APPENDIX 2: Transportation Status Quo
- APPENDIX 3: Services Infrastructure Status Quo
- APPENDIX 4: Agricultural Potential Status Quo
- APPENDIX 5: Terrestrial Ecology Status Quo
- APPENDIX 6: Wetland Ecology Status Quo
- APPENDIX 7: Landscape Character Status Quo
- APPENDIX 8: Socio-Economic Status Quo
- APPENDIX 9: Economic Status Quo
- APPENDIX 10: Cultural Heritage Status Quo

Volume II: Desired State

- APPENDIX 1: Stakeholder Engagement
- APPENDIX 2: Spatial Development Framework Maps
- APPENDIX 3: Calculations for Priority Conservation Areas
- APPENDIX 4: Maps

Volume III: SEMP

- APPENDIX 1: Land Use Management System
- APPENDIX 2: Social Guidelines
- APPENDIX 3: Issues and Response Report

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ACRONYMS

AMD	Acid Mine Drainage
DEAT	Department of Environmental Affairs and Tourism
DEA&DP	Department of Environmental Affairs and Development Planning
DME	Department of Minerals and Energy
DWEA	Department of Water and Environmental Affairs
EIA	Environmental Impact Assessment
ELM	Emakhazeni Local Municipality
EMF	Environmental Management Framework
GIS	Geographic Information Systems
IDP	Integrated Development Plan
LDO	Land Development Objective
LUMS	Land Use Management System
MBCP	Mpumalanga Biodiversity Conservation Plan
MDEDET	Mpumalanga Department of Economic Development, Environment and Tourism
MTPA	Mpumalanga Tourism and Parks Agency
NEMA	National Environmental Management Act, 1998
UORC	Upper Olifants River Catchment
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework
SEF	Strategic Environmental Focus (Pty) Ltd
SEMP	Strategic Environmental Management Plan
VIA	Visual Impact Assessment
VIP	Ventilated Improved Pits
WMA	Water Management Area

1. INTRODUCTION

The Emakhazeni Local Municipality (ELM), with the assistance of the Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) and the National Department of Environmental Affairs and Tourism (DEAT) embarked on the compilation of an Environmental Management Framework (EMF) for the Municipality. The ELM includes the following major centres: Dullstroom, Belfast, Machadodorp and Waterval Boven.

An EMF is a decision support tool aimed at:

- Describing the environmental attributes of the study area;
- Assessing the attributes in terms of relative sensitivity to development; and
- Guiding environmental decision-making.

The EMF delineates geographic areas in terms of environmental attributes, such as water resources, cultural and heritage resources and agricultural potential; assesses the current status quo against the vision or desired state for the ELM; and identifies environmental control zones to guide land use planning and development in the ELM.

The EMF will be used to proactively plan development in a sustainable manner within the Municipality and to guide decision-making by authorities on development applications, ultimately ensuring continued progress towards sustainability.

Strategic Environmental Focus (Pty) Ltd (SEF) was appointed as the independent environmental consultancy to compile the EMF for the Emakhazeni Local Municipality.

1.1. Structure of EMF

The EMF is made up of the following components:

- Volume I: Status Quo Report;
- Volume II: Desired State Report; and
- Volume III: Strategic Environmental Management Plan, including an Implementation Plan.

This report is a summary of the three separate volumes.

Volume I, the Status Quo Report, describes the current environmental issues. Information is sourced for all aspects of the environment, from socio-economic data to data on natural resources, such as wetlands, endangered plant and animal species and habitats, as well as cultural heritage. Existing policies, legislation and guidelines, such as the Integrated Development Plan (IDP), are reviewed. Issues such as capacity of road networks, trends in development planning and services,

such as water, sewage and electricity, are addressed. The Status Quo Report paints a picture of the current state of the environment in the Municipality. During the initial phases, specialist scientists undertook field work in the Municipality at key locations to gather data and input into the central GIS database of environmental information. Specialists included landscape architects, ecologists, wetland specialists, agricultural or soil specialists, heritage specialists, town and regional planners, resource economist, as well as traffic and services engineers. The report outlines the pressures on the environment and laid the groundwork for further studies.

Volume II (Desired State Report) reports on the vision for further development in the municipality, based on broad stakeholder consultation, and sets out objectives and principles for future developments. The preferred land uses are mapped according to the environmental attributes and resource constraints within management zones. These management zones form the basis for specific recommendations for land use change and development in the Strategic Environmental Management Plan (Volume III). The Desired State report is a visionary document, but is founded in the opportunities and constraints as identified in the Status Quo Report (Volume I). A zonation map is the visual representation of the desired state, i.e. directing the municipality towards a vision for each zone, which reflects and respects the broader objectives per sector for the area. A zonation table detailing the boundaries and rationale for each zone, as well as the zone's status quo, supports the zonation map. Biophysical features and existing spatial management units, such as catchment boundaries, have been used to demarcate and delineate the zone boundaries.

Volume III, the Strategic Environmental Management Plan (SEMP), is aimed at providing the municipality and developers with guidelines for land use change in areas within Emakhazeni. There are two levels of zonation from the Desired State Report: the first is a set of management zones based on preferred land uses, the second is a layer that rates the areas according to agricultural, heritage, ecological and geotechnical sensitivity to development. The SEMP provides a set of guidelines for developments within these areas. The Implementation Plan broadly outlines roles and responsibilities with regards to implementing the EMF.

2. STATUS QUO

The Status Quo report provides an analysis of the current status quo in ELM with regards to:

- Development and Planning Context;
- Legislative and Policy Context;
- Built Environment:
 - Town and Regional Planning;
 - Environmental and Waste Management; and
 - Infrastructure.

