

MBOMBELA STATE OF ENVIRONMENT 2003

Identification of Key Environmental Issues



Prepared for:

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Mpumalanga Province

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ACRONYMS

AIDS	Acquired Immuno-Deficiency Syndrome
ARC	Agricultural Research Council
CARA	Conservation of Agricultural Resources Act
CMA	Catchment Management Association
CSIR	Council for Scientific and Industrial Research
DACE	Department of Agriculture, Conservation and Environment
DEAT	Department of Environment Affairs and Tourism
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
GRIP	Greater Nelspruit Rape Intervention Project
HIV	Human Immuno-deficiency Virus
IDP	Integrated Development Plan
KMIA	Kruger Mpumalanga International Airport
KNP	Kruger National Park
LRAD	Land Reform for Agricultural Development
MMC	Manganese Metal Company
MPB	Mpumalanga Parks Board
NEMA	National Environmental Management Act
RDP	Reconstruction and Development programme
SAHRA	South African Heritage Resources Agency
SAPS	South African Police Services
SoER	State of Environment Report
TB	Tuberculosis
TRAC	The Rural Action Committee
UNISA	University of South Africa
WfW	Working for Water

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1. INTRODUCTION

1.1 What is the State of the Environment Report?

The State of the Environment Report is an environmental decision-making and reporting system, which provides concise and current information on the environmental state of a specific area or region.

Aspects and impacts that influence the state are identified and reported on, including indicators, which are used to measure this environmental state. Parameters to be considered for further management of the various environmental components are also considered.

1.2 Why do we need a State of the Environment Report for Mbombela?

The United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, and Agenda 21, the global environmental strategy for sustainable development, which resulted from the Conference, called for improved environmental information for decision-making. State of the Environment reporting has since become the globally accepted means of reporting on environmental issues, and of measuring progress towards sustainable development in the countries, which have adopted the principles, contained in Agenda 21. South Africa as a signatory of Agenda 21, is committed to following this approach, at national and local levels.

Agenda 21 calls for regular monitoring and reporting on the state of the Earth's environment. Formal state of the environment reporting (SoER) is advocated as a means of providing decision-makers and society at large with a regular description about:

- The current state of the environment and trends of change;
- What is causing environmental change;
- Progress on the previous activities and programs that have been put in place to address environmental change; and
- Recommended future activities that need to be implemented in order to improve the state of the environment.

The National Environmental Management Act (Act No. 107 of 1998) states that "every person is entitled to have access to information held by the State relating to the state of the environment, and actual and future threats to the environment". Access to environmental information at a national, provincial and local level is essential to upholding these rights.

1.3 Background to the Mbombela State of Environment Report

The Mbombela Local Municipality adopted its Integrated Development Plan in June 2002. Mbombela has a rich, diverse and dynamic natural resource base, which supports its agricultural, industrial, financial and tourist sectors, as well as the human living environment. The Municipality currently has no accurate or baseline information on the state of its environment and the impact of human development on the sustainability of the natural resources.

The South African Constitution states that municipalities have the responsibility to make sure that all citizens are provided with services to satisfy their basic needs. As the Mbombela Local Municipality area is one of the fastest growing areas in terms of development, its decision makers urgently need to obtain information on the current state of the environment, and also be able to monitor the state of the environment through a set of indicators, to facilitate effective decision-making.

The underlying factor for any effective decision making process is the availability of applicable and accurate data and management information. Lack of information results in ad hoc planning initiatives. More specifically, lack of information on the state of the environment leads to the destruction of sensitive environments, and poor monitoring and control of development activities. This in turn leads to inadequate planning and development initiatives, harming the environment, and consequently its inhabitants.

The Mbombela Local Municipality has appointed Naidoo, Molobela and Partners as environmental consultant to investigate the state of the environment in Mbombela. The goal of this project is to provide the basis for decision-making by the local authority, major industries, businesses and individuals regarding issues affecting the environment. The report will be used as a decision-making tool, specifically for strategic decision and overall development planning in the Mbombela area of jurisdiction.

1.4 The development of the Mbombela State of Environment Report

The Mbombela State of Environment Report will be undertaken in 3 phases:

Phase 1: The determination of Key environmental Issues and Concerns

Phase 2: The determination of environmental Indicators associated with these issues.

Phase 3: The determination of the state of the environment in Mbombela using the Driving force–Pressure-State-Impact-Response (DPSIR) Framework.

This brief report represents the key environmental issues in the Mbombela area, Mpumalanga Province and constitutes phase 1 in determining the state of the environment in Mbombela. These issues were determined through a review of relevant information, stakeholder workshops and through a public participation process in the 9 planning areas of Mbombela (See figure 1: Mbombela Planning Areas)

2. APPROACH TO ISSUES IDENTIFICATION

This is the first step in determining the state of environment and should be addressed by the process followed. The identification of key environmental issues should be based on several aspects, developed in consultation with stakeholders, environmental experts and involve the appropriate government departments

An environmental issue can be defined as a topic of strategic concern that will influence the sustainability of the province. It is important to realise that not all issues are equally important at any given moment and that the issues being considered will change over time (DEAT, 2001)

The relevant sources that were consulted included:

- The State of Environment Report for Mpumalanga Province, 2001
- The draft Key environmental Issues and Concerns for Mpumalanga Province, 2003
- The Mbombela Integrated Development Plan, 2002
- The Mpumalanga Environmental Implementation Plan, 2001
- Other resources such as the National State of Environment Report (1999) and internet sources such as the Cape Town, Durban and Johannesburg Metro SoERs.

In addition to the identification of key environmental issues from relevant documents and specialist input, a stakeholder workshop was held on 25 February 2003 in Nelspruit. A draft issues and concerns list was prepared by NM&P and distributed to the stakeholders at the workshop and through emails. This list formed the basis for discussion during the workshop. At this stage environmental issues were discussed in a broad manner, but specific critical issues for certain areas of Mbombela were also highlighted.

Issues listed included the broad categories listed below:

Biophysical Environment:

- Terrestrial (Land) Resources
 - Biodiversity
 - Soil erosion
- Water Resources and supply
- Air Quality
- Cultural Resources
- Land Use
 - Mining
 - Agriculture
 - Urban development
- Waste Management

Socio-Economic Environment:

- Health
- Education
- Poverty
- Tourism
- Infrastructure
 - Transport
 - Energy
 - Communications

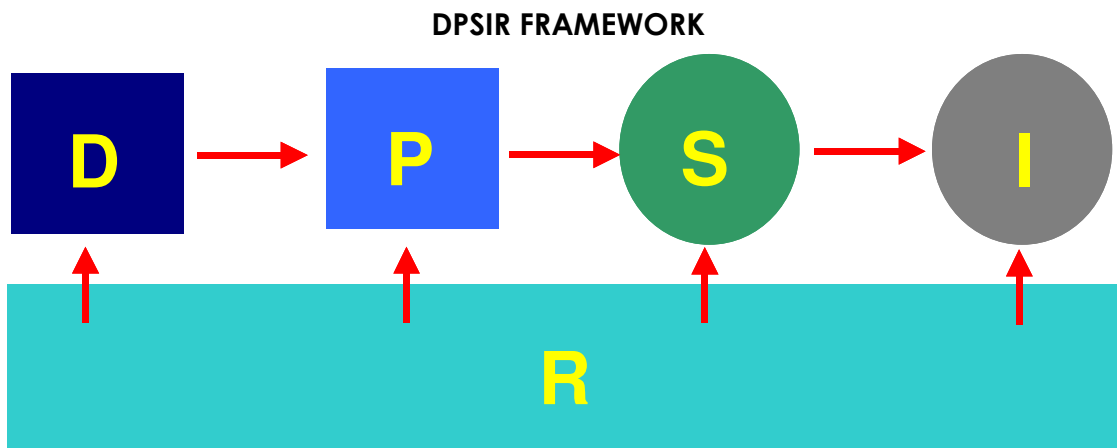
Environmental Governance:

- Institutional and capacity problems
- Non-compliance with environmental requirements

Additional workshops were then held in the nine planning areas (See figure 1: Mbombela Planning Areas) with members of the public. The above-mentioned issues were discussed in lesser detail. These workshops were held at the following venues:

PUBLIC WORKSHOPS IN THE 9 PLANNING AREAS OF MBOMBELA MUNICIPALITY			
Planning Areas	Dates	Time	Venues
A	13/3/03	16H30 - 18H00	FEP Centre (Councillor Sibanyoni)
B	13/3/03	14H00-16h00	Hazyview Council Chamber (Councillor Mpangane)
C	17/3/03	17h00-19H00	Khumalo Traditional Offices (Councillor M W Nkosi)
D	18/3/03	17h00-19H00	White River Community Hall
E	14/3/03	16H30-18H00	KNZ Community Hall
F	15/3/03	13H00-15H00	Matsulu Civic Hall
G	14/3/03	14H00-16H00	Council Chambers
H	12/3/03	17H00-19H00	Council Chambers
I	15/3/03	8H00-10H00	Schagen Constituency Office (Councillor Makubule)

During these nine planning area workshops, the Driving force–Pressure–State–Impact–Response (DPSIR) Framework, used in the National SoER as well as the 2001 Mpumalanga SoER, was introduced and used to establish the key issues in each planning area.



Description of the components of the DPSIR framework:

(Source: National SOE: www.environment.gov.za)

- D – Driving Forces:** These are the underlying social and economic activities that lead to environmental change. Population growth, poverty, agriculture and industrial production are common examples.
- P – Pressures:** These are pressures on the environment which result from the driving forces, for examples pollution of air, water and soil from industrial production, or depletion of fish stocks through human consumption.
- S - State:** This component describes the current state of the environment and recent trends in environmental quality.
- I - Impacts:** These are the consequences of the pressures on the environment, for example reductions in biodiversity, soil degradation, poor human health, and lack of clean, safe water.
- R - Responses:** This component describes the human responses to environmental change, including policies and management strategies to reduce

environmental damage, rehabilitate damaged environments and encourage sustainable development.

The DPSIR approach was briefly applied to all the environmental issues. In some instances drivers of environmental change were discussed and in others pressures or impacts related to the environmental issues. Responses for the problems experienced were mentioned where possible

3. AN OVERVIEW OF THE KEY ENVIRONMENTAL ISSUES IN THE MBOMBELA AREA

It was determined during the stakeholder workshop as well as the workshops in the nine planning areas of Mbombela that there are common issues and drivers of change within Mbombela. These issues may vary in degrees and be influenced by factors such as: the natural environment (resources), the dominant land uses and sectors of activities in each area.

The following section would highlight environmental issues or drivers of change in the nine planning areas.

It was highlighted at the workshops that the issues raised in the workshops could be emotive or biased. These issues have not been verified with scientific information and will therefore be presented as important issues raised by stakeholders. During the identification of appropriate environmental indicators during phase 2 of the project, these issues will be verified against scientific evidence before the indicators are proposed.

3.1 Terrestrial Resources:

- Bush clearing for agricultural, urban and industrial development without compliance to EIA regulations is considered to be one of the most critical issues that is causing irreversible loss of biodiversity throughout the region. Agricultural development is by far the major cause of transformation, but urban sprawl and industrial development are also important because they lead to permanent loss of arable land.
- Habitat destruction is threatening a number of species in the region, in particular the blue swallows, African python, red duiker and various plants species
- Bush encroachment through poor land management leads to conversion of natural grasslands to thickets dominated by a few species, with concomitant reduction in grazing value and biodiversity value.
- Unsustainable harvesting of plants for medicinal purposes, firewood, curios, furniture and building is having a major impact on local species diversity, as it places selective pressure on endangered and threatened species.
- Collectors are having detrimental impacts on populations of targeted plants, such as cycads and tree ferns.
- Informal hunting and the widespread use of snares is a major problem in the area.
- Alien invasive vegetation is spreading throughout the region, and this is having detrimental impacts on land use, biodiversity and stream flows. The Working for Water Program has been addressing this problem, but follow-up work is perceived to be inadequate.

