PRELIMINARY ECOLOGICAL ASSESSMENT UNDERTAKEN FOR MBIZANA LOCAL MUNICIPALITY AS PART OF THE ENVIRONMENTAL MANAGEMENT FRAMEWORK-PHASE 1

ZEN

"Balancing human livelihoods with environmental sustainability"

REPORT INFORMATION

Report Title:	PRELIMINARY ECOLOGICAL ASSESSMENT UNDERTAKEN FOR MBIZANA LOCAL MUNICIPALITY AS PART OF THE ENVIRONMENTAL MANAGEMENT FRAMEWORK-PHASE 1		
Report Reference:	ECO_REP/JULY'16		
Report Status:	FINAL		
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Approved By:			

DECLARATION OF INDEPENDENCE

I, **Vuyokazi April,** in my capacity as a specialist consultant, hereby declare that I:-

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of this project, other than remuneration for the work performed in terms of the National Environmental Management Act 107 of 1998;
- Have and will not have vested interest in the proposed activity nor will I engage myself in any conflicting interest associated with this project
- As a registered member of the South African Council for Natural Scientific Professions, I will undertake my profession in accordance with the Code of Conduct of the Council as well as other associates to which I am a member;
- I undertake to disclose and provide to the competent authority any material or information at my disposal regarding this project as required in terms of the National Environmental Management Act 107 of 1998;
- Based on the information provided to me by the client and in addition to information obtained during the course of this study, I have presented the results and conclusion with regard to this project to the best of my professional ability;
- I reserve the right to modify aspects pertaining to this study should additional information become available through ongoing research and further work on this field;
- I undertake to have my work peer reviewed on a regular basis by a competent specialist in the field of study.

11/07/2016

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Introduction

Zen Environmental Consultant (ZEN), as an independent environmental and specialist consultant has been appointed by IKamva Consulting to undertake preliminary ecological survey for Mbizana Local Municipality (MLM) Environmental Management Framework-Phase 1 development. Mbizana Local Municipality is under the jurisdiction of Alfred Nzo District Municipality. The municipality has 31 wards whose offices are seated in a small town of Bizana situated in the Wild Coast Region of the Eastern Cape, South Africa.

The preliminary ecological survey was conducted as a requirement for the National Environmental Management Act 107 of 1998 Environmental Management Framework regulations (NEMA-EMF). The Environmental Management Framework is one of the integrated environmental management tools that are used to support informed decision regarding environmental impacts management as a result of development activities. Therefore, the objectives of the EMF are to support the decision making with regards to the proposed activity based on the associated environmental impacts, inform competent authorities by identifying geographical areas that are sensitive to environmental impacts as per listed activities; and contribute to environmental sustainable development by providing thresholds, limits and cumulative impacts as part of early warning to existing impacts within the area.

Objectives of the study

This assessment aims to determine the ecological status of Mbizana Local Municipality areas. The proposed EMF for the municipality is aimed to be utilized and considered during the application for Environmental Authorization or developments of areas in which environmental management applies. As a result, it will function as a support mechanism in Environmental Impact Assessment (EIA) processes during the evaluation and review of development applications within the affected municipality boundaries.

Approach to conduct the survey

Areas of ecological importance within the Mbizana Local Municipality were surveyed and co-ordinates taken in order to establish the present ecological status. The ecological importance was determined by the area's vegetation unit status, elements of habitat capability to support flora and fauna, susceptibility to transformation & degradation and occurrence of flora and fauna of conservation importance.

However, constriction such as time, limited funds and accessibility prevented the study to explore wider coverage of the area thus may miss certain areas that could have been identified through fine scale survey.

Survey Findings and Recommendations

The survey areas within MLM are characterised by undulating mountains hills and plains with large, medium and small meandering rivers running at their foot. The MLM (Municipality Code EC443) covers an area of ±240 000 hectares (ha) of which 60% of the area is considered natural and 40% is developed, transformed or degraded. The terrestrial ecosystem of the area is characterised by three (3) biomes covers; the **Savanna**, **Grassland** and **Indian Coastal Belt** and twelve (12) vegetation units in which three (3) are identified as **Endangered** and four (4) are **Vulnerable** to threat.