- Biophysical Environment:
 - Climate;
 - Noise;
 - Air Quality;
 - Land Cover;
 - Topography;
 - Geology;
 - Hydrology;
 - Agricultural Potential;
 - Terrestrial Ecology;
 - Wetland Ecology; and
 - Landscape Character.
- Mining and Mining-Related Impacts, including overview of mining sector in ELM, impact of mining on water resources and other mining-related impacts;
- The People:
 - Demographic Profile;
 - Economic Profile; and
 - Cultural Heritage.

The majority of the specialist studies were undertaken between June- July 2007.

The limitations of reporting and analysis, an overview (based on available literature and data, supplemented by specialist studies, where necessary) and an assessment of key issues related to planning in ELM that were carried forward to the Desired State report are provided for each section. A series of maps forms part of Volume I, outlining the environmental features in the study area, and the full versions of the specialist studies are appended to Volume I.

The information assembled for the Status Quo Report provides a comprehensive overview of the current state of the environment of the ELM and forms the basis for all subsequent analyses within this project. The information contained within the Status Quo Report should be updated as frequently as possible, to ensure that the EMF is current and representative of the latest developments within the study area.

2.1. Stakeholder Engagement

During the Status Quo phase, stakeholder engagement included the following activities:

- The stakeholder engagement process commenced on 11 June 2007 and will run until 23 July 2007, to make allowance for the Mpumalanga school holidays;
- Newspaper advertisements introducing the project and inviting registration and comments from stakeholders was placed in the Middelburg Observer and Lowvelder on 12 June 2007;

- Letters were distributed to key stakeholders and notices were sent to ELM offices to be erected at the offices;
- A public meeting was held to on 17 September 2007 at the Funda Community Hall, Belfast, to provide stakeholders with the key findings of the Status Quo Report and to provide them with an opportunity to raise issues of concern or comments;
- A questionnaire was designed and distributed to capture specific responses from stakeholders on issues such as:
 - The major challenges for the ELM;
 - The ability and capacity of ELM to manage these challenges;
 - Ideas for improving sustainability and land use distribution;
 - The value and use of open space areas; and
 - The level of provision of basic services and general level of service offered by ELM;
- Draft copies of the Status Quo Report were made available for stakeholder review from Wednesday, 10 October 2007 to Wednesday, 24 October 2007 at local venues in the area; and
- The Issues and Response Report was updated based on comments received from stakeholders.

2.2. Summary of issues related to planning in ELM

The following section is a summary of the key issues identified during the Status Quo phase, through specialist studies and stakeholder engagement:

2.2.1. Issues related to Town and Regional Planning

- Need for alignment with SDF;
- Importance of the trout triangle (Belfast, Dullstroom, Machadodorp, Waterval-Boven and Lydenburg) as a tourist attraction and in terms of economic development and development of hospitality and tourism uses along the P81-1 (between Dullstroom and Lydenburg);
- Importance of the N4 Maputo Corridor and Road P81-1 in terms of tourism;
- Strategic location of ELM;
- Constraints posed by topography;
- Divergence of various town planning schemes- lack of a uniform land use management system for the entire ELM area;
- Need for inter-governmental coordination in land use planning;
- Lack of formal land use control in Sakhelwe, Emthonjeni and Emgwenya;
- Rural nature of ELM and spatial segregation of communities has implications for accessibility to services for rural communities;
- Need for improvements in public transport and the rail network;
- Low education and skills levels, and high levels of poverty and unemployment; and

- Land reform and restitution is a key issue in ELM, with slow processing of land claims.

2.2.2. Issues related Waste Management

- Need for effective waste management and proactive planning is one of the major environmental management issues;
- Lack of formal refuse removal service in many areas;
- People living in informal dwellings on the Belfast waste site;
- Need for appropriate hazardous waste sites; and
- Issue of disposal of medical waste also requires attention as a matter of urgency.

2.2.3. Issues related to Transport and Services

- Limited public transport;
- Increased traffic volumes on the N4 Maputo Corridor;
- Roads in the region are generally in a poor condition and require upgrading;
- Need for upgrading the busy mini bus taxi routes to bus routes;
- Access to basic services in the ELM area is generally good, and improvement is evident;
- Existing service structure would be sufficient to serve the additional developments in Belfast, Siyathuthuka and Dullstroom in the short term, however these towns are experiencing the highest growth rates, and demand for services is likely to increase in these areas within the next five years;
- All households in Belfast, Dullstroom, Machadodorp and Waterval-Boven have access to safe potable water, however access to safe drinking water has been a problem around the rural areas;
- Rural households, particularly in communal land areas, use Ventilated Improved Pits (VIP) for sanitation, and the safety of borehole water is compromised, particularly in the Middle Olifants sub-area;
- In urban areas, the dilapidating bulk infrastructure causes discolouration of water;
- Many informal settlements do not have access to basic electricity supply;
- Power supply in the four main urban areas (Belfast, Dullstroom, Machadodorp and Waterval-Boven) is often disrupted by rains, winds and other natural elements due to overhanging network systems;
- With the increasing development, the electricity demand is predicted to increase by 25% by 2011/2012 and a further 15% from this by 2015/2016;
- In Emthonjeni, Waterval-Boven and Emgwenya, the existing electrification networks can accommodate more than 100 % growth before any problems will be experienced with the capacity of the network; and
- There is lack of suitable space for new cemeteries.