- The forestry industry generates a large number of jobs for the area, but afforestation has a number of detrimental impacts, such as reducing stream flows, causing soil acidification and nutrient depletion, reducing biodiversity through loss of habitats, causing sedimentation of streams, spreading alien vegetation, destroying wetlands and limiting alternative land use options. Future generations and the community at large are therefore unwittingly paying for the external costs of the forestry industry.
- Soil erosion is causing permanent loss of arable lands, and is a major issue throughout the area, particularly in Nsikazi.
- A number of additional issues were highlighted during the public participation process, including frequent and unplanned burning, illegal dumping, and poor compliance to environmental laws and regulations.

3.2 Water Resources:

- Surface and groundwater resources were considered separately, but there was unanimous agreement during the public participation process that existing supplies for both surface and groundwater are inadequate to meet the current demands. Clearly, limitations in water availability are a major constraint to future development in the area.
- Boreholes in the area generally have poor yields and many are severely contaminated by a variety of sources, in particular pit toilets, inadequate septic tanks (both in capacity and design) and french drains, agricultural pesticides and solid wastes (both legal and illegal).
- There is a dire need for formal domestic solid waste handling as well as the installation of adequate non-polluting toilet facilities.
- Springs used by rural communities are polluted and turbid, usually through cattle having uncontrolled access.
- Flows in most rivers and streams are highly regulated by impoundment, although there is still considerable capacity for additional storage. Stream flows are limited, particularly during droughts. Agriculture is perceived to abstract more than their fair share, and this impacts on downstream users and stream ecology.
- Rainwater harvesting is not used to augment supplies in the area, but has the potential to reduce the dependency of households on water services, and has a number of additional benefits, such as reducing stormwater flows.
- Floods have damaged dams and weirs, and their incidence has been aggravated by poor catchment management and poor town and regional planning. Sand mining has aggravated the poor state of rivers and streams further.
- It is understood that there are a number of unlicensed dams in the area, and this increases the risk of dam failure during floods.
- Fish have been over-exploited in most streams and rivers, and the use of pesticides as a method of fishing has impacted on non-target fauna.
- Many wetlands in the area have been cultivated with silviculture or formal and informal agriculture.
- Illegal sand mining and making of cement bricks along streams and rivers throughout the area is destabilizing banks and causing erosion.

3.3 Air quality:

- Transboundary air pollution from Gauteng and the Highveld area causes acid rain and smoke in valley areas during the winter months.
- The paper mills and sawmills in the Mbombela area cause odors and dust, which influence tourism and health.
- Smoke from veld fires and sugar cane burning during the winter months causes respiratory diseases and visibility problems.
- Pollen from the citrus trees in the Mbombela area is a big factor causing asthma and hay fever during the flowering season.
- Dirt roads in predominantly the rural areas cause dust that influences the surrounding communities.
- Industrial processes such as MMC, the Halls processing plant, Delta and Mondipark cause air pollution.
- Air pollution from informal settlements is also a cause for concern.
- Air pollution from the N4 that runs through the center of Nelspruit causes increased air pollution, which causes respiratory problems with surrounding residents and workers.

3.4 Cultural Resources:

- Nelspruit is a young city and also the capitol of Mpumalanga Province. With the exception of the Nelspruit Library, the Lowveld National Botanical Gardens, the Nelspruit Civic Centre and the Mpumalanga Legislative Building, the city is not notable for any cultural and/or heritage resources that contribute to the status of the city. The surrounding areas of White river, Hazyview as well as the rural areas have limited known resources.
- In the rural areas, the biggest cultural resource is the cemeteries, which are deemed very important in cultural values. This resource is not maintained and the local authorities do not realize the significance thereof.
- There are sites with rock art as well as Late Iron Age remains, but no formal preservation of these sites and they are not accessible for potential tourism opportunities.

Informal, environmentally unsafe cemeteries. Insufficient provision. Poor maintenance. No services.

- This very serious environmental hazard is mostly found among the previously disadvantaged and more rural communities, but also to some extent on farms where labourer families are buried on the farm itself. The problem has its origins in a mixture of cultural values, poverty and the lack of proper planning in the past.
- Cultural values demand that family members are buried at the place of birth and where the family forefathers lie, where surviving family members must regularly tend to the graves.
- The abject poverty in which most of the previously disadvantaged communities find themselves and the costs associated with funerals place a serious constraint on the ability of the people to travel any long distance to the grave.
- For the reasons mentioned above, the people tend to bury the deceased at the "local" informal cemeteries, which are all potential environmental hazards. Due to the fact that no proper planning was undertaken to determine their best possible localities.
- In addition, most of these cemeteries are already full which may cause further extension or the informal development of new cemeteries.

- To a lesser extent informal cemeteries exist and are made use of on farms. Once again cultural values play a role in that the farm labourers prefer to be buried alongside their forefathers. The farm owners may also prefer to evade the burial costs at formalised "town" cemeteries and agree to the burials on the farm.
- In addition, private family cemeteries are also found in the Mbombela area. These cemeteries are usually located in very inaccessible, pristine, natural habitats. For the same reasons mentioned above these cemeteries will continue to be used by the people.
- Due to the extent of the area, the lack of information, the quantity of informal cemeteries concerned and the cultural and financial reasons for making use of the informal cemeteries, the regulation and control thereof will be exceedingly difficult.
- However, seen in the light of the expected AIDS mortality rate in the near future, it is and will remain an issue of extreme concern.
- The lack of services at the graveyards, such as water, toilets and fencing, as well as the lack of maintenance have also been cited as environmental concerns.

Lack of knowledge regarding cultural/historical sites or the significance thereof in the area

- There is a lack of knowledge regarding potential cultural/historical resources in especially the rural areas.
- There are cultural sites on farms that are inaccessible to the public as well as the local people. Programs should be implemented to make formalize these sites for future preservation.
- Forestry activities impacts on cultural sites.

3.5 Land use:

3.5.1 Urbanization

Extension of major centra due to new urban developments.

- Nelspruit, being the capital of Mpumalanga, experiences the bulk of new development and increasing pressure on the environment. To a lesser extent, the same can be said for the White River and Hazyview areas.
- All major centra in Mbombela are at present experiencing a shortage of housing and it may be expected that new developments will increase in future.
- New urban developments threaten either natural habitat or agricultural land.

Uncontrolled low density urban sprawl and land invasion.

- Urban sprawl and land invasion is a phenomenon that is mostly associated with the previously disadvantaged areas where poverty has a great influence on human activity. Another important factor is the almost complete lack of control or regulation in these areas in the past and more recently.
- Urban sprawl and land invasion is found in the rural area of Nsikazi, stretching from Tshabalala in the north to KaNyamazane/Matsulu in the south.
- It may generally be said that those areas with the strongest rural character experience less land use regulation and control and therefore higher instances of urban sprawl and land invasion. Another important factor is the traditional or "informal" land system, where land or stands are demarcated and sold by the Traditional Authority.
- Urban sprawl is however also found in areas that may be described as the natural extension corridors of the major centra. This can be ascribed to insufficient control mechanisms in the past.

- It may be expected that urban sprawl will continue in areas where development catalysts exist, such as the area surrounding the new KMIA Airport.
- Uncontrolled and unplanned urban sprawl leads to many associated problems of which the destruction of natural habitat may be mentioned.

Uncontrolled densification in existing settlements.

- Sufficient control mechanisms are implemented in the major centra of Hazyview, White River, Nelspruit and surrounds. The problem is mostly found in the disadvantaged rural areas. The causes are the same as that for urban sprawl but there is an added hazard resulting from uncontrolled densification in that it negatively affects the future quality of life of the people (due to the lack of open spaces) in addition to threatening the environment. In this regard, a serious concern has been identified in the settling of people within flood lines of rivers and streams and open green spaces within settlements. In addition to the degradation of the stream or riverbank, the lives and properties of the people thus settled are in danger.

The long distances between living and working/shopping areas.

- This concern is, by exception, applicable to the previously disadvantaged areas and is a direct result of the discriminatory settlement policies of apartheid. Thousands of people commute daily between their homes and the employment and/or shopping centra of Nelspruit, White River, Hazyview and others. Taken cumulatively, the time and money spent on travelling by these commuters amounts to an enormous loss of resources.

Insecure land tenure.

- In the previously disadvantaged rural areas, land ownership rests to a large extent with the State, effectively depriving the people access to capital via mortgage bonds.
- The lack of capital to invest in business concerns may be one of the primary reasons that the previously disadvantaged areas have up till now failed to develop economically.

Development places a burden on already stressed water sources.

- The White River/Kabokweni area is experiencing severe water shortages and water restrictions are common during the dry seasons. Further development in the area is impossible without upgrading the bulk water supply.

3.5.2 Industries

Overprovision of industrial properties

- The area of Rocky Drift has been identified as an industrial development zone. There is, however, an overprovision of industrial properties at present, which results in many of the properties lying vacant. Naturally, the property taxes, which are considerable for industrial land, cannot be paid on unproductive land leading to losses on capital investment for all concerned. The further development of industrial properties, especially in areas not demarcated therefore will result in the compounding of the problem.

Illegal industrial uses.

- Illegal industrial uses have been found in the peripheral areas around White River and Nelspruit. The White River/Rocky Drift, Barberton and N4 roads are affected hereby. Strict land use control is however being implemented at present.
- Illegal industrial uses are also found in the rural areas. It is common that these uses are situated among incompatible uses such as residential or open space.
- These industrial uses are usually of a small scale such as back yard workshops, spray painters, welding services and others.

3.5.3 Parks and Open Spaces

Lack of parks, open spaces and recreational uses.

- The improper settlement of people in the rural areas during the previous dispensation lead to the creation of disfunctional settlements. All settlements in the rural areas are suffering from an almost complete lack of parks, open spaces and recreational uses.
- The lack of such spaces has a negative impact on the quality of life in these settlements, which is compounded by high population densities. The provision and protection of open space land in the formal areas of White River, Nelspruit and Hazyview is sufficient.

Lack of control over open spaces

- The general lack of land use control in the rural areas leads to open access to open spaces or parkland. The high demand for housing and property in the Mbombela area further compounds the problem. Natural open green spaces are degraded and vacant areas that could have been used for the future development of parks is taken up by informal settlement. This further densifies the settlements in the light of the existing lack of recreational land. Vacant land and natural open spaces should be identified, demarcated as such and protected against any encroachment.

3.5.4 Conservation

Lack of control and regulation of sensitive areas with conservation value.

- Mbombela has a high percentage of sensitive natural habitats with conservation value. A lack of land use control in especially the rural areas and the high demand for housing and land leads to the degradation of these areas by human settlement and other activities. Areas that may be highlighted are the areas directly adjacent to the KNP western boundary.
- There is no policy in place to deal with wild animals roaming freely, which threaten the lives of people and get killed on roads.

Insufficient containment of wild animals in the Kruger National Park (KNP).

- Some settlements in Mbombela are situated directly adjacent to the KNP border. Animals such as elephant, leopard, lion and hippos at times cross the KNP boundary and destroy crops and kill livestock. These animals also pose a safety risk to the people of those settlements.
- The issue was cited as a problem in the settlement of Matsulu, which is situated directly adjacent to the KNP. The animals are usually caught and transported back to the KNP by Parks Board officials.