The municipality is endowed with pristine beaches and appealing scenery. Mbizana coast is known for its internationally acclaimed biodiversity hotspot hence it is called Pondoland centre of endemism (PCE). Two major protected areas the Mkambati Nature Reserve and Umtamvuna Nature reserve shares the bounder of KwaZulu-Natal and Eastern Cape; and extends its area into MLM.

As part of terrestrial ecosystem survey, three major land-use were identified viz; Cultivation, Residential/Settlement and Plantation which have a significant impact on the natural/ pristine state of the study area. The identified land-uses are characterised by removal of natural vegetation cover, transformation of natural occurring flora and destroying of flora and fauna natural habitat.

High level findings

Flora

The study findings show that there are 212 families of plant species that occur and distributed within the Mbizana Local Municipality boundary. There are 96 plants of conservation importance and management; 35 of these recorded plants are considered **VULNERABLE**, 20 are **NEAR THREATENED**, 14 are **ENDANGERED**, 12 are **RARE**, one (1) is **CRITICAL ENDANGERD**, 13 are **DECLINING** and another one (1) plant species is **THREATENED**.

Majority of the recorded species of conservation importance and management occur within the Indian Coastal Belt biome, followed by Grassland and Savanna.

The recorded plant species are found to be under the threat and three major threats were identified within the study area. They are as follows:-

1. Alien Plants invasion in the area requires immediate solution in terms of control, management and awareness.
2. Development or structural development within the area, the municipality is undergoing a major and important phase of transformation as a result roads are being extended and constructed. The requirements to achieve these developments plays havoc in the habitat of the flora as a result of vegetation cover removal.
3. Over harvesting or uncontrolled harvesting of the plant species. The community within the municipality is economically challenged due to high unemployment rate. For sustainable income, some harvest and sell some of the medicinal and edible plants in markets and to the commuters near the roads.

Fauna

Findings for species of special conservation and management concern recorded five (5) amphibians that occurs and extend their distribution within the municipality; of the recorded species two (2) are considered **ENDANGERED**, one (1) **CRITICAL ENDANGERED**, one (1) **VULNERABLE** and the last one to be **ENDEMIC** within the study area.

Furthermore, four (4) mammal species of concern were identified; they are recorded as one (1) **ENDAGERED**, one (1) **VULNERABLE** and the last two (2) **NEAR THREATENED**. Four reptile species were also found to occur and extend its distribution in the study area and of importance, four (4) species of concern were identified of which two (2) are considered **VULNERABLE**, one (1) **NEAR THREATENED** and the last one (1) **ENDANGERED**.

Lastly, three (3) Lepidoptera species of conservation and management importance are found to occur within the study site and one (1) is considered **ENDANGERED**, the other one (1) species **VULNERABLE** and the last species is found to be **CONSERVATION DEPENDANT** which means that its continuous existence and prevention from being threatened depend on conservation efforts and programmes that are in place around its area of occurrence.

Due to time, birds were omitted from this preliminary survey.

Environmental Constricted Zones of Ecological Importance

Recorded areas of flora and faunal species of conservation importance within the study area were as follows:-

1. Mountains; the Engeli mountains, cliffs and hills that extend its range within the Municipality are habitats of endemic and important flora and fauna and serves as ecological corridor for biodiversity functioning.
2. Rivers, meandering rivers and natural functioning wetlands within the study site are habitats and keepers of flora and freshwater fauna. Areas like Riparian's and floodplains are important for ecosystem functionality and species conservation.
3. Estuaries and associated dunes within the study area serve as habitat for special flora and fauna and play a vital role in ecosystem functioning and biodiversity of the area.

In conclusion, areas within Mbizana Local Municipality are ±90 % rural in mountainous or steep terrain areas, except for Central Business District (CBD) which is Bizana where major development and transformation is taking place. The outskirts of the area have minimal developmental impact but it is envisaged that as the municipality is gearing towards improving its areas and implementing service delivery to the communities those areas will in future experience impacts as a result. Therefore, as part of providing informed decision making, these areas must be assessed to establish the occurrence of the above mentioned species and to prevent unnecessary habitat removal.