2.2.4. Issues related to the Biophysical Environment

- The number of aircraft flying at low altitude over the study area and associated noise impacts;
- The need for a provincial air quality monitoring network, coordinated data collection and local air quality management plans to form part of the IDP;
- The Olifants and Inkomati Water Management Areas (WMAs) face a water deficit, with future water demand exceeding supply. Irrigation is the chief water use in the area, and both the Inkomati and Olifants WMA have shown a decline in water quality;
- The agricultural sector contributes significantly to the creation of employment and the local economy, however the sector is limited by water availability and the lack of suitable land;
- Need for limitation of further fragmentation of natural habitats through agricultural and forestry activities, and need for maintenance of natural corridors;
- Importance of palustrine wetlands (wetlands associated with rivers and channeled drainage lines) in maintaining connectivity between patches of untransformed grassland;
- Importance of maintaining remnant primary vegetation patches and delineation of priority conservation areas;
- Need for empirical enquiries into the extent of the impact of harvesting plants for use in traditional medicines;
- The quality of surface and ground water in some parts of the Upper Olifants River Catchment (UORC) does not achieve the guideline values for aquatic ecosystems as determined by the DWEA;
- Acidic water resulting from water pollution in adjacent catchments may threaten sensitive aquatic habitats;
- Monitoring of water quality should be in place;
- Need for empirical enquiries into the impacts of forestry on water quality and quantity as well as wetland systems;
- Need for conservation priorities for wetlands, based on research data;
- All wetland types, including artificial wetlands and moist grasslands, are threatened by afforestation and agriculture;
- Wetlands and associated grasslands in the Municipality are known to be a crucial habitat for many endangered bird and plant species that can contribute to the tourism industry in the area; and
- Certain landscapes have been classified as sensitive in terms of potential visual impacts of developments in these areas.

2.2.5. Issues related to Mining

- Key impacts of mining in ELM include the potential for subsidence of the surface and associated long term impacts on groundwater flows, surface water quality and Acid Mine Drainage (AMD); and

- There is lack of governmental coordination and a unifying policy for mining waste and water issues.

2.2.6. Socio-Economic Issues

- Under a low HIV/AIDS infection rate scenario, the population growth rate for the majority of the study area is classified as high, however under the high HIV/AIDS scenario, there will be medium population growth rates;
- ELM is predominately rural and sparsely populated;
- The concentration of the population of ELM in a few urban centres allows the easier distribution of services compared to other more rural and remote areas;
- More than a quarter of the population above the age of 20 years in the ELM have no form of education;
- The agricultural sector makes the largest contribution to employment in the ELM;
- Although the ELM has a reasonably strong, diversified and growing economy, it is essential that the local economy is diversified, with employment opportunities not being dependent on a few sectors;
- The poorest areas are Emthonjeni, Emgwenya and Siyathuthuka;
- One additional secondary school is required to meet standards;
- The trend in economic growth of the area has included a move from the primary sector to the tertiary sector and there is need to identify potential areas of development within the region to cater for this growth;
- The strongest sectors are mining, transport and communication, agriculture and trade and catering;
- The N4 Maputo Development Corridor brings investment and cross border opportunities;
- The local economy is dominated by the tourism sector, which shows potential growth and is strongly positioned due to the strong linkages between the natural environment and ecotourism. Neglecting the environment could compromise economic and other development;
- Ignorance as to the importance and value of heritage sites and their protection through legislation. Land and property owners are, in most cases, ignorant about the value of heritage or their legal obligation to protect it. Current legislation is very clear as to the obligation of the land or property owner with regards to heritage management and preservation.
- Need for improving information on heritage resources;
- Tourism related activities provide an economic incentive to safeguard and restore heritage sites. There is a need for inclusion of heritage sites in tourism developments through interpretative plaques, guided tours and interpretative exhibitions and centres as well as appropriate heritage management plans;
- Many cultural heritage resources have been negatively affected or even destroyed by rapid urban and agricultural expansion; and
- Knowledge of cultural heritage resources and traditions is being lost.

3. DESIRED STATE

Formulating the Desired State began with establishing a vision for the ELM, based on understanding how development was undertaken in the past in the study area and the environmental implications of this development. It is recognized that understanding the driving forces behind land use change and development allows for targeted environmental management interventions to address the underlying factors proactively, rather than reactively measuring progress against the vision and *ad hoc* decision-making.

3.1. Driving Forces

Local planning policy drivers include the N4 Maputo Development Corridor, location of undeveloped areas, the Trout Triangle, wetlands and important conservation areas, mining and agriculture. There is need for consideration of economic values of natural resources, as it is recognised that certain land uses cannot be supported owing to their transient nature and long term impacts, such as mining in sensitive environments can not be supported.

3.2. Stakeholder Engagement

The following section outlines the process followed in the stakeholder engagement component of the Desired State phase.

3.2.1. Focus Group Meetings

A series of focus group meetings was undertaken from 29-31 January 2008, during which broad discussion on a range of environmental issues took place. The meetings took place as follows:

- 29 January 2008 - Emakhazeni Municipal Office, Community Services Department (Conference Room), Belfast;
- 29 January 2008 - Emakhazeni Municipal Office, Conference Room, Dullstroom;
- 30 January 2008 – Department of Water and Environmental Affairs, Nelspruit;
- 30 January 2008 - MDEDET offices, Government Complex, Nelspruit; and
- 31 January 2008 - MTPA Offices, Nelspruit.

One of the key discussion points was the trend in development in the study area, which changed from a predominately agricultural focus to a focus on ecotourism and tourism. The drive for expansion of agriculture led to environmental degradation, including impacts on water resources, which have become a limiting factor for further development in the municipality. Dullstroom, in fact, has an indefinite moratorium imposed on any further development until water supply can be increased and water infrastructure upgraded. The overall impression created is that development has driven service infrastructure upgrades, instead of *vice versa*, and that this situation is

not sustainable. In building a vision for sustainable development, themes that emerged included:

- Need for sustainable energy;
- Crime –free communities;
- Greater socio-economic development;
- Absence of poverty;
- Infrastructure to support economic activities;
- New developments that favour disadvantaged/ jobless people;
- Green developments;
- Better co-operative governance;
- The area as an “escape to the country” or “lung”;
- A peaceful rural community, clean air, clean water, focusing on eco-tourism, trout fishing, relaxation-related activities, with low industrialisation (no primary industry); and
- Strictly controlled mining.