3.6 Agriculture:

New land for agricultural development

- The economic base of the Mbombela area is largely centred on the agricultural sector. However, large expanses of pristine conservation land are also present. Conflict between the two uses is therefore imminent and it is expected that conservation land is being sacrificed – formally and informally – to agricultural uses. Environmental regulations require an EIA before any such change in land use may be undertaken, but unfortunately the extent of the area makes efficient control impossible.
- It may be expected that the problem is more severe in the “formal” commercial farming areas due to mechanised farming practices and the large-scale commercial nature thereof. However, the same problem may be associated with subsistence farming practices in the rural areas.

Overgrazing

- Overgrazing is a problem that is found mostly in the previously disadvantaged areas. Insufficient infrastructure as well as a lack of skills and knowledge is largely to blame.
- Overgrazing leads to the depletion of ground cover, which causes erosion during the rainy season.

Free roaming livestock

- A lack of grazing camps leads to free roaming of livestock such as cattle and goats. This factor may be blamed for the distribution of diseases and the difficult containment thereof. Free roaming livestock has also been blamed for the destruction of crops. Furthermore, the uncontained livestock create hazardous conditions on the roads. The problem is mostly limited to the more rural areas where sufficient land is available for the keeping of livestock.

Subsistence farming within flood lines, stream banks and wetlands. Unproductive and unsustainable farming practices.

- The lack of water for irrigation purposes, especially in the rural areas, compels the people to raise crops within easy reach of a water source, such as riverbeds, stream banks and wetlands, leading to the destruction of very important natural habitats. During rainy seasons the degraded area is more susceptible to erosion. Alien vegetation also tends to multiply in areas where degradation has taken place. During the rainy season the alien vegetation is then spread further downstream.
- Subsistence farming is a major activity in the Mbombela area. Insufficient knowledge and skills associated herewith leads to environmental degradation.
- The greatest problem is probably the lack of infrastructure, capital and the general impoverished state of the people.

3.7 Forestry:

Extension of plantations

- Forestry is a major economic activity in Mbombela. The continual extension of forests may lead to the destruction of natural habitats.
- There will be very little future expansion of forestry as forestry is limited by water availability. At present forestry is the only Stream Flow Reduction Activity recognized by the National Water Act , and as such only a few Water Use Licenses

for afforestation purposes are being granted , mostly outside the Mbombela area . Due to compliance to certification bodies' requirements there might even be reductions of plantation areas in some cases.

Deforestation

- The periodic deforestation of plantations and natural woodlands creates the opportunity for the spread of alien vegetation. Erosion is also a problem associated with deforestation.

3.8 Mining:

Environmentally unsafe mining practices

- Limited mining takes place in the Mbombela area. Some disused, unrehabilitated mines are however found, which have been cited as environmental hazards.
- Due to the severe change of landscape and associated peripheral pollution problems, mining is generally regarded as an environmental hazard. It is believed that strict control measures in the Mbombela area limits the occurrence of pollution through mining.
- The disposal of hazardous waste products from the MMC plant, currently at Pappas quarry and in future at Kingston Vale, has also been cited as possible causes of environmental degradation.

Uncontrolled and illegal mining

- Sand mining is a huge problem in the Mbombela area. Sand is mined from streambeds and banks creating severe environmental degradation. The sand is used for building purposes and as mineral supplements for pregnant woman. The problem is associated with the rural areas where poverty is an ever-present factor in human activity and where the necessary control measures are lacking. It has been said that illegal sand mining takes place "everywhere".
- Not only sand mining but also borrow pits for gravel for roads. These were /are often opened up by Provincial Roads Department for use on national roads and never rehabilitated after closure.

3.9 Socio-Economics:

Poverty

- High levels of unemployment, high adult illiteracy and lack of local job opportunities are among the most critical issues limiting development in the area and discouraging potential investors. Skilled people tend to migrate to urban areas or out of the area in search of jobs, and this leaves behind an unskilled population of mostly children and the aged. This leads to high dependency ratios, and a limited ability to pay for basic services.
- Uncertainty about land tenure and conflicting land claims, particularly on state land under tribal control, is another major factor that tends to discourage potential investors. Land restitution claims are not being processed sufficiently fast to address the problem, and this is likely to increase the potential of future illegal occupations and invasions.
- Food security is generally low, particularly among subsistence farmers who rely on annual dryland cultivation of maize. This makes communities highly vulnerable to drought periods, and places increased pressure on surrounding natural resources

that are being depleted. It also leads to health problems, and increases crime and security problems.

- The disparity in living standards between urban (rich) and rural (poor) areas tends to increase crime and security problems.
- Informal trading in all areas, particularly rural areas, increases the opportunity for trade in counterfeit goods, including medicines. Informal trading also exposes buyers to poor quality services and health hazards, in particular unsafe meat and medicines that have expired.
- The lotto has had a major and detrimental impact on household economy and spending behavior, and has increased poverty levels throughout the area. Surplus cash is spent on buying lotto tickets instead of buying food and other basic needs for the family. Small businesses that rely on surplus cash spending are also affected.
- Just as the lotto has had a detrimental effect on household economy, casinos, illegal gambling halls as well as shebeens have had the same effect on the community.
- High border duties and visa costs reduce trade opportunities with Mozambique.

Education

- Low levels of education and high adult illiteracy restrict development opportunities
- There are insufficient numbers of schools in rural areas, so learners have to travel long distances to get to school. Schools in rural areas are poorly equipped.
- Increasing numbers of teachers dying of AIDS is having a detrimental impact on the quality of schooling.
- There are limited tertiary education facilities in the area, so young achievers have to leave the area to further their studies and then get jobs elsewhere, or they stay uneducated because of a lack of funding for distance traveling.
- The cost of tertiary education is also a limiting factor.
- Disparity between levels of education: Secondary school to Tertiary Institution.
This often causes students to fail after the first term, thus resulting in a loss of money and time and interest in getting an education.

Health

- Government health services are inadequate to cope with the demands, particularly in rural areas. Hospitals and mobile clinics are inadequate, and are often short of medicines. There is a severe shortage of doctors, nurses and Environmental Health Practitioners in rural areas. Most people in rural areas have to travel long distances to get medical help, and many people are said to die before they get treated. Nyongana and Kiepersol areas have no clinics or ambulance service. Nelspruit and White River, on the other hand, have an abundance of doctors.
- The incidence of HIV/AIDS and sexually transmitted diseases, and associated diseases such as TB, is extremely high. This profoundly affects productivity and the availability of labour and results in the depletion of resources (at all levels of the economy). It also has major impacts on family structure, social cohesion, demographics and is causing a severe increase in the numbers of AIDS orphans. Low life expectancy also increases risk behavior, particularly crime.

- Incidence of disease is high, in particular malaria, bilharzia, cholera (due to a lack of water supply and proper sewage) and respiratory infections.
- Notifiable disease information is not standardized or available for all sub districts.

Immigration

- High numbers of legal and illegal immigrants from Mozambique, Swaziland, Zimbabwe, Malawi, Nigeria and elsewhere cause overcrowding and increased demands on housing and services, increased spread of diseases, in particular malaria, and disruption of local labor market as well as the cost of repatriation of illegals.

Crime

- Crime is a major problem in the area, particularly in rural areas, where policing is inadequate. Mugging of workers on paydays is frequent, theft from private property is pandemic and the threat of armed hijacking or theft with aggravating circumstances, often leading to murder, particularly on farms, is not uncommon. Rape of children is of particular concern because of the widespread belief that sex with a child can cure AIDS. It appears that there are two levels of crime – that for personal survival, and that for major personal gain with no regard for human life. The SAPS moratorium on crime statistics is unfortunate, in that it inhibits proper reporting on this issue.
- Inadequate street lighting in many areas is highlighted as a contributing factor to high levels of crime.
- Levels of alcohol abuse are high, particularly on farms and at shebeens. This leads to family violence, increased crime and gangsterism.
- Emergency services in rural areas are reported to be inadequate.

Housing

- Demand for housing exceeds supply, and this has led to overcrowding, high prices, and informal settlements in inappropriate areas. The Malelane tollgate has caused many people to move to the Nelspruit side of the toll road, and this has placed pressure on housing availability and services in Kanyamazane.
- Environmental principles are not considered in the design, siting and materials used for building houses. Poor insulation, poor orientation, sub-optimal window sizes and orientation leads to poor energy efficiency and high maintenance costs.
- The quality of some of the housing is poor, particularly some of the RDP housing schemes. This leads to high maintenance costs.
- A few informal settlements have been developed within flood lines.
- Informal settlements have no infrastructure or services, causing destruction of the surrounding natural vegetation (fuel) and the use of bushes for ablution (causing higher risk of a Cholera outbreak)

3.10 Infrastructure:

3.10.1 Waste Management

Solid Waste Landfill sites

- Nelspruit, Hazyview and White River have formal landfill sites, but they are not managed properly and have almost reached capacity. There is limited resources and capacity for the management of landfill sites in the area.
- There is no form of formal landfill sites in the rural areas and waste is either burned or covered in holes. This cause smoke, unhealthy situations and littering in these areas. Groundwater is polluted by uncontrolled dumping through leaching.
- Some of the formal landfill sites are situated in the surrounding rural areas, which are not serviced by these sites. Odors, smoke and litter Impacts on the surrounding communities.
- Foods that have gone bad are dumped at the landfill sites and the impoverished, unemployed people eat these foods. This causes diseases and sickness.
- Recycling methods / programs in the urban as well as rural areas are non-existent. The Mbombela Local Municipality has initiated a recycling program in 2002, but it is still very limited.
- Knowledge and environmental education regarding the hazards or solid waste and the treatment/recycling or reducing thereof are lacking in the entire Mbombela area.
- Uncontrolled illegal dumping occurs throughout the area and in wetland areas. This is caused mainly due to a lack of formal landfill sites as well as security problems at the formal landfill sites. People in White River are scared to go to the landfill site due to the security situation, but there are not other alternative ways for waste disposal in the town.
- The old Rifle Range municipal landfill site is leaching hazardous substances into the Alhabama / Bester Spruit that runs through Nelspruit into the Crocodile River. MMC and Delta EMD deposited some of their process residues in this landfill site in the 1980s when there was no hazardous landfill site in the area and environmental regulations governing this issue were limited. This landfill site also received animal waste from the municipal abattoir for a period.

Sanitation

- The urbanized areas in Mbombela have formal water borne sewage. The surrounding areas and especially the rural areas use pit latrines and french drains. These pit latrines pollute the groundwater. The locations of french drains and other toilets are not planned properly and boreholes for potable water are polluted by seepage, causing Cholera and other diseases.

3.10.2 Water Supply

- Inadequate water supplies are one of the most critical issues in the area. Reticulation is inadequate in a number of areas, both through formal public development and private development, such as by agricultural and silvicultural companies for their employees and sub-contractor employees. Many areas with good reticulation complain about inadequate supplies, with taps standing dry for days and sometimes weeks on end. Some statistics show that water is available, but fail to indicate that it may be available for a few hours each day only. Part of the problem is related to illegal connections and associated leakages, which are considered a major problem in the rural areas in particular.

- The quality of water provided through formal systems is often poor, particularly after rains when water turbidity is high. Many residents complain of dirty water caused by rusty pipes and containers.
- Water supply tanks brought into areas by vehicle are intermittent, and the quality of this water is often poor, with tanks often dirty and rusty.
- Water metering in many areas is inadequate, making equitable cost-recovery impossible.