Furthermore, the areas around the Coastal belt which is part of PCE is experiencing a high flora species transformation due to alien plant invasion and distribution that threatens to outcompetes and replace indigenous plant species; and the impact of over exploitation of natural plant species for medicinal purpose such as *Helichrysum petiolare* and seasonal harvesting of wild fruits for consumption.

It is recommended that the municipality initiate management measures that could minimize the effect of indigenous plant illegal exploitation and prepare a regulation and guidelines that aim to address this impact.

ACRONYMS

C-Plan	Conservation Plan
CR	Critically Endangered
DD	Data Deficient
DEA	Department of Environmental Affairs
MLM	Mbizana Local Municipality
NFEPA	National Freshwater Ecosystem Priority Areas
WMA	Water Management Areas
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EN	Endangered
EW	Extinct in the Wild
EX	Extinct
EA	Environmental Authorization
IUCN	International Union for Conservation of Nature
LC	Least Concern
PCE	Pondoland Center of Endemism
R	Rare
CBD	Central Business District
EC	Eastern Cape
BGIS	Biodiversity Geographic Information System
NEMBA	National Environmental Management Biodiversity Act
ESA	Ecological Support Areas
CBA	Critical Biodiversity Areas
NEMA	National Environmental Management Act
NT	Near Threatened
NWA	National Water Act
DEA	Department of Environmental Affairs
RDL	Red Data List
POSA	Plants of Southern Africa
ToR	Terms of Reference
NBSAP	National Biodiversity Strategy and Action Plans
IEM	Integrated Environmental Management
VU	Vulnerable
QDS	Quarter Degree Square
IDP	Integrated Development Plans
NBA	National Biodiversity Assessment
ADU	Animal Demographic Unit

1. INTRODUCTION

Biodiversity forms the most crucial environmental aspect and as such its status is used to evaluate decisions pertaining to activities with significant environmental impacts. The inclusion of biodiversity in decision making has been aimed to bridge a gap between economic development and land destruction, thus mitigating the environmental effects these developments may pose while still maintaining a functioning biodiversity (Driver et al., 2005). Therefore, as part of the Environmental Impact Assessment guidelines it is important to assess the potential impact of these proposed activities as they can impact directly or indirectly on the receiving environment.

Furthermore, biodiversity underpins every aspect of human livelihood and well-being as a result biodiversity loss and degradation are considered to be one of the three challenges that will affect loss of the ecosystem services and exacerbate vulnerability to the effects of climate change. The poorest communities are mostly dependent to natural resources to sustain their livelihood and are most vulnerable to the effects of biodiversity loss. Therefore, through maintained and conserved biodiversity, financial organs like World Bank are recognising the importance of ecosystem and natural resources in food and water provision and are gearing towards alleviating poverty and support sustainable development that take into account biodiversity conservation and management. As a result, they have programmes that funds biodiversity initiatives through lending, grants and trust funds and the portfolio of biodiversity projects represents monetary value in biodiversity investments and many of the projects promote sound management of natural resources that could help mitigate climate change, restore natural ecosystems and improve land and water management through protection and conservation of biodiversity (Cadman et al., 2010).

In South Africa, biodiversity and healthy ecosystems provide essential services such as supply of clean water, pollination of plants, prevention of soil erosion and flooding. It is a safety net for rural communities who depend on its ecosystem services and goods such as harvesting, recreational and shelter. Over half of the population of the country rely on medicinal plant for health care, use woods for fuel and harvest wild fruit for food. As a result, many benefits derived from biodiversity and ecosystems are public goods that come free and their value/price not captured in markets and taken into account in decision makings. This further leads to poor management of these resources which leads to loss of biodiversity, degradation of ecosystem and unmitigated climate change effects. For remediation purpose, the country is in a mission to recognise the importance of biodiversity, there are initiatives taking place to maintain, promote and invest in ecological aspects. The aim is developing a landscape approach that will aid in conserving; restoring and sustainable use of biodiversity while enabling agricultural and urban development through developing tools that will be used as part of landscape approach to address these challenges (Sonjica, 2010).