3.2.2. Stakeholder Workshop and Review

In addition to the focus group meetings, a stakeholder workshop was held on 20 February 2008 at the Funda Community Hall, Belfast, and the discussion focussed on:

- Need for conservation of pristine grassland and rocky outcrops;
- Need for monitoring of mitigation measures;
- Need for enforcement of environmental law;
- Concern regarding approval process for mining applications;
- Need for economic valuation of wetland systems;
- Unsustainable nature of mining in study area;
- Need for preservation of areas of high potential agricultural land;
- Need for local environmental monitoring committee;
- Lack of transparency in decision-making; and
- Need for waste management.

Stakeholders made recommendations for land uses that should be promoted or limited in ELM (this was supplemented with inputs received by stakeholders through completed questionnaires distributed during the Status Quo phase).

The Draft Desired State report was distributed for stakeholder review from 14 July 2008 to Monday 28 July 2008. On request from the stakeholders, the review period was extended to 14 August 2008.

3.3. Building a Vision

The vision was developed as:

“To ensure that development in the municipality proceeds in a manner that does not undermine the integrity of the natural, social or economic environment, while providing for opportunities and benefits for economic growth and prosperity”

This vision, which builds on the notion of sustainable development in ELM, forms the basis for the Desired State.

The Desired State Report sets out principles based on those in Section 2 of the National Environmental Management Act, 1998 (Act No. 107 of 1998). The ELM must strive for sustainable development within its boundaries, to meet the needs of the present generations without compromising the resource base and development opportunities for future generations. In order to enhance the element of sustainability in terms of the development vision, the Desired State outlines a set of management objectives to achieve the sustainable development vision.

3.4. Summary of Management Objectives

- To allow for development that serves the people of ELM and serves their psychological, physical, developmental, cultural and social interests equitably;
- To ensure development is in line with the goals of Integrated Environmental Management;
- To minimise the generation of waste and to manage waste disposal;
- To discourage urban sprawl;
- To reduce reliance on non-renewable resources in the long term and to encourage the use of renewable resources, in a responsible and equitable manner, within acceptable levels;
- To employ a risk-averse and cautious approach in environmental decision-making;
- To ensure that the environmental impacts of new developments are meaningfully assessed and that the EIA process informs decision-making;
- To ensure good governance in environmental management, including ensuring openness and transparency, participation, accountability, effectiveness, coherence and consistency;
- To optimise the use of existing services infrastructure;
- To ensure that land use change optimises use of the natural resource base;
- To protect sensitive landscape features and landscape-level function;
- To maintain ecological corridors within a network of formally protected conservation areas;
- To protect watercourses, including wetlands;
- To minimise development with water-related impacts in water-stressed catchments;
- To preserve areas of high agricultural potential for agricultural purposes;
- To restrict mining to areas that are not considered sensitive and to less sensitive catchments;

- To encourage private landowners to participate in conservation;
- To conserve a representative sample of each threatened habitat type; and
- To protect sites of cultural heritage value and the landscape within which these sites occur.

3.5. Management Zones

Using the untransformed areas within the study area as a basis, the underlying sensitivities of the environment to development were used to delineate management zones. These form the basis for zonation of the area based on appropriateness of various major land uses and areas of similar sensitivities.

Various datasets were used in the delineation of sensitive areas within ELM, with sensitivity ratings based on prioritisation of issues through specialist inputs and literature review. These datasets included:

- National Spatial Biodiversity Framework Priority Areas;
- Mpumalanga Conservation Plan- May 2007;
- Rivers and Drainage Lines;
- Wetlands;
- Protected Areas;
- Heritage Sites;
- Slope;
- Landscape Sensitivity; and
- VegMap Conservation Status- with priority ranking for each vegetation type and identification of priority conservation areas through a pair-wise comparison matrix to establish the relative importance of each Vegmap type in ELM- this ensures that a representative sample of the highest priority vegetation types is protected and that there is optimal contribution to national conservation targets.

On all areas, except those classified as "High" in terms of ecological sensitivity, the various zonation parameters were run to identify preferred land use/ management zones. A hierarchy of management zone criteria was progressively applied to the study area as in Figure 1.

Hierarchy of Management Zonation Criteria

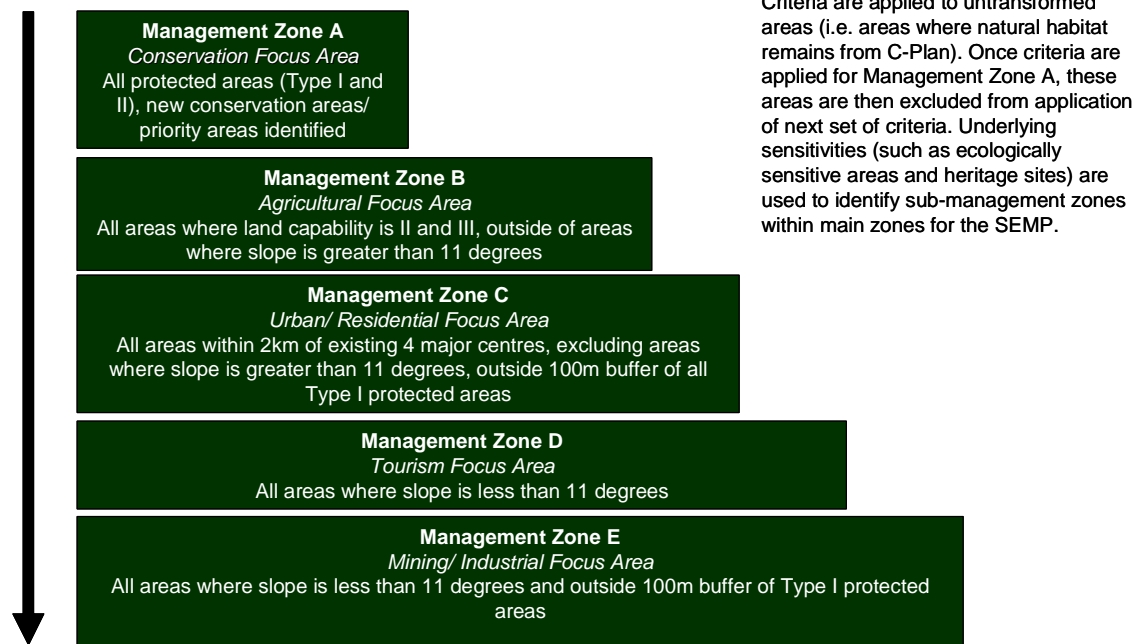


Figure 1: Hierarchy of Management Zone Criteria

The map of management zones is shown in Figure 2.