3.10.3 Energy provision

- Power failures, particularly during summer months, and fluctuating power supplies, are seen as one of the major issues concerning electricity provision, particularly in the rural areas and smallholdings.
- Power distribution networks within Mbombela are relatively good, and this is reflected by the low incidence of paraffin poisoning and burns (Swart 2002). However, some areas have no electricity (eg Mshadza and Wards 50/50), and others have inadequate supplies (eg Mayfern).

3.10.4 Transport

- A lack of road maintenance is a critical issue for the Mbombela area. Potholes, lack of road markings and signage makes the roads unsafe for pedestrians as well as other road users. Most of the secondary roads in the rural areas are dirt roads, which are poorly maintained, causing dust and soil erosion. Shoulders next to the roads are not maintained and pedestrians therefore walk inside the roads, causing accidents and deaths.
- There are insufficient road crossings for pedestrians in the area and a limited amount of bus terminals. Facilities at the taxi ranks and bus terminals are inadequate to deal with the commuters waiting during peak periods.
- Nelspruit and White River are experiencing increasing traffic congestion as a result of ever expanding urban areas and increased job opportunities. The increase in traffic especially in the N4 highway causes emissions that influence the people in the surrounding areas.

3.11 Tourism:

- Nelspruit and the surrounding area have always been a stop over place en-route to the Kruger National Park and other Lowveld tourism areas. With the new international airport and expanding urbanization of Nelspruit, this situation has changed in recent years. Opportunities for bed and breakfast guesthouses have increased dramatically. An issue that was raised was that tourism development, as a result of this, impacts negatively on other land uses and employment opportunities.
- At present, the Nelspruit/ White River area and the N4 route has the best opportunity for tourism. Tourism potential in the surrounding rural areas is very limited and underdeveloped. Near Numbi gate to the KNP, natural vegetation is cut down to make curios for tourists. This is a critical issue that threatens the natural biodiversity of the Hazyview/Numbi areas. The local rural population does not receive the benefit from tourism, although their area is impacted negatively by these practices.
- Safety and security at tourist sites is a critical issue that needs special attention, before tourism could be promoted in Mbombela.
- Cultural tourism is very limited in the Mbombela area and other tourist attractions are underdeveloped, diminishing tourism potential in the area.

- Cost and effect of N4 tolls on tourism, transport of goods , exports , imports etc.

3.12 Environmental Governance:

- Through the workshops and public participation, a lack of environmental governance has been highlighted as one of the most critical issues in the Mbombela area. Non-compliance to the EIA regulations, waste management policies, spread of alien vegetation and other non-conformances occur throughout the area. There is a major lack of capacity in the Local and Provincial Authorities to monitor compliance and to prosecute transgressors.
- There are a lack of awareness and environmental education regarding environmental legislation in the rural areas, compounding the problem of no monitoring as a result of limited capacity.
- Co – operative governance is still lacking implementation and capacity in the Mbombela area

4. SPECIFIC ISSUES FOR THE 9 PLANNING AREAS IN MBOMBELA

This section provides a summary, in tabular form, of the environmental issues raised at public workshops held in the nine planning areas of Mbombela. During these workshops it were determined that each planning area has unique environmental issues that may be shared by one or two of the other areas. Column 3 provides guidance on the affected areas that are influenced by these environmental issues or drivers of change.

4.1 Terrestrial Resources				
Main Issues or Drivers of change	Areas impacted	Reasons for the importance of the issue	Data and availability	What initiatives are in place to deal with these issues?
Biodiversity:				
<ul style="list-style-type: none"> Bush Clearing for agricultural development without compliance to EIA regulations 	<ul style="list-style-type: none"> All areas, but particularly around sugarcane developments and along escarpment 	<ul style="list-style-type: none"> Loss of biodiversity and natural resources through reduced areas of natural vegetation Increased isolation of natural populations Natural migration corridors and refuge areas destroyed. Loss of future land use options. Loss of sites of archaeological, historical and/or geological importance. Increased erosion Increased pollution and use of pesticides 	<ul style="list-style-type: none"> MPB DACE EIA applications 	<ul style="list-style-type: none"> Integrated Development Plan NAP on combating desertification (DEAT) Land Care
<ul style="list-style-type: none"> Bush Clearing for housing and industry without compliance to EIA regulations (planned and unplanned urban sprawl) 	<ul style="list-style-type: none"> All areas, but particularly around Nelspruit, Uitkyk, Alkmaar, Hazyview and Nsikazi (Areas H, A, C, D, E and F) 	<ul style="list-style-type: none"> As above Permanent loss of arable land and good soils 	<ul style="list-style-type: none"> As above 	<ul style="list-style-type: none"> As above Greenbelt Policy
<ul style="list-style-type: none"> Bush encroachment from overgrazing and poor fire management, in particular sickle bush (<i>Dichrostachys</i>) and flame acacia (<i>Acacia ataxacantha</i>) 	<ul style="list-style-type: none"> All areas 	<ul style="list-style-type: none"> Loss of biodiversity through selective grazing and competitive advantage Loss of grazing land Increased fire hazards 	<ul style="list-style-type: none"> DACE ARC MPB 	<ul style="list-style-type: none"> Land Care NAP on combating desertification (DEAT) Mpumalanga Performance report on sustainable development (2001)
<ul style="list-style-type: none"> Unsustainable harvesting of medicinal plants and animals, 	<ul style="list-style-type: none"> All areas, but particularly around Hazyview and 	<ul style="list-style-type: none"> As above Selective pressure on 	<ul style="list-style-type: none"> MPB Lowveld Botanical 	<ul style="list-style-type: none"> Biodiversity Bill Nurseries to grow

<p>in particular the pepperbark tree (<i>Warburgia salutaris</i>), aloes, wild ginger, african potato and other bulbs</p> <ul style="list-style-type: none"> • Unsustainable harvesting of trees for firewood, curios, building and furniture, particularly Kiaat and Red ivory 	Mpakeni (Areas A & F).	endangered and threatened species.	Gardens <ul style="list-style-type: none"> • DWAF 	indigenous plants <ul style="list-style-type: none"> • DACE programme on medicinal plants • MPB biobase • DWAF DANCED program
<ul style="list-style-type: none"> • Species threatened by habitat destruction, especially red data species such as blue swallows, African Python, Red duiker, Meester's Golden Mole, tree ferns and <i>Aloe simii</i> • Bats threatened by disturbance of caves, in particular Lesser long-fingered bat 	<ul style="list-style-type: none"> • Kaapsehoop for blue swallows (Area I) • White River and Hazyview for <i>Aloe simii</i> (Area D and B) • Caves at Sudwala for bats 	<ul style="list-style-type: none"> • Loss of biodiversity 	<ul style="list-style-type: none"> • MPB • DACE • DWAF 	<ul style="list-style-type: none"> • Monitoring of blue swallow breeding • Protection of Indigenous Forest – National Forest Act
<ul style="list-style-type: none"> • Species threatened by poaching and widespread use of snares (eg porcupine, bushpig, pangolin and duiker) • Species threatened by collectors targeting cycads and tree ferns 	<ul style="list-style-type: none"> • All areas for small mammal poaching • Starvation Creek and Coetzee stroom for cycads and tree ferns (Area I) 	<ul style="list-style-type: none"> • Loss of biodiversity 	<ul style="list-style-type: none"> • MBP • DACE 	<ul style="list-style-type: none"> • Cycads equipped with micro-chips
<ul style="list-style-type: none"> • Alien invasive vegetation spreading in disturbed areas, particularly <i>Chromoleana</i>, <i>Lantana</i>, <i>Solanum</i>, guava and Seringa, lantana, pine, eucalyptus, Mauritius thorn and guava. 	<ul style="list-style-type: none"> • All areas 	<ul style="list-style-type: none"> • As above • Alien vegetation invades open spaces and greenbelt areas making them less useful • Invasion of grazing land • Poison livestock • Stream flow reduction • Expensive to control 	<ul style="list-style-type: none"> • Working for Water Program • Nat. Dept. Agriculture 	<ul style="list-style-type: none"> • Working for Water Program
<ul style="list-style-type: none"> • Afforestation 	<ul style="list-style-type: none"> • Kaapsehoop/ Ngodwana 	<ul style="list-style-type: none"> • Loss of biodiversity 	<ul style="list-style-type: none"> • DWAF GIS database 	<ul style="list-style-type: none"> • Stream Flow Reduction -

	and Sudwala Caves (Area I)	<p>through loss of habitats and species</p> <ul style="list-style-type: none"> • Loss of wetlands • Spread of aliens • Increased sedimentation of rivers • Stream flow reduction • Soil compaction • Soil acidification leading to reduced agricultural potential • Nutrient depletion • Loss of alternative land use potential 	<ul style="list-style-type: none"> • MPB Biodatabase 	<p>Water Act</p> <ul style="list-style-type: none"> • CMAs • WfW • Forest Certification
<ul style="list-style-type: none"> • Alien invasive fauna, in particular Indian minahs 	<ul style="list-style-type: none"> • Nelspruit 	<ul style="list-style-type: none"> • Loss of biodiversity through competitive advantage over indigenous bird species 	<ul style="list-style-type: none"> • WfW • KNP • MPB 	<ul style="list-style-type: none"> • WfW • Dept Agriculture - CARA
Other Issues:				
<ul style="list-style-type: none"> • Soil erosion and large dongas forming after heavy rains especially where forestry activities, sand mining and cemeteries leave the soil bare 	<ul style="list-style-type: none"> • Area I – Kaapsehoop/ Ngodwana and Sudwala Caves • A bigger problem in the rural areas of Area G. • Steep slopes into accelerated run-off Ward 27 to Ward 128 • Matsulu B 	<ul style="list-style-type: none"> • Permanent loss of arable soils • Damage to infrastructure, especially roads • Impacts on stream geomorphology and water quality 	<ul style="list-style-type: none"> • DACE 	<ul style="list-style-type: none"> • Land Care
<ul style="list-style-type: none"> • Fire, in particular frequent and unplanned burning 	<ul style="list-style-type: none"> • Forestry, grassland and Savannah areas 	<ul style="list-style-type: none"> • Loss in biodiversity, in particular reptiles • Loss of soil nutrients and organics • Promotes spread of alien vegetation and pioneer species • Air pollution & poor 	<ul style="list-style-type: none"> • Safari 2000 	<ul style="list-style-type: none"> • Fire Act • SANA • Disaster Management Bill

		visibility		
<ul style="list-style-type: none"> Dangerous animals, in particular hippo, and periodic escapees of lion and other dangerous animals from the Kruger National Park 	<ul style="list-style-type: none"> Hippos are a problem along the Crocodile River (areas H, G, E and F) Lions are occasionally a problem along the border with the Kruger National Park (areas F, E, C & A) 	<ul style="list-style-type: none"> Hippos cause road accidents and destroy crops 	<ul style="list-style-type: none"> MPB KNP 	<ul style="list-style-type: none"> Fencing
<ul style="list-style-type: none"> Sensitive ecosystems threatened by development, particularly sand? forests, wetlands and riparian zones 	<ul style="list-style-type: none"> Sand forests in Crocodile gorge Matsulu – Mara area (area F) Wetlands throughout area, particularly along foothills of escarpment Riparian zones throughout the area 	<ul style="list-style-type: none"> Loss in biodiversity 	<ul style="list-style-type: none"> MPB WfW DWAF 	<ul style="list-style-type: none"> National Water Act National Forest Act
<ul style="list-style-type: none"> Development on granite outcrops 	<ul style="list-style-type: none"> Nelspruit and White River area 	<ul style="list-style-type: none"> The aesthetic value of granite outcrops in the area are being compromised 		<ul style="list-style-type: none"> NEMA