1.1.Locality of Study

The Mbizana Local Municipality (MLM) seated in Bizana situated in Eastern Pondoland of the former Transkei and forms part of the Wild Coast Region of the Eastern Cape Province, South Africa is the study area (Figure 1). The municipality is within the jurisdiction of Alfred Nzo District Municipality and has 31 wards within its border (Figure 2). The study area is centred between Umtamvuna River in the North which forms a provincial border between Eastern Cape and KwaZulu-Natal and Umzimvubu River in the South separating the area from the West Pondoland. The project areas can be access through R61 from Umtata to Port Edward via Bizana (Figure 3).

Within the municipality, most areas are built on the undulating hills and mountainous areas with both perennial and non-perennial rivers and streams running through the foot and edges. In terms of the Water Management Area (WMA), the MLM falls within two WMA which are uMvoti-Umzimkulu in the north and uMzimvubu-Kieskamma in the south.

The study area size covers 241 671 hectares of which 157 000.0 ha is a remaining natural area (BGIS, 2016).

Figure 1: Topographic Map of the Former Transkei Demarcation based on Bantu Clan (source: Museum Archives).

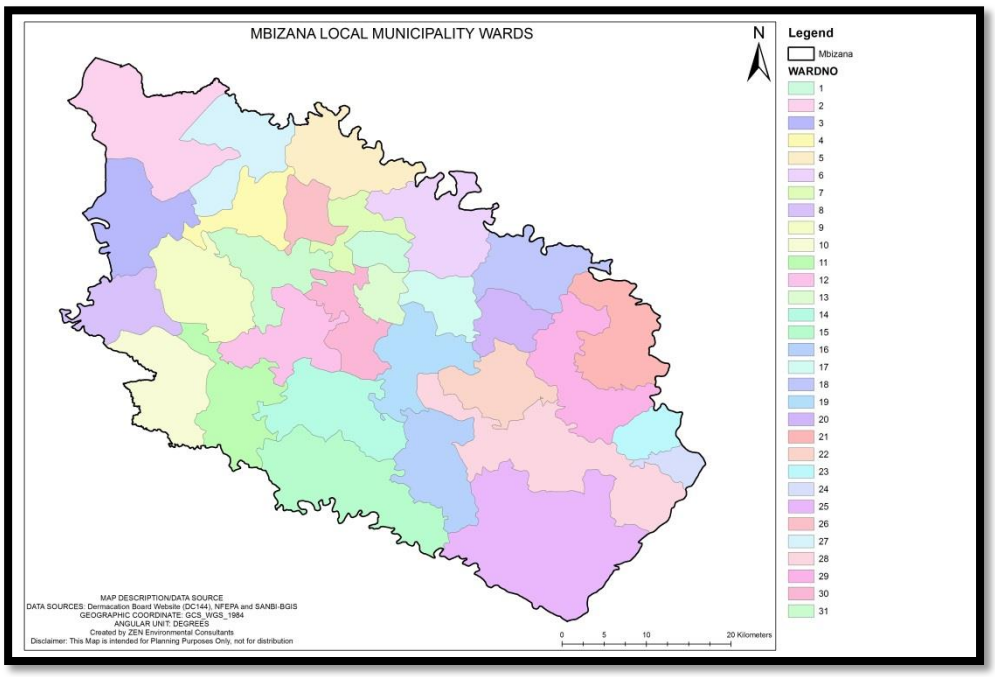

Figure 2: Mbizana Local Municipality Boundary and Wards.

Figure 3: A welcoming board at the entrance of Bizana where MLM offices are seated.

1.2 The objectives of the Ecological Survey as part of the Environmental Management Framework

The landscape approach to biodiversity conservation involve working both within and beyond the boundaries of protected areas in order to manage a mosaic of land uses such as protection, restoration, production and subsistence use in order to deliver ecological, economic and social benefits (Cadman et al., 2010). Biodiversity is a critical foundation of human well-being and economic activities and has enormous value to the society. Healthy, functioning ecosystems provides the basic necessities of life through delivery of variety of ecosystem goods and services which are by product of ecological processes that are of use to humans.