Importantly:

- The study focussed on the major land uses in ELM. Other cross-over land uses, such as agritourism or ecotourism, have not been specifically delineated;
- The land uses that are shown are based on an analysis of low scale datasets and do not preclude site-specific studies;
- A juxtapositioning of different land uses is often encouraged, under the Land Development Objectives. For the purposes of this study, preferred land uses are grouped according to underlying environmental attributes. The SDF also provides greater detail on development patterns within the major centres;
- The sensitivity criteria must be applied separately from the preferred management zone criteria. This implies that, even though an area may be designated as preferred land use being agriculture, the management of that area must still be in line with the underlying sensitivities; and
- An economic comparison or evaluation for the preferred land uses in the study area was not undertaken. This implies that the preferred land uses are not based on economic needs or demands in ELM, but on the attributes of the receiving environment.

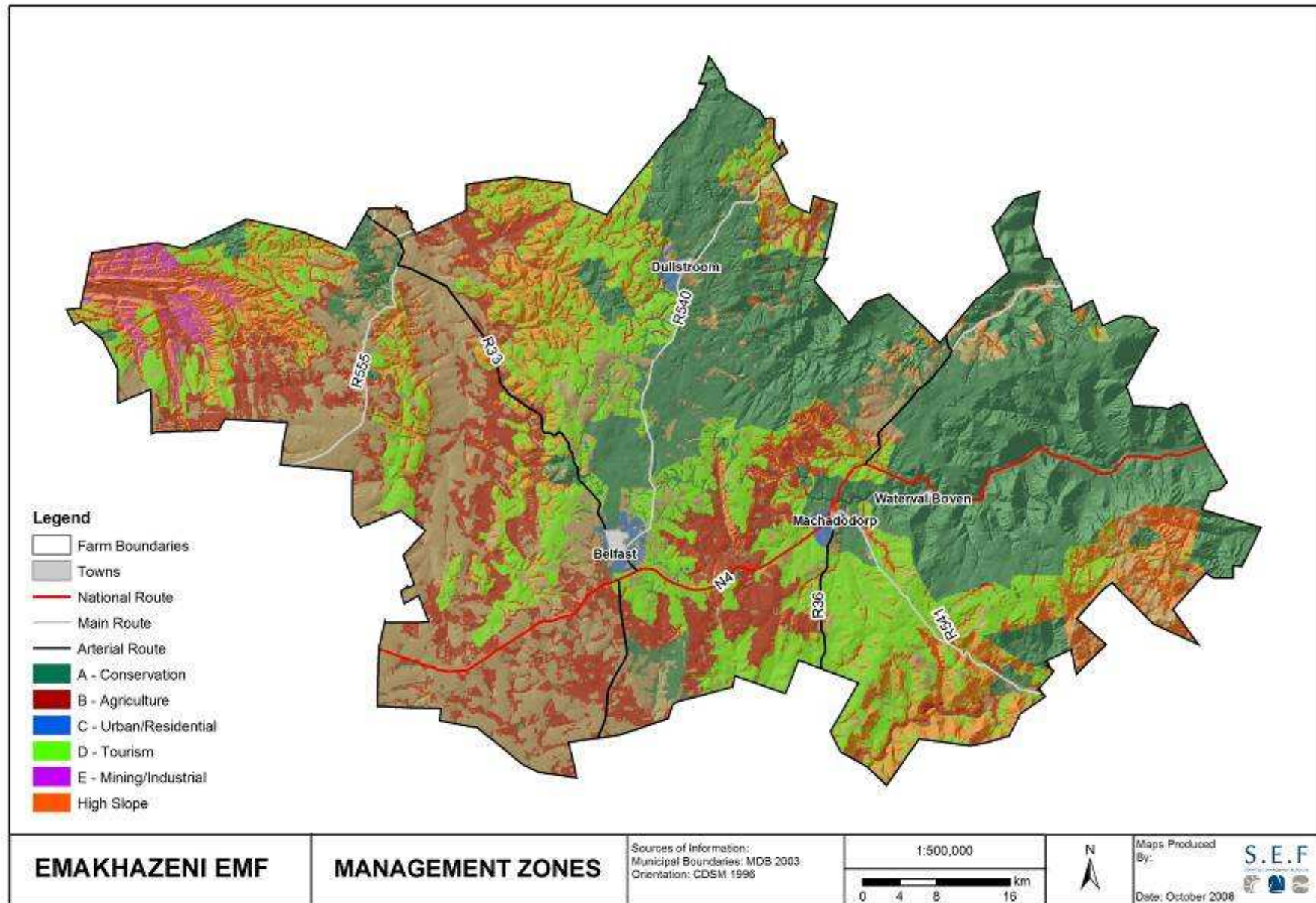


Figure 2: Management Zones

4. STRATEGIC ENVIRONMENTAL MANAGEMENT PLAN

The SEMP provides a set of guidelines for developments within the management zones and throughout the study area, based on certain environmental attributes.