4.2 Water Resources

Main Issues or Drivers of change	Areas impacted	Reasons for the importance of the issue	Data and availability	What initiatives are in place to deal with these issues?
Groundwater quality:				
<ul style="list-style-type: none"> Groundwater quality severely contaminated by pit toilets, industrial and domestic wastes, agricultural pesticides, cemeteries in unsuitable locations and solid waste dumping (both legal and illegal) Subdivision of agricultural land and illegal development with inadequate septic tanks 	<ul style="list-style-type: none"> Hazyview and Numbi Park (Trust land), Gutshwa and surroundings (Areas A, B & C) Uitkyk - Septic tanks polluting groundwater (Area H) Kaapsehoop: Sewage and boreholes – perched water table – groundwater contamination No piped 	<ul style="list-style-type: none"> Increased risk of cholera outbreaks, diarrhea and other health problems Use of water restricted 	<ul style="list-style-type: none"> DWAF Mbombela 	<ul style="list-style-type: none"> Provision of sanitation facilities Groundwater quality monitoring

	<p>water</p> <ul style="list-style-type: none"> • Rehabilitated Rifle range landfill site (Nelspruit) pollute the groundwater . • Landfill sites (Nelspruit, Hazyview, White River) 			
Groundwater quantity:				
<ul style="list-style-type: none"> • Poor yields, with boreholes drying up during dry periods • Limited number of boreholes 	<ul style="list-style-type: none"> • Nsikazi (Areas A, C, E & F) • Nelspruit and surrounding plots towards Barberton (Areas G&H) 	<ul style="list-style-type: none"> • Low assurance of supplies, particular problem for domestic supplies during droughts 	<ul style="list-style-type: none"> • DWAF 	<ul style="list-style-type: none"> • Groundwater quantity monitoring of recharge rates
Surface water quality:				
<ul style="list-style-type: none"> • Organic pollution from municipal treated sewage effluent entering Crocodile and White Rivers 	<ul style="list-style-type: none"> • White River and Kanyamazane sewage treatment works 	<ul style="list-style-type: none"> • Increased risk of cholera outbreaks, diarrhea and other health problems • Algal blooms • Limited uses for water • Impacts on sensitive biota 	<ul style="list-style-type: none"> • DWAF 	<ul style="list-style-type: none"> • River Health Program
<ul style="list-style-type: none"> • Organic pollution from washing of clothes and cars in rivers and streams 	<ul style="list-style-type: none"> • North Sand River (Area E) 	<ul style="list-style-type: none"> • As above 	<ul style="list-style-type: none"> • DWAF 	<ul style="list-style-type: none"> • River Health Program
<ul style="list-style-type: none"> • Industrial pollution and periodic spills 	<ul style="list-style-type: none"> • Elands River downstream of Ngodwana factory (Area 1) Kaapsehoop/ Ngodwana and Sudwala Caves • Manganese waste site at Pappas quarry impacting on lower Gladdespruit • Lower Besterspruit impacted by industrial activity 	<ul style="list-style-type: none"> • As above • Periodic fish kills and reduction in stream biodiversity • Chloride in water kills tobacco plants, impacting on agriculture 	<ul style="list-style-type: none"> • DWAF • CSIR • MMC • SAPPI 	<ul style="list-style-type: none"> • SAPPI monitor water quality regularly • River Health Program
<ul style="list-style-type: none"> • Agricultural pollution entering the streams and rivers 	<ul style="list-style-type: none"> • Karino packhouse pollutes Crocodile River water 	<ul style="list-style-type: none"> • As above 	<ul style="list-style-type: none"> • DWAF 	<ul style="list-style-type: none"> • River Health Program

<ul style="list-style-type: none"> Sawmills dumping sawdust, bark and other debris into rivers 	<ul style="list-style-type: none"> Nelspruit and Elands Rivers 	<ul style="list-style-type: none"> As above 	<ul style="list-style-type: none"> DWAF 	<ul style="list-style-type: none"> River Health Program
<ul style="list-style-type: none"> Herbicides used in road maintenance entering streams and rivers 	<ul style="list-style-type: none"> Mainly along N4 	<ul style="list-style-type: none"> As above 	<ul style="list-style-type: none"> Trans African Concessions Roads Authority 	<ul style="list-style-type: none"> River Health Program
<ul style="list-style-type: none"> Dams and Weirs 	<ul style="list-style-type: none"> Crocodile River (eg Mataffin Weir) Main tributaries, including White River and Houtbosloop North Sand River 	<ul style="list-style-type: none"> Impacts on hydrology and downstream users Increase evaporative losses Trap sediments and increase downstream erosion Increase habitats for bilharzia snails and alien fish species Barriers to upstream migration of fish and aquatic invertebrates 	<ul style="list-style-type: none"> DWAF 	<ul style="list-style-type: none"> River Health Program National Water Act Dam Safety legislation
Surface Water Quantity:				
<ul style="list-style-type: none"> Stream flows limited, particularly during droughts 	<ul style="list-style-type: none"> Throughout the area, but particularly the northern Nsikazi, which draws water from the Sabie River, and the White River area, which draws water from Longmere and Klipkopje Dams 	<ul style="list-style-type: none"> Major limitation to further development 	<ul style="list-style-type: none"> DWAF 	<ul style="list-style-type: none"> DWAF hydrology monitoring CMAs
<ul style="list-style-type: none"> Lack of rainwater harvesting 	<ul style="list-style-type: none"> All 	<ul style="list-style-type: none"> Rainwater harvesting reduces dependency on services Reduces storm water flows Reduces the strain on services, particularly during droughts 	<ul style="list-style-type: none"> Ecolink 	<ul style="list-style-type: none"> National Water Act

<ul style="list-style-type: none"> • Flooding 	<ul style="list-style-type: none"> • Throughout the area, particularly in low-lying areas 	<ul style="list-style-type: none"> • Floods are a natural phenomenon, but are aggravated by poor catchment management and poor town and regional planning • Dams and weirs have been swept away by floods 	<ul style="list-style-type: none"> • DWAF • Dam Safety Office 	<ul style="list-style-type: none"> • DWAF hydrology monitoring • CMAs
<ul style="list-style-type: none"> • Agricultural water abstraction during low flows 	<ul style="list-style-type: none"> • Streams and rivers throughout the area 	<ul style="list-style-type: none"> • Impacts on downstream users and downstream ecology 	<ul style="list-style-type: none"> • DWAF 	<ul style="list-style-type: none"> • DWAF hydrology monitoring • CMAs
<ul style="list-style-type: none"> • Unlicensed dams 	<ul style="list-style-type: none"> • Throughout the area 	<ul style="list-style-type: none"> • Increased risks of failure 	<ul style="list-style-type: none"> • DWAF • Dam Safety Office 	<ul style="list-style-type: none"> • Dam Safety Regulations
Other issues:				
<ul style="list-style-type: none"> • Overfishing and use of pesticides to catch fish 	<ul style="list-style-type: none"> • Mainly along Crocodile River (Areas H, G, E and F). 	<ul style="list-style-type: none"> • Depleted fish fauna with reduced recruitment 	<ul style="list-style-type: none"> • MPB 	<ul style="list-style-type: none"> • River Health Monitoring Program
<ul style="list-style-type: none"> • Silviculture in wetlands 	<ul style="list-style-type: none"> • Forestry areas 	<ul style="list-style-type: none"> • Destruction of biodiversity and wetland functions 	<ul style="list-style-type: none"> • DWAF 	<ul style="list-style-type: none"> • WfW
<ul style="list-style-type: none"> • Cultivation of food crops, mainly madumbis, in wetlands by informal farmers 	<ul style="list-style-type: none"> • White River and surroundings • Nsikazi 	<ul style="list-style-type: none"> • As above 	<ul style="list-style-type: none"> • WfW 	<ul style="list-style-type: none"> • WfW
<ul style="list-style-type: none"> • Destruction and pollution of wetlands and their use as illegal dumping grounds 	<ul style="list-style-type: none"> • Nelspruit 	<ul style="list-style-type: none"> • Loss of wetland function 	<ul style="list-style-type: none"> • DACE • MPB 	<ul style="list-style-type: none"> • WfW
<ul style="list-style-type: none"> • Illegal sand mining and making of cement bricks 	<ul style="list-style-type: none"> • Along most streams and rivers throughout the area, particularly Kabokweni, Karino and White River 	<ul style="list-style-type: none"> • Destabilisation of banks leading to erosion and destruction of riparian zones • Increased turbidity 	<ul style="list-style-type: none"> • Department of Minerals and Energy 	<ul style="list-style-type: none"> •
<ul style="list-style-type: none"> • Destruction of riparian zones, particularly for irrigated agriculture 	<ul style="list-style-type: none"> • All areas 	<ul style="list-style-type: none"> • Destabilisation of banks • Destruction of natural migration corridors and green belts 	<ul style="list-style-type: none"> • DACE • Department of Agriculture 	<ul style="list-style-type: none"> •

4.3 Air quality				
Main Issues or Drivers of change	Areas impacted	Reasons for the importance of the issue	Data and availability	What initiatives are in place to deal with these issues?
<ul style="list-style-type: none"> Paper mills and Sawmills cause odors and dust 	<ul style="list-style-type: none"> Ngodwana, Rocky's Drift, White River Areas D, H and I 	<ul style="list-style-type: none"> Dust impacts on human health (respiratory problems) Dust ends up in water systems, reducing PH in water - increasing fish kills Sawdust could combust spontaneously – causing fires Socially odors are not accepted as a positive aspect in an area. It may also influence human comfort. 	<ul style="list-style-type: none"> SAPPI DWAF 	<ul style="list-style-type: none"> Monitoring by SAPPI Formal structured intervention with sawmills (current: National DEAT)
<ul style="list-style-type: none"> Veld fires and sugar cane burning during winter months 	<ul style="list-style-type: none"> Veld fires (Areas C, F, I) Sugarcane (Area E, H) 	<ul style="list-style-type: none"> Smoke impacts on visibility and road safety in the surrounding area Smoke causes respiratory problems with residents and workers in the area 	<ul style="list-style-type: none"> DWAF 	<ul style="list-style-type: none"> Natural Veld and Forest Fires Act National Disaster Management Bill IDP Disaster Management Plan Local Municipalities: firefighting and fire breaks
<ul style="list-style-type: none"> Pollen from orange and other fruit trees during the flowering season 	<ul style="list-style-type: none"> Areas A &H 	<ul style="list-style-type: none"> Increased pollen causes respiratory diseases such as Asthma and hay fever. 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Dirt roads in mainly the rural areas 	<ul style="list-style-type: none"> Through out the area 	<ul style="list-style-type: none"> Dust surrounding the roads cause discomfort to humans Dust also impacts on the fauna and flora next to the road 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">

• Industrial processes causes air pollution	• MMC, Delta EMD and Halls processing plant (Area H)	•	• MMC, JSB, SAPPI	•
• Emissions from vehicles traveling on the N4 highway	• Area H, F and I	• Air quality impacts on surrounding residents and workers	• Mbombela Municipality monitor air quality around the N4 in Nelspruit	• Mbombela Municipality – dept of health • TRAC
• Burning on formal and informal landfill sites	• All areas but critical in Areas C and A	• Smoke from the burning rubbish have bad odors and could cause respiratory problems. • These odors and smoke discourages tourism	• DWAF • Mbombela municipality	• Mbombela Waste Management policy • ECA • NEMA