Development impacts on biodiversity as a result of decision choices are factors affecting the chances to attain successful human development goals as they fail to realise the condition, management and governance of ecosystems. Therefore, ecosystem functioning can be lost when the composition, structure and ecological processes that maintains an ecosystem are disrupted. Disruption in ecosystem functioning has a negative impacts on human well-being and compromise sustainable economic development.

The Environmental Management Framework (EMF) is part of the Integrated Environmental Management (IEM) tools to support landscape approach and can be utilised to support informed decision regarding management of impacts on the environment that arise from human induced activity or development. The inclusion of Ecological aspects in the EMF is aimed at:-

- Informing decision making pertaining land use application by providing areas of Sensitive or Critical Biodiversity and of Conservation Importance during Environmental Authorization Applications evaluation.
- Provide information on the ecological important areas through spatial mapping.
- Contribute to environmental sustainable development by identifying anticipated potential impacts and provide early warnings to thresholds, limits and cumulative impacts through identification of current existing impacts.
- Support the undertaking of Environmental Impact Assessment (EIA) in the area by indicating scope of potential impacts and information needs that is necessary for EIA.
- Delineate geographic areas within specified listed activities are to be identified in terms of NEMA as either sensitive, prone or resilient to development and assess their potential impacts.

Therefore, Ecological survey undertaken for Mbizana Local Municipality was aimed:

- To assess the current vegetation and its conservation status;
- To identify the floral species of ecological importance and their status;
- To identify the fauna species on the area;
- To identify current developmental triggers to ecological functioning of the study site;

The scope of the study will:-

- Identify biome(s) of the study area;
- List of vegetation types and their conservation status;
- List of available ecosystems (Terrestrial) and their present ecological status);
- List of flora and fauna of importance for ecological, conservation and management;
- Comment on the ecological or conservation status of the flora and fauna occurrence at the study area;
- Highlight the potential impacts of development activities may have on the ecosystem components of the study area; and
- Provide management recommendation to mitigate negative impacts and enhance positive impacts of the activities.

2. LEGISLATIVE CONTEXT

- **The Constitution of the Republic of South Africa Act (Act No. 108 of 1996) – Section 24**

The Constitution is South Africa's overarching law. It prescribes minimum standards with which existing and new laws must comply. Chapter 2 of the Constitution contains the Bill of Rights in which basic human rights are enshrined. Government's commitment to give effect to the environmental rights enshrined in the Constitution is evident from the enactment of various pieces of environmental legislation since 1996, including the National Water Act, the National Environmental Management Act, etc.

- **National Environmental Management Act (Act No. 107 of 1998) (NEMA), as amended**

NEMA replaces a number of the provisions of the Environment Conservation Act, 1989 (Act No. 73 of 1989). The Act provides for cooperative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for coordinating environmental functions. The principles enshrined in NEMA guide the interpretation, administration and implementation of the Act with regards to the protection and / or management of the environment. These principles serve as a framework within which environmental management must be formulated. Section 2(4) specifies that "sustainable development requires the consideration of all relevant factors including aspects specifically relevant to biodiversity":

- **National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA)**

NEMBA provides for the management and conservation of biological diversity and components thereof; the use of indigenous biological resources in a sustainable manner; the fair and equitable sharing of benefits rising from bio-prospecting of biological resources; and cooperative governance in biodiversity management and conservation within the framework of NEMA.

- **National Environmental Management Protected Areas Act (Act No. 57 of 2003) (NEMPAA), as amended**

NEMPAA provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes; for the establishment of a national register of all national, provincial and local protected areas; for the management of those areas in accordance with national norms and standards; for intergovernmental co-operation and public consultation in matters concerning protected areas; for the continued existence, governance and functions of South African National Parks; and for matters in connection therewith.