The aim of the SEMP, apart from informing appropriate land uses in relation to environmental attributes, is to provide guidelines on improving the compatibility of land uses within ELM. Land uses need to be located with consideration of compatibility, i.e. where land uses are in mutual support and do not impact negatively on other land uses. Compatibility relates to elements such as aesthetic impacts and volumes of traffic and usage. The ongoing and consistent control of land uses within buffer zones is important, and this can be achieved through mechanisms such as land acquisition, conservation servitudes or deed restrictions. It is important to note that the kind of transportation network and hierarchy of road network can play a major role in attracting or dissuading certain types of land uses.

To this end, a series of buffer zones and associated land uses are outlined for each land use, including buffer zones for:

- Agricultural and forestry activities;
- Industrial land uses;
- Wetlands (including pans);
- Riparian areas (all drainage lines, intermittent streams); and
- Public amenities (airports, sewage treatment plants, waste facilities, disposal sites).

It is important to note that, while the SEMP outlines preferred land uses in management zones, the zones do not preclude a developer/ planner from having to consider the underlying ecological, agricultural or heritage sensitivity or having to comply with relevant legislation.

4.1. Stakeholder Engagement

The SEMP phase involved distribution of the draft SEMP document to local venues for stakeholder review from 30 October 2008 –13 November 2008. Issues were collated and used to compile an updated Issues and Response Report, which forms part of the final SEMP.

4.2. Summary of Management Zone Guidelines

The management zones and restrictions are summarized below:

.

Table 1: Summary of Management Zone Guidelines

Management Zone	Description	Specialist Studies/ Inputs Required	Attributes	Desirable Land Uses
<p>Conservation Focus Area (Zone A)</p>	<p>All ecologically sensitive areas that contribute to maintenance of biodiversity and ecosystem function. Existing protected areas are included. This management zone covers 156, 284 hectares and extends over 33% of the municipality.</p>	<ul style="list-style-type: none"> • Water availability; • Level of road access; • Specialist Biodiversity Assessment (with reference to MTPA guidelines); • Offset Management Plans, as per Western Cape guidelines for biodiversity offsetting; • Wetland delineation, where applicable (wetlands and buffers); • Aquatic Impact Assessment, where applicable (rivers and drainage lines and buffers); • Determine land ownership and zoning of priority conservation areas; • Declaration under the Protected Areas Act, 2003: Informal (Type II) protected areas are more vulnerable and where these are 	<ul style="list-style-type: none"> • Slope categories; • Protected areas (Type I and II) • New priority conservation areas, made up of all High and Medium-High areas, including: <ul style="list-style-type: none"> ○ C-Plan– irreplaceable sites (aquatic and terrestrial) ○ Locally important Vegmap categories (High): <ul style="list-style-type: none"> • Eastern Highveld Grassland; • Legogote Sour Bushveld; • Lydenburg Thornveld; • Northern Mistbelt Forest; and • Sekhukhune Montane Grassland. ○ Locally important Vegmap categories (Medium-High): <ul style="list-style-type: none"> ▪ Lydenburg Montane Grassland; and ▪ Rand Highveld Grassland. ○ Rivers and drainage lines and 30m buffers; and ○ Wetlands and 100m buffers; 	<p>All preferred land uses should be aimed at biodiversity conservation and management, including:</p> <ul style="list-style-type: none"> • Environmental conservation land uses (5.2.7 of the LUMS); • Protected areas, as per hierarchy provided in Protected Areas Act, 2003; • “High” areas should be Special Nature reserves, Nature Reserves or Wilderness Areas. “Medium-High” areas should be designated Protected Environments; • Areas immediately adjacent to protected areas that are designated priority conservation areas should be set aside as Protected Environments in terms of the Protected Areas Act; • Low impact eco-tourism facilities should be supported, but only where specialist studies have been undertaken and the mitigation measures can be implemented to reduce impacts on biodiversity to “Low”; and • Consolidated developments should be planned in these areas to reduce fragmentation of habitats, i.e. allow contiguous areas of similar habitat, minimize impact on connectivity of conservation important areas, minimize stream and river crossings.

Management Zone	Description	Specialist Studies/ Inputs Required	Attributes	Desirable Land Uses
		<p>supported by the “new priority conservation areas” layer, should be targeted for declaration;</p> <ul style="list-style-type: none"> • Need for protected areas management plans; • Biodiversity management plans; • Species management plans, where necessary; • Monitoring of consumptive resource uses; and • Control of developments immediately adjacent to protected areas. 		
<p>Agricultural Focus Area (Zone B)</p>	<p>All areas where land capability is highest (II or III) but excludes areas where slope is greater than 11 degrees, due to erosion potential in these steeper areas. This management zone covers 58,158 hectares and extends over 13% of the municipality.</p>	<ul style="list-style-type: none"> • Local, regional and national issues and characteristics should be taken into account in the assessment of proposed development on agricultural land; • Permanent removal of productive agricultural land must not be undertaken without consideration of its economic importance for the agricultural sector, 	<ul style="list-style-type: none"> • Land capability II or III; and • Slope less than 11 degrees. 	<p>Ideally, in this zone all preferred land uses should be aimed at optimizing the use of agricultural land, including:</p> <ul style="list-style-type: none"> • Agricultural orientated land uses (section 5.2.1 of the LUMS); • Agricultural activities, including agri-industrial such as biofuels projects; • Developments must consider the carrying capacity of land and use accepted soil management techniques, aiming at reducing erosion; and • Consolidated developments should be

Management Zone	Description	Specialist Studies/ Inputs Required	Attributes	Desirable Land Uses
		<ul style="list-style-type: none"> • The potential off-site effects of development proposals must be balanced against the benefits of the proposal; • The compatibility between the proposed development and the existing uses on the surrounding land will be considered; • All developments in this zone must obtain the approval and/or consent of the National and Provincial Department of Agriculture in terms of the Subdivision of Agricultural Land Act, 1970 (Act No. 70 of 1970); • Water availability; • Cumulative impacts of monoculture on biodiversity; • Cumulative impacts of agri-industrial activities; • Details of surrounding land uses; • Agricultural potential study, with inclusion of economic factors; 		<p>planned in these areas to reduce fragmentation of agricultural parcels, i.e. maintain at least 1ha parcels to retain agricultural viability, subject to water availability.</p>