4.4 Cultural Resources

Main Issues or Drivers of change	Areas impacted	Reasons for the importance of the issue	Data and availability	What initiatives are in place to deal with these issues?
Traditional Cultural / historical resources				
• Limited historical buildings in Mbombela to provide character • The few historical relics and buildings in the area are not conserved and demolished to make way for modern developments	• Nelspruit (Historical buildings) • Elandshoek village • Lowveld Botanical Gardens • Late Iron Age sites and Rock art	• Historical buildings provide identity to an area, which in turn promotes tourism	• SAHRA	• South African Heritage Resources Act
• Accessibility and conservation of cultural sites non-existent	•	•	• SAHRA	•
• There are limited traditional cultural villages in the area	• All planning areas	• Traditional village preserve cultures and expose tourist to new cultures.	•	• Shangani Cultural Village and a new one near Numbi gate to the KNP (Area A)
• There is a lack of knowledge regarding cultural/historical sites and their locations in Mbombela	• All planning areas	• Cultural sites are being demolished due to a lack of awareness	• SAHRA	•
• Local authorities and	• Planning Area H	• Cultural sites are being	•	• South African Heritage

contractors are unaware of the value of cultural sites and the implication of legislation preserving them		demolished due to a lack of awareness <ul style="list-style-type: none"> • Legal implications are not met and monitoring is limited. 		Resources Act
Cemeteries				
<ul style="list-style-type: none"> • Informal cemeteries in rural areas unplanned and not in suitable places or have reached capacity 	<ul style="list-style-type: none"> • Planning Areas A, E, F • Traditional authorities: Shabalala, Daantjie, Msogwaba • The Nelspruit, Tekwane, Matsulu and Kabokweni cemeteries are nearing capacity or is being closed • All rural areas 	<ul style="list-style-type: none"> • The location of cemeteries is very important i.t.o. Groundwater pollution, the types of soils (erosion) and other environmental factors • Cemeteries under traditional authorities do not comply to environmental legislation and pose a health risk • A lack of cemeteries or full cemeteries force people to travel large distances to visit graves and is expensive • The high incidence of HIV?AIDS necessitates and urgent increase in available cemetery space 	<ul style="list-style-type: none"> • Mbombela Municipality 	<ul style="list-style-type: none"> • Mbombela plan for the establishment of regional and rural cemeteries are being drafted. • National regulations for burial procedures at all cemeteries
<ul style="list-style-type: none"> • Informal cemeteries in rural areas are not maintained, fenced and have no ablution facilities 	<ul style="list-style-type: none"> • Planning Areas A, F • All rural areas 	<ul style="list-style-type: none"> • Cemeteries are culturally very important to the communities and they visit the graves regularly. Safety and health is important. 	<ul style="list-style-type: none"> • Mbombela Municipality 	<ul style="list-style-type: none"> • Mbombela plan for the establishment of regional and rural cemeteries are being drafted.
<ul style="list-style-type: none"> • Cemeteries inaccessible or located far from certain areas 	<ul style="list-style-type: none"> • Planning Area I • Schagen area has only 	<ul style="list-style-type: none"> • Traveling expensive for unemployed and poor 	<ul style="list-style-type: none"> • Mbombela Municipality 	<ul style="list-style-type: none"> • Mbombela plan for the establishment of regional

• Some areas have no cemeteries and people have to go to the nearest formal cemetery in towns	informal cemeteries on farms. These have become inaccessible. • All rural areas	communities • Formal cemeteries expensive		and rural cemeteries are being drafted.
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4.5 Land Use				
Main issues or drivers of change	Areas impacted	Reasons for the importance of the issue	Data and availability	What initiatives are in place to deal with these issues?
Urbanisation				
Extension of major centra due to new urban developments	• Nelspruit, White River, Hazyview & Rocky Drift	• Ever increasing destruction of natural habitat and agricultural land.	Mbombela Municipality	• EIAs required for all new developments. • Mbombela IDP
Uncontrolled low density urban sprawl and land invasion.	• Planning Areas A,C,D,E,F,G,H. • All rural areas and Uitkyk, The Rest, Alkmaar, W/R, Maggiesdal.	• Destruction of natural habitats and land with agricultural potential. • Destruction of wetlands due to squatting.	• Aerial photography. • Site inspections. • Mbombela Municipal	• Land use inspections and control. • Provide housing and planned erven to the people.
Uncontrolled densification within existing settlements	• Planning Areas A,C, D, E, F. • All rural areas.	• Loss of land that could potentially be utilised for parks, recreational uses and open green spaces. • Settlement within flood lines.	• Aerial photography. • Site inspections.	• RDP houses
Long distances between live and work/shopping areas.	• Planning Areas A,C, D, E, F. • All rural areas.	Long travel distances and loss of income and time.	Spatial analysis.	
Insecure land tenure.	• All Planning Areas. • Informal land rights mostly in rural areas. • Farm evictions in farming areas.	• Lack of investment capital. • Farm evictions.	• Mbombela municipality. • DLA	• Land tenure upgrading.
• Informal, environmental	• All Planning areas.	• Pollution of the soil and	• Mbombela	

unsafe cemeteries. <ul style="list-style-type: none"> • Insufficient provision. • Poor maintenance. • No services. 	<ul style="list-style-type: none"> • Problem most acute in former rural areas. 	water sources and severe health hazard. <ul style="list-style-type: none"> • AIDS mortality 	municipality <ul style="list-style-type: none"> • Aerial photography 	
Development places a burden on the already stressed water sources.	Planning areas C and D. (White River/Kabokweni)	Severe water interruptions during the dry seasons.	Mbombela Municipality.	<ul style="list-style-type: none"> • "No development" policy. • Upgrading of water supply
Industries				
Overprovision of industrial properties.	<ul style="list-style-type: none"> • Rocky Drift • Axis Park • Informal uses in peripheral areas around Nelspruit, W/R • Planning Areas D,H 	Insecurity of investment.	Mbombela municipality	Regulation of further industrial development.
Illegal industrial uses.	<ul style="list-style-type: none"> • W/R – Rocky Drift road. • Barberton road • Alkmaar area • Sawmills and related uses in forestry areas. • All Planning areas • Rural areas 	<ul style="list-style-type: none"> • Possible pollution of environment • Aesthetical degradation. 	<ul style="list-style-type: none"> • Mbombela municipal. • Aerial photography 	<ul style="list-style-type: none"> • Strict regulation and control • Enforced formalisation of existing illegal uses.
Parks and Open Space				
Lack of parks, open space and recreational land.	<ul style="list-style-type: none"> • All previously disadvantaged settlements. • Hazyview • Planning areas A,C,D,E,F 	Decreased quality of life.	<ul style="list-style-type: none"> • Mbombela Spatial Analysis. • Aerial photography 	
Lack of control over open spaces.	<ul style="list-style-type: none"> • All previously disadvantaged settlements. • Planning areas A,C,D,E,F 	<ul style="list-style-type: none"> • Open access to land • Degradation of natural green spaces. • Decreased potential for future development of parks and open 	<ul style="list-style-type: none"> • Aerial photography • Inspections • Mbombela municipal. 	<ul style="list-style-type: none"> • Land use control and regulation

		spaces.		
Conservation				
Lack of control and regulation of sensitive areas with conservation value.	<ul style="list-style-type: none"> • Mostly in previously disadvantaged areas where the pressure for land is high • Planning areas A,C,E,F • Especially area adjacent to KNP 	<ul style="list-style-type: none"> • Degradation of environmentally sensitive areas • Loss of land with conservation value 	<ul style="list-style-type: none"> • Aerial photography • MPB 	<ul style="list-style-type: none"> • Land use control and regulation
Insufficient containment of wild animals in KNP.	<ul style="list-style-type: none"> • Mostly Matsulu area. • Also other areas adjacent to KNP • Planning areas A,C,E,F 	<ul style="list-style-type: none"> • Destruction of crops • Human safety hazard 	<ul style="list-style-type: none"> • KNP • MPB 	<ul style="list-style-type: none"> • Continual repair of fences • Capture of wild animals
4.6 Agriculture				
Main issues or drivers of change	Areas impacted	Reasons for the importance of the issue	Data and availability	What initiatives are in place to deal with these issues?
New land for agricultural development.	Occurs in the whole of the Mbombela area.	Destruction of natural habitats.	<ul style="list-style-type: none"> • DACE. 	Undertake EIAs as required by legislation.
Overgrazing	<ul style="list-style-type: none"> • Mostly rural areas. • Planning areas A,C,E,F. 	<ul style="list-style-type: none"> • Destruction of natural habitat. • Soil erosion. 	<ul style="list-style-type: none"> • DACE. 	Education of livestock farmers by Dept of Agriculture
Free roaming livestock.	<ul style="list-style-type: none"> • Mostly in the rural areas. • Planning Areas A,C,E,F. 	<ul style="list-style-type: none"> • Distribution of diseases. • Hazardous conditions on roads. • Destruction of crops. 	<ul style="list-style-type: none"> • DACE • Inspections 	Education of livestock farmers by Dept. of Agriculture.
<ul style="list-style-type: none"> • Subsistence farming within floodlines, stream banks and wetlands. • Unproductive and unsustainable practices 	<ul style="list-style-type: none"> • Mostly in the rural areas. • Planning areas A,B,C,E,F. 	<ul style="list-style-type: none"> • Destruction of natural habitat. • Erosion • Spread of alien invaders. 	<ul style="list-style-type: none"> • Aerial photography • Inspections • DACE 	<ul style="list-style-type: none"> • Food gardens. • Education of subsistence farmers. • LRAD.

4.7 Forestry				
Main issues or drivers of change	Areas impacted	Reasons for the importance of the issue	Data and availability	What initiatives are in place to deal with these issues?
Extension of plantations.	<ul style="list-style-type: none"> Western areas Planning areas B,D,H,I,G Water source under severe pressure in White River catchment. 	<ul style="list-style-type: none"> Possible destruction of natural habitats. Possible loss of wetlands Reduction of water source in catchment area. 	<ul style="list-style-type: none"> DWAF SAPPI MONDI 	<ul style="list-style-type: none"> EIAs to be undertaken with new plantations.
Deforestation.	All forestry areas.	<ul style="list-style-type: none"> Spread of alien invaders. Erosion 	<ul style="list-style-type: none"> DWAF 	<ul style="list-style-type: none"> Control measures
4.8 Mining				
Main issues or drivers of change	Areas impacted	Reasons for the importance of the issue	Data and availability	What initiatives are in place to deal with these issues?
Environmentally unsafe mining practices.	<ul style="list-style-type: none"> Planning area I,H Some mining at Kaapschehoop MMC Pappas quarry New MMC landfill site. 	<ul style="list-style-type: none"> Contamination of water source Peripheral pollution. 	<ul style="list-style-type: none"> DACE 	<ul style="list-style-type: none"> Inspections by DACE.
Uncontrolled and illegal mining such as sand mining	<ul style="list-style-type: none"> Mostly rural areas Planning areas A,C,D,E,F 	<ul style="list-style-type: none"> Destruction of natural habitat. Severe erosion 	<ul style="list-style-type: none"> Mbombela municipality Aerial photography 	<ul style="list-style-type: none"> Strict control and regulation. Rehabilitation.
4.9 Socio-Economics				
Main Issues or Drivers of change	Areas impacted	Reasons for the importance of the issue	Data and availability	What initiatives are in place to deal with these issues?
Poverty:				
<ul style="list-style-type: none"> High levels of unemployment and lack of local job 	<ul style="list-style-type: none"> All areas, particularly Nsikazi 	<ul style="list-style-type: none"> Skilled population migrate to urban areas or out of 	<ul style="list-style-type: none"> Statistics SA 	<ul style="list-style-type: none"> Maputo corridor IDP

opportunities		<p>the area in search of jobs</p> <ul style="list-style-type: none"> • Unskilled population remain behind (mostly women, children and the aged) • High dependency ratio • Homelessness and poverty increases • Limited ability to pay for services 		<ul style="list-style-type: none"> • Mpumalanga Investment Initiative
<ul style="list-style-type: none"> • Land tenure and high level of land restitution claims • Uncertainty about land tenure and conflicting land claims • Equitable redistribution of land not taking place at a rate sufficiently fast to address the problem, leading to future problems of land invasions 	<ul style="list-style-type: none"> • Rural areas, particularly state land under tribal control 	<ul style="list-style-type: none"> • Discourages capital investment and long-term commitment by investors • Prevents individuals from owning land and this has prevented potential housing projects as well as commercial projects. • Complex period of negotiation that involve "transaction costs" that often add to the cost of a project • Traditional authorities selling land illegally 	<ul style="list-style-type: none"> • Department of Land Affairs • TRAC 	<ul style="list-style-type: none"> • Tenure reform programme • Mbombela Performance Management Plan
<ul style="list-style-type: none"> • Food security low 	<ul style="list-style-type: none"> • Subsistence farmers 	<ul style="list-style-type: none"> • Communities highly vulnerable to drought • Health problems • Unsustainable harvesting of natural resources • Increases crime and security problems 	<ul style="list-style-type: none"> • Ecolink • TRAC 	<ul style="list-style-type: none"> • School feeding schemes
<ul style="list-style-type: none"> • Disparity between urban area and outlying rural areas 	<ul style="list-style-type: none"> • Nsikazi 	<ul style="list-style-type: none"> • Increased crime and security problems 	<ul style="list-style-type: none"> • Statistics SA 	<ul style="list-style-type: none"> • IDP
<ul style="list-style-type: none"> • Informal trading 	<ul style="list-style-type: none"> • All areas, particularly Nsikazi 	<ul style="list-style-type: none"> • Exposes buyers to poor quality services and 	<ul style="list-style-type: none"> • Mbombela 	<ul style="list-style-type: none"> •

		health hazards (eg meat sold on the streets and medicines that have expired) <ul style="list-style-type: none"> • Increase in counterfeit goods, including medicines 		
<ul style="list-style-type: none"> • The lotto has had a major and detrimental impact on household economy and spending behaviour, and has increased poverty levels 	<ul style="list-style-type: none"> • All area 	<ul style="list-style-type: none"> • Surplus cash is spent on buying lotto tickets instead of buying food and other basic needs for the family • Impacts on small businesses that rely on surplus cash spending (eg spaza shops) 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
<ul style="list-style-type: none"> • Border duties and visa costs impact negatively on the area 	<ul style="list-style-type: none"> • All areas 	<ul style="list-style-type: none"> • Reduced trade opportunities with Mozambique 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •
Education:				
<ul style="list-style-type: none"> • Low levels of education and high adult illiteracy 	<ul style="list-style-type: none"> • Nsikazi area 	<ul style="list-style-type: none"> • Development opportunities restricted 	<ul style="list-style-type: none"> • Department of Education 	<ul style="list-style-type: none"> • Skills Development Act • ABET Adult Literacy programme • Norwegian Training Programme • Mbombela Performance Management Plan
<ul style="list-style-type: none"> • Insufficient numbers of schools, particularly high schools • Schools have limited resources, such as sporting facilities 	<ul style="list-style-type: none"> • Nsikazi area 	<ul style="list-style-type: none"> • Learners have to walk or travel long distances to get to school 	<ul style="list-style-type: none"> • Department of Education 	<ul style="list-style-type: none"> •
<ul style="list-style-type: none"> • Impacts of HIV/AIDS on the number of teachers 	<ul style="list-style-type: none"> • All area 	<ul style="list-style-type: none"> • Detrimental impacts on the quality of schooling 	<ul style="list-style-type: none"> • Department of Education 	<ul style="list-style-type: none"> •
<ul style="list-style-type: none"> • Limited tertiary education 	<ul style="list-style-type: none"> • All area 	<ul style="list-style-type: none"> • Young achievers tend to 	<ul style="list-style-type: none"> • Department of 	<ul style="list-style-type: none"> • Technikon SA

		leave area to further their studies and then get jobs elsewhere	Education	<ul style="list-style-type: none"> • Technikon Pretoria • UNISA
Health:				
<ul style="list-style-type: none"> • Government health services are limited, particularly in rural areas • Hospitals and mobile clinics are inadequate, and often short of medicines • Inadequate numbers of doctors, nurses and Environmental Health Practitioners in rural areas • Inadequate transport for health practitioners in rural areas 	<ul style="list-style-type: none"> • Nsikazi • Nyongana and Kiepersol areas have no clinics or ambulance service • Themba Hospital short of medicine and doctors 	<ul style="list-style-type: none"> • Limited medicines • Long distances to health services • People die before they can receive treatment 	<ul style="list-style-type: none"> • Department of Health 	<ul style="list-style-type: none"> • Environmental Health Program
<ul style="list-style-type: none"> • HIV/AIDS and sexually transmitted diseases extremely high • Associated diseases, such as TB, also high in area • High numbers of AIDS orphans in area 	<ul style="list-style-type: none"> • Throughout area • High risk areas are Shebeens • Prostitutes and truck drivers using N4 road promoting these diseases 	<ul style="list-style-type: none"> • Major impacts on family structure and social cohesion, demographics, economy, • Low life-expectancy increases risk behaviour, particularly crime • Profoundly affects productivity and the availability of labour and results in the depletion of resources (at all levels of the economy). 	<ul style="list-style-type: none"> • Department of Health • Ecolink 	<ul style="list-style-type: none"> • AIDS support groups • Orphan support groups (Ecolink) • Protein-rich maize growing program as nutritional supplement for AIDS sufferers (Ecolink) • Distribution of condoms
<ul style="list-style-type: none"> • Malaria incidence moderately high 	<ul style="list-style-type: none"> • Mainly in low-lying regions towards Matsulu and the Kruger National Park 	<ul style="list-style-type: none"> • Drug resistance a major problem • Can be fatal 	<ul style="list-style-type: none"> • Department of Health 	<ul style="list-style-type: none"> • House spraying program
<ul style="list-style-type: none"> • Bilharzia incidence very high 	<ul style="list-style-type: none"> • Mainly in low-lying regions towards Matsulu and the Kruger National Park 	<ul style="list-style-type: none"> • Chronic illness 	<ul style="list-style-type: none"> • Department of Health 	<ul style="list-style-type: none"> • Schools survey

<ul style="list-style-type: none"> Cholera - periodic outbreaks 	<ul style="list-style-type: none"> Nsikazi area where sanitation facilities are lacking 	<ul style="list-style-type: none"> Highly contagious Can be fatal 	<ul style="list-style-type: none"> Department of Health 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Nutrition - Feeding schemes at schools inconsistent and not always enough 	<ul style="list-style-type: none"> Nsikazi 	<ul style="list-style-type: none"> Stunted growth and stunted development of children 	<ul style="list-style-type: none"> Department of Health 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> High infant mortality 	<ul style="list-style-type: none"> Nsikazi 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Department of Health 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Diarrhea a significant cause of death among <5yr olds 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Department of Health 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Lower respiratory infections Asthma and respiratory problems caused by pollen in flowering season Spraying of crops / trees 	<ul style="list-style-type: none"> Nelsville area and banana plantations 	<ul style="list-style-type: none"> Respiratory illnesses 	<ul style="list-style-type: none"> Department of Health 	<ul style="list-style-type: none"> Environmental Health Program
<ul style="list-style-type: none"> Bad hygiene practices and the consumption of food from diseased animals 	<ul style="list-style-type: none"> Nsikazi 	<ul style="list-style-type: none"> Food poisoning 	<ul style="list-style-type: none"> Department of Health 	<ul style="list-style-type: none"> Environmental Health Program
<ul style="list-style-type: none"> Notifiable disease information is not standardised or available for all subdistricts 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Department of Health 	<ul style="list-style-type: none"> Environmental Health Program
<ul style="list-style-type: none"> Lack of registration of births and deaths 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Department of Health 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Insufficient health programmes to educate people on diseases 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Department of Health 	<ul style="list-style-type: none"> Environmental Health Program
<ul style="list-style-type: none"> Inadequate control of human and livestock disease spread at border posts 	<ul style="list-style-type: none"> Komatipoort and new airport 	<ul style="list-style-type: none"> Spread of diseases such as malaria and foot and mouth 	<ul style="list-style-type: none"> Department of Health 	<ul style="list-style-type: none"> Mbombela Port Health Services at Nelspruit International Airport Environmental Health Program
<p>Immigration:</p>				
<ul style="list-style-type: none"> High numbers of immigrants from Mozambique, Swaziland, Zimbabwe, Malawi, Nigeria and elsewhere 	<ul style="list-style-type: none"> Mjejane, Luphisi, Hazyview, Gutshwa and Daantjie 	<ul style="list-style-type: none"> Overcrowding and increased demands on housing and services Increased spread of diseases, in particular 	<ul style="list-style-type: none"> SAPS 	<ul style="list-style-type: none">

		<ul style="list-style-type: none"> malaria Disruption of local labour market 		
<ul style="list-style-type: none"> Illegal labour 	<ul style="list-style-type: none"> Farms 	<ul style="list-style-type: none"> Exploitation of labour 	<ul style="list-style-type: none"> SAPS 	<ul style="list-style-type: none">
Crime:				
<ul style="list-style-type: none"> Safety and security, including high levels of theft, hijacking, rape and murder 	<ul style="list-style-type: none"> Outlying areas of particular concern because policing tends to concentrate in urban areas only 	<ul style="list-style-type: none"> One of the main factors that discourage investment Widespread belief that sex with a child can cure AIDS 	<ul style="list-style-type: none"> SAPS GRIP 	<ul style="list-style-type: none"> Community Police Forums are being initiated or refreshed, and these aim to include all levels of society. GRIP
<ul style="list-style-type: none"> Inadequate street lighting 	<ul style="list-style-type: none"> Nsikasi 	<ul style="list-style-type: none"> Increased crime 	<ul style="list-style-type: none"> Mbombela 	<ul style="list-style-type: none"> Mbombela Performance Management Plan
<ul style="list-style-type: none"> Alcohol abuse 	<ul style="list-style-type: none"> Nsikazi area and particularly on farms and at shebeens 	<ul style="list-style-type: none"> Family violence Increased crime and gangsterism 	<ul style="list-style-type: none"> SAPS 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Inadequate emergency services 	<ul style="list-style-type: none"> Kabokweni & Matsulu 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Mbombela Performance Management Plan
Housing:				
<ul style="list-style-type: none"> Demand for housing exceeds supply 	<ul style="list-style-type: none"> Nelspruit in particular, but other areas as well The Malelane toll gate has caused many people to move to the Nelspruit side of the toll road, and this has placed pressure on housing availability and services in Kanyamazane 	<ul style="list-style-type: none"> Overcrowding Cost of housing and rentals are high Low quality of housing Informal settlements in inappropriate areas 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Ownership of houses - workers on farms do not own the houses 	<ul style="list-style-type: none"> Farms 	<ul style="list-style-type: none"> Poor maintenance of houses 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Unplanned housing 	<ul style="list-style-type: none"> Nsikazi 	<ul style="list-style-type: none"> This causes major problems with service provision, routing of roads etc 	<ul style="list-style-type: none"> Mbombela 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Environmental principles are 	<ul style="list-style-type: none"> Throughout 	<ul style="list-style-type: none"> Poor insulation, poor 	<ul style="list-style-type: none"> Mbombela 	<ul style="list-style-type: none">

not considered in the design, sighting and materials used for building houses		orientation, sub-optimal window sizes and orientation lead to poor energy efficiency and increase maintenance costs		
<ul style="list-style-type: none"> Poor quality of housing, particularly some of the RDP Schemes 	<ul style="list-style-type: none"> Low cost housing developments 	<ul style="list-style-type: none"> High maintenance costs 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> A few informal settlements have been developed within flood lines 	<ul style="list-style-type: none"> Low-lying regions 	<ul style="list-style-type: none"> Houses and infrastructure flooded, placing strain on disaster management services 	<ul style="list-style-type: none"> Mbombela 	<ul style="list-style-type: none">