Management Zone	Description	Specialist Studies/ Inputs Required	Attributes	Desirable Land Uses
		<ul style="list-style-type: none"> • Determine land ownership and zoning; • Determine grazing carrying capacity for livestock projects; • Conduct land audit of these areas to check for compatibility of land uses; • Consult with National Department of Agriculture regarding siting of agricultural projects in these target areas; and • Determine productivity of these parcels of land. 		
<p>Urban/ Residential Focus Area (Zone C)</p>	<p>All areas within 2km of the existing 4 major centres, excluding those areas where slope is greater than 11 degrees and those areas falling within the 100m buffer of protected areas. This management zone covers 2,292 hectares and extends over 0.5% of the municipality.</p>	<ul style="list-style-type: none"> • Consultation with Spatial Development Framework (SDF); • Water demand and availability; • Details of surrounding land uses; • Compatibility of adjacent land uses; • Market feasibility study; • Social Impact Assessment, focus on job creation and expectations of local 	<ul style="list-style-type: none"> • Areas within 2km of existing centres; • Where slope is less than 11 degrees; and • Outside 100m buffer of protected areas. 	<p>Ideally, in this zone all preferred land uses should be aimed at addressing the housing shortages and contributing to compact urban centres. These land uses include:</p> <ul style="list-style-type: none"> • High, medium and low density residential projects (section 5.2.2 of the LUMS); • Commercial land uses (section 5.2.5 of the LUMS); • Utilities orientated land uses (section 5.2.10 of the LUMS), including telecommunications infrastructure and sewer purification plants; • Retail land uses; • Institutional land uses, including government

Management Zone	Description	Specialist Studies/ Inputs Required	Attributes	Desirable Land Uses
		<p>community, optimizing use of local resources;</p> <ul style="list-style-type: none"> • Consultation with Department of Housing; • Engineering services agreements with service providers and assessment of capacity to support proposed development; • Geotechnical study-identification of geotechnical suitability of land parcel for proposed development; • Determine land ownership and zoning; • Liaise with Department of Housing on proposed locations of housing projects and aim to coordinate; and • Audit of services demands and supply. 		<p>orientated land uses (section 5.2.8 of the LUMS);</p> <ul style="list-style-type: none"> • Light industrial activities (section 5.2.6 of the LUMS, excluding mining and noxious industries) - Only light industrial uses that have a minimal impact, compatible with the specific locality, will be allowed; and • Community facility land uses (section 5.2.4 of the LUMS)- such as hospitals, clinics, schools, police stations, sports and recreational facilities.
<p>Tourism Focus Area (Zone D)</p>	<p>The tourism focus area remains after extraction of management zones A-C. This management zone covers 95,527 hectares and extends</p>	<ul style="list-style-type: none"> • Details of surrounding land uses; • Compatibility of adjacent land uses; • Survey of nature and 	<ul style="list-style-type: none"> • Areas where slope is less than 11 degrees; and • Areas excluding management zones A-C. 	<p>Ideally, in this zone all preferred land uses should be aimed at optimizing growth of the tourism industry in the study area. These land uses include:</p> <ul style="list-style-type: none"> • Tourism orientated land uses (section 5.2.3 of the LUMS); and

Management Zone	Description	Specialist Studies/ Inputs Required	Attributes	Desirable Land Uses
	<p>over 20.2% of the municipality.</p>	<p>proximity of similar tourism initiatives;</p> <ul style="list-style-type: none"> • Market feasibility study; • Social Impact Assessment, focus on job creation and expectations of local community, optimizing use of local resources; • Engineering services agreements with service providers, and assessment of capacity to support proposed development; • Geotechnical study-identification of geotechnical suitability of land parcel for proposed development; • The need for development will have to be demonstrated; • Retail and other tourist orientated uses such as conference facilities may be allowed if such use will result in increased convenience and amenity to the tourist and is ancillary to and 		<ul style="list-style-type: none"> • Tourism facilities (where strong linkages with existing tourism initiatives and projects can be demonstrated and there is a proven market demand for such facilities).

Management Zone	Description	Specialist Studies/ Inputs Required	Attributes	Desirable Land Uses
		subservient to the main use; • Tourism establishments and facilities should be provided with adequate services; • Tourism establishments and facilities should build upon the assets and qualities of surrounding urban and rural activities and cultural and natural attractions; • Determine land ownership and zoning; • Minimize water uses and demand; • Energy efficient designs; • Audit of services demands and supply; and • Develop sustainable tourism guidelines.		
Mining/ Heavy Industrial	The focus area remains	• Details of surrounding land	• Areas where slope is less than 11	In this zone, due to low ecological sensitivities

Management Zone	Description	Specialist Studies/ Inputs Required	Attributes	Desirable Land Uses
Focus Areas (Zone E)	after extraction of management zones A-D. This management zone covers 3, 898 hectares and extends over 0.8% of the municipality.	uses; • Compatibility of adjacent land uses- institute appropriate buffer zones ¹ ; • Consultation with Department of Minerals and Energy (DME) regarding mining or prospecting applications and relevant legislated processes to be followed; • Geohydrological study, where there is a risk of contamination of groundwater or underground workings; • Geotechnical study- identification of geotechnical suitability of land parcel for proposed	degrees; • Areas excluding management zones A-D and • Areas outside the 1km buffer of formally protected areas (Type I).	and need for appropriate distance from urban/ residential focus areas and protected areas, heavy industrial and mining activities could be considered (Class 2 industries). It is noted that mining is a resource-based activity. Due to the focus on environmental sensitivities rather than the location and viability of mineral resources, this is a secondary consideration.