4.10 Infrastructure

Main Issues or Drivers of change	Areas impacted	Reasons for the importance of the issue	Data and availability	What initiatives are in place to deal with these issues?
Waste management – solid waste				
<ul style="list-style-type: none"> Widespread and Illegal dumping and informal burning of wastes 	<ul style="list-style-type: none"> Throughout the area, particularly in areas which have no services for refuse removal 	<ul style="list-style-type: none"> Aesthetics Noxious smells 	<ul style="list-style-type: none"> DACE DWAF Mbombela Municipality 	<ul style="list-style-type: none"> National Water Act
<ul style="list-style-type: none"> Formal land fill sites unsafe with limited resources or capacity to manage them properly 	<ul style="list-style-type: none"> Nelspruit Hazyview White River 	<ul style="list-style-type: none"> Safety and security force people to illegal dumping No recycling or reducing of waste 	<ul style="list-style-type: none"> DWAF 	<ul style="list-style-type: none"> National Water Act – permits Mbombela Integrated Waste Management Plan
<ul style="list-style-type: none"> Lack of formal landfill sites in rural areas - Burning of waste, Waste is buried anywhere 	<ul style="list-style-type: none"> Throughout the area 	<ul style="list-style-type: none"> Odors and air pollution Seepage causing groundwater pollution Increasing littering Increasing fauna / livestock and human health risk- 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Closed landfill site is leaking hazardous substances into the groundwater 	<ul style="list-style-type: none"> Rifle Range landfill site in Planning area H Impacting on Alhabama / 	<ul style="list-style-type: none"> Groundwater pollution Risk to human health Pollution of fauna in Rivers 	<ul style="list-style-type: none"> DWAF 	<ul style="list-style-type: none"> Rehabilitation plan

	Bester Spruit that runs through Nelspruit to the Crocodile river			
<ul style="list-style-type: none"> Limited recycling or reducing programmes in Mbombela 	<ul style="list-style-type: none"> Throughout the area 	<ul style="list-style-type: none"> Increasing capacity problems with landfill sites 	<ul style="list-style-type: none"> Mbombela Municipality 	<ul style="list-style-type: none">
Sanitation				
<ul style="list-style-type: none"> Formal waterborne sewage systems in Nelspruit, Hazyview and White River. Pit latrines and French drains in the surrounding areas No ablution facilities in informal settlements 	<ul style="list-style-type: none"> Throughout the area, particularly the rural highly developed unplanned areas 	<ul style="list-style-type: none"> Risk of groundwater pollution Increasing health risk - Cholera 	<ul style="list-style-type: none"> DWAF Mvula Trust 	<ul style="list-style-type: none">
Water Supply				
<ul style="list-style-type: none"> Frequent water shortages and unreliable supplies in reticulated services Water tanks are not filled regularly 	<ul style="list-style-type: none"> Nsikazi area Marathon, Woodhouse & Dingell farms - no provision of reticulated water 	<ul style="list-style-type: none"> Inadequate water supply for primary needs Water sourced from local springs, streams and rivers that are polluted, and this leads to health problems, cholera and bilharzia in particular Inadequate water for running businesses Long distances to fetch water High prices for water in rural areas 	<ul style="list-style-type: none"> Greater Nelspruit Utility Company Mvula Trust 	<ul style="list-style-type: none"> Mbombela Performance Management Plan
<ul style="list-style-type: none"> Distribution networks limited 	<ul style="list-style-type: none"> Inkomazi area Plots around Nelspruit 	<ul style="list-style-type: none"> As above Long distances to fetch water 	<ul style="list-style-type: none"> Greater Nelspruit Utility Company Mvula Trust 	<ul style="list-style-type: none"> Mbombela Performance Management Plan
<ul style="list-style-type: none"> Untreated water supplies 	<ul style="list-style-type: none"> Matsulu B and Youth 	<ul style="list-style-type: none"> Increased risks of disease 	<ul style="list-style-type: none"> Matsulu Water Scheme 	<ul style="list-style-type: none"> Upgrading of treatment works
<ul style="list-style-type: none"> Reticulated water quality highly variable, often carrying rust and usually turbid 	<ul style="list-style-type: none"> Inkomazi area Mataffin and Crocodile Valley areas - water 	<ul style="list-style-type: none"> Health problems, cholera and bilharzia in particular 		

<ul style="list-style-type: none"> following heavy rains Water tanks are dirty inside 	<ul style="list-style-type: none"> untreated Ngodwana: SAPPI reticulated water inadequate and dirty 			
<ul style="list-style-type: none"> Privatization of water perceived by many as a major problem because of high costs 	<ul style="list-style-type: none"> All areas, particularly where meters have not been installed 	<ul style="list-style-type: none"> Non-payment 	<ul style="list-style-type: none"> Greater Nelspruit Utility Company 	
<ul style="list-style-type: none"> Perceived excessive abstraction from river flow by upstream agricultural users 	<ul style="list-style-type: none"> Crocodile River, Area F 		<ul style="list-style-type: none"> DWAF 	
<ul style="list-style-type: none"> Illegal connections, leakages and poor maintenance 		<ul style="list-style-type: none"> Paying customers subsidizing illegal connections 	<ul style="list-style-type: none"> Greater Nelspruit Utility Company Mvula Trust 	
<ul style="list-style-type: none"> Boreholes not working or insufficient for the demand 		<ul style="list-style-type: none"> Reliance on surface water that may be polluted 		
Energy				
<ul style="list-style-type: none"> Power failures and fluctuating supplies 	<ul style="list-style-type: none"> Cairn area 	<ul style="list-style-type: none"> Problem with frozen foods and other supplies Candles increase fire risks 	<ul style="list-style-type: none"> Mbombela 	<ul style="list-style-type: none"> Mbombela Performance Management Plan
<ul style="list-style-type: none"> Electricity too expensive 	<ul style="list-style-type: none"> Nzikazi Area 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Inadequate electricity distribution 	<ul style="list-style-type: none"> Mshadza and Ward 50/59 with no electricity Mayfern (1amp/house) 4000 people settlement with insufficient electricity 	<ul style="list-style-type: none"> Harvesting of local bush and trees for fuel Use of primus stoves for cooking 	<ul style="list-style-type: none"> Mbombela 	<ul style="list-style-type: none"> Mbombela Performance Management Plan
<ul style="list-style-type: none"> Unsustainable harvesting of fuel wood Lack of woodlots 	<ul style="list-style-type: none"> Throughout the area, but mainly in Nsikazi 	<ul style="list-style-type: none"> Firewood increasingly scarce Distance to find firewood increases Denudation of natural vegetation 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Light pollution 	<ul style="list-style-type: none"> Airport Casino Ngodwana 	<ul style="list-style-type: none"> Aesthetics 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">

• Limited development of alternative energy sources	• All	• Dependency on ESCOM	•	•
Transport				
• Unmaintained roads with potholes unsafe. Mostly dirt roads in rural areas	• Throughout the area but especially the rural areas	• Risk of accidents and associated deaths • Health risk associated with dust from dirt roads	• Ehlanzeni District Council	• Ehlanzeni Roads Infrastructure plan
• Insufficient bus terminals • Insufficient facilities at taxi ranks and bus terminals • Unsafe road crossings for commuters	• Planning areas A, C, D, E, F and H	• Commuters exposed to elements while waiting for busses and taxis • Accidents between vehicles and commuters causing injuries or deaths • Increased health risk due to limited facilities	• Ehlanzeni District Council	• Ehlanzeni Roads Infrastructure plan
• Increasing traffic congestion	• Planning areas D and H • N4 highway route • Nelspruit and White River	• Increasing air pollution and health risk	• Ehlanzeni District Council	• Ehlanzeni Roads Infrastructure plan
• Increasing road infrastructure impacts negatively on natural drainage patterns	• Throughout the area	• Changes in drainage patterns • Soil erosion • Increased runoff degrade riverbanks	•	•

4.11 Tourism

Main Issues or Drivers of change	Areas impacted	Reasons for the importance of the issue	Data and availability	What initiatives are in place to deal with these issues?
• Increasing tourism potential in Mbombela, but tourism resources underdeveloped	• Throughout the area	•	• Mpumalanga Tourism	•
• Destruction of natural vegetation for curios	• Hazyview, Numbi Park • Rural areas	• Loss of biodiversity • Loss of indigenous trees • Increasing demand in contrast with diminishing resources	• MPB • DWAF/Danced	• Participatory forest management programs.
• People in the rural areas	• Planning areas A, F	• Unemployment	•	•

experience limited benefits from tourism opportunities		<ul style="list-style-type: none"> • Poverty • Destruction of natural environment • Crime 		
<ul style="list-style-type: none"> • Safety and security at tourism sites 	<ul style="list-style-type: none"> • Throughout the area 	<ul style="list-style-type: none"> • Places unsafe to visit – diminishing tourism potential 	<ul style="list-style-type: none"> • Crime statistics 	<ul style="list-style-type: none"> •
<ul style="list-style-type: none"> • Cultural tourism very limited in Mbombela 	<ul style="list-style-type: none"> • Planning areas A, C, E 	<ul style="list-style-type: none"> • Preservation of cultures • Tourism potential - job opportunities 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

4.12 Environmental Governance

Main Issues or Drivers of change	Areas impacted	Reasons for the importance of the issue	Data and availability	What initiatives are in place to deal with these issues?
<ul style="list-style-type: none"> • Insufficient governance on natural resources • Compliance of environmental requirements are not adhered to 	<ul style="list-style-type: none"> • All areas 	<ul style="list-style-type: none"> • Poor and uncoordinated conservation planning • Duplication of efforts • Developers who ignore regulations are not brought to book 	<ul style="list-style-type: none"> • Biodiversity inventories • MPB document - determining conservation of land 	<ul style="list-style-type: none"> • Biodiversity Bill • National Parks Act • National Conservation Act
<ul style="list-style-type: none"> • Lack of environmental awareness and environmental education 	<ul style="list-style-type: none"> • Mostly in the rural areas 	<ul style="list-style-type: none"> • Degradation of the natural and human environment as a result of ignorance. 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> •

5. CONCLUSION

This report has presented both an overview of the key environmental issues in Mbombela and has presented the issues raised in the 9 planning areas.

It was established through the stakeholder workshop as well as the workshops in the nine planning areas of Mbombela that there are common issues and drivers of change within Mbombela. These issues may vary in degrees and be influenced by factors such as: the natural environment (resources), the dominant land uses and sectors of activities such as forestry, agriculture, industry and tourism in each area.

The specific information (presented in the form of tables) have addressed the following:

- Main Issues or Drivers of change
- Areas impacted
- Reasons for the importance of the issue
- Data and availability

The second phase of the Mbombela State of Environment Report will assess the issues raised and determine which environmental indicators would be appropriate for future monitoring of the state of the environment and trends in environmental change.

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