¹ Dependant on class of industry and prevailing wind directions. Industries range from:

- Class 1A – industries with pollution risks with serious health effects. Exclusion zone – 500m, recommended restrict development within 5-15km of footprint;
- Class 1B – Industries characterized by air pollution, production of effluent, noise and power generation, e.g. scheduled activities in terms of the Atmospheric Pollution Prevention Act, 1965 Exclusion zone – 200m, recommended restrict development within 1200m of footprint;
- Class 2 – Heavy engineering, breweries, food manufacturing, etc. Minimum buffer for residential development is 200m;
- Class 3 – Industrial office parks, clean manufacturing processes, techno parks, warehousing, transport and distribution operations. Minimum buffer for residential development is 50m; and
- Class 4 – Commercial or service industries in industrial areas- no buffer but check land use compatibility

Management Zone	Description	Specialist Studies/ Inputs Required	Attributes	Desirable Land Uses
		development; • Cumulative impact on air quality, noise and light pollution levels and surface water and groundwater pollution; • Determine land ownership and zoning; • Ensure compatibility of land uses in medium-long term; and • Audit of services demands and supply.		

4.3. Specialist Study Requirements

The nature and type of specialist study is triggered by the environmental attributes in an area, through querying the GIS. The specialist study requirements are provided in Table 2. The SEMP also outlines the requirements for a visual impact assessment, which is based on underlying landscape sensitivity as determined through the Status Quo Report. Recommendations are included in Table 3 for the various landscape sensitivity ratings in the Desired State Report.

Table 2: Guidelines for Specialist Studies based on sensitivity rating (cross-reference Table 1)

Sensitivity Rating of Areas	Specialist Studies Required	Key factors to be considered in Decision-Making
Ecological- High and Medium-High	As for Management Zone A	As for Management Zone A
Ecological- Medium	Ecological, Red Data Aquatic	Impact of development on connectivity Proximity to protected areas (formal and informal) Potential habitat for Red Data species
Ecological- Medium-Low	Ecological, Red Data Aquatic	Impact of development on connectivity Proximity to protected areas (formal and informal) Potential habitat for Red Data species
Ecological - Low	Ecological survey	Impact of development on connectivity Proximity to protected areas (formal and informal) Potential habitat for Red Data species
Agricultural- High potential (land capability II and III)	As for Management Zone B	As for Management Zone B
Agricultural- Land capability III-IV, and where areas zoned for agricultural use	Agricultural potential study	Surrounding land uses and compatibility Proximity to transportation routes Access to water (many catchments are water-limited and irrigated agriculture is limited) Access to viable markets
Heritage- High	Heritage Impact Assessment Alignment with Heritage Management Plan	Importance of sites in terms of landscape Proximity of other similar sites Appropriate development buffers Consultation with SAHRA and permits where necessary
Heritage- Medium-High	Heritage survey	Importance of sites in terms of landscape Proximity of other similar sites Appropriate development buffers Consultation with SAHRA, where necessary

Table 3: Levels of Visual Impact Assessment

Level of Visual Impact ²	Level of Visual Impact Assessment	Description ³
No/ little	Level 1	<ul style="list-style-type: none"> • Identification of issues, and site visit; and • Brief comment on visual influence of the project and an indication of the expected impacts / benefits
Minimal	Level 2	<ul style="list-style-type: none"> • Identification of issues raised in scoping phase, and site visit; • Description of the receiving environment and the proposed project; • Establishment of view catchment area and receptors; and • Brief indication of potential visual impacts, and possible mitigation measures.
Moderate	Level 3	<ul style="list-style-type: none"> • Identification of issues raised in scoping phase, and site visit; • Description of the receiving environment and the proposed project; • Establishment of view catchment area, view corridors, viewpoints and receptors; • Indication of potential visual impacts using established criteria • Inclusion of potential lighting impacts at night; • Description of alternatives, mitigation measures and monitoring programmes; and • Review by independent, experienced visual specialist (if required).
High- Very High	Level 4	<ul style="list-style-type: none"> • Identification of issues raised in scoping phase, and site visit; • Description of the receiving environment and the proposed project; • Establishment of view catchment area, view corridors, viewpoints and receptors; • Indication of potential visual impacts using established criteria; • Inclusion of potential lighting impacts at night; • Description of alternatives, mitigation measures and monitoring programmes; • Complete 3D modeling and simulations, with and without mitigation; and • Review by independent, experienced visual specialist (if required).

² Determined by Type of Environment and Category of Development (refer to full SEMP for categories)

³ From: Visual Resource Management Africa web site at <http://www.vrma.co.za/self-assessment.htm>

4.4. Implementation Plan

The SEMP includes an Implementation Plan that outlines the roles and responsibilities with regards to implementing the EMF. Key role-players include the municipality, MDEDET, Department of Water and Environmental Affairs, Department of Minerals and Energy and Department of Agriculture.

The SEMP is intended to guide broad land use planning in ELM, in line with the Land Use Management System specifications and with reference to the management zones developed through the Desired State component of the study. The use of untransformed land in ELM, based on environmental attributes and the EMF, is aimed at reducing the potential for conflict over land and between non-compatible land uses. The focus is on optimizing the use of the land. The requirements for specialist studies to inform the EIA process are framed on the underlying environmental sensitivities within the study area.

The SEMP, importantly, does not replace the need for consultation with local planning and environmental officials through the development application process, but provides a uniform basis for all stakeholders to inform land use planning and management.

5. CONCLUSIONS

This integrated summary report is intended to provide an overview of the 3 full volumes that make up the EMF for ELM. This document is not intended as a standalone report, as there are references throughout to relevant volumes and related studies. The EMF acts to translate environmental attributes of the study area in such a way as to inform planning and management of the environment, and provides a means to support decision-making around land use planning and management. It is intended to be used widely, by decision-making authorities, developers, consultants and planners, and provides a valuable means of integrating environmental data for application in consistent and informed decision-making.