- **Conservation of Agricultural Resources Act (Act No. 43 of 1983) (CARA)**

South Africa has numerous problematic alien invaders, such as black wattle, lantana and queen of the night. CARA sets out to combat invasive plants. The Act categorizes weeds into three categories, with varying degrees of action required for each category of weeds. CARA is currently in the process of being revised. In addition the drafting of new regulations on alien and invasive species for the National Environmental Management: Biodiversity Act (NEMBA), Act 10 of 2004 is in effect in progress.

- **National Water Act (Act No. 36 of 1998) (NWA)**

The National Water Act (NWA) is a legal framework for the effective and sustainable management of water resources in South Africa. Central to the NWA is recognition that water is a scarce resource in the country which belongs to all the people of South Africa and needs to be managed in a sustainable manner to benefit all members of society. The NWA places a strong emphasis on the protection of water resources in South Africa, especially against its exploitation, and the insurance that there is water for social and economic development in the country for present and future generations.

- **National Forests Act (Act No. 84 of 1998) (NFA)**

The Act protects State Forests, Forest Nature Reserves and Wilderness Areas, and the plant and animal life contained therein. In addition the Act allows for management programmes to be established in order to prevent soil erosion and fire, maintain the natural genetic and species diversity and control plants and animals which are harmful to a particular area. The Act provides for the control and reasonable access to State Forests for the purposes of recreation, education, culture or spiritual fulfilment as well as prohibiting any person from damaging State Forests or contributing to the threat of fire. Forest officers are empowered to arrest any person who has contravened this Act and may seize such person's property.

- **Eastern Cape Biodiversity Conservation Plan**

The ECBCP addresses the urgent need to identify and map critical biodiversity areas and priorities for conservation in the Province. It also provides land use planning guidelines, recommending biodiversity-friendly activities in priority areas.

The ECBCP is intended for use by technical users and decision-makers in the spheres of planning, development and environment. Mapped information can be used both reactively and strategically to guide future development away from sensitive and priority biodiversity areas.

- **Bioregional plans**

The Bioregional plans aim to provide maps of biodiversity priorities with accompanying land-use planning and decision making guidelines in order to inform decisions associated with land-use planning, environmental assessment, natural resource management and authorization.

- **Biodiversity management plans (BMP)**

BMP's ensure the long term survival in nature of species; to provide the responsible person or organ of state effective monitoring and reporting on species progress and to be consistent with acts, frameworks and applicable bioregional plans or any plans issued in terms of Chapter 3 of the NEMA or any municipal integrated development plans etc.

- **National biodiversity strategy and action plans (NBSAP)**

NBSAP goal is to conserve and managed terrestrial and aquatic biodiversity to ensure a sustainable and equitable benefits.

- **National biodiversity assessment (NBA)**

Formerly known as National Spatial Biodiversity Assessment (NSBA) which is a systematic biodiversity planning approach that aims to give a comprehensive biodiversity assessment (previously it focused on spatial only) throughout the country. Its focus is to mainstream biodiversity priorities throughout the economy and making links between biodiversity and socio-economic development.

- **Local Municipality Integrated Development Plan (IDP)**

The Integrated Development Plan is a strategic planning instrument that guides and informs all planning, budgeting, management and decision–making in a municipality. The IDP gives impetus to the implementation of the government programme of action

In line with the requirements of the Local Government Municipal Systems Act (MSA) 32 of 2000 which prescribes for the review of municipal Integrated Development Plan (IDP), The IDP review focused on the following key aspects:

- Updating of the planning baseline information and assumptions based on new ward needs, revised analysis etc;
- Improving readability of the document in order to make it accessible;
- To respond to the comments made on past IDP;
- To make the IDP more credible and design it along the lines suggested by MEC assessment; and

- Implementation of the Municipal Turn Around Strategy model.

3. TERMS OF REFERENCE

In recent years, increase attention has been focused on the role of biodiversity in sustainable development at a global scale. In spite of the global uptake of sustainable development as a concept, and of the growing recognition of the critical role that biodiversity plays in human wellbeing, most politicians and administrators have failed to make the link between conservation of biodiversity, social and economic development, and human wellbeing.

The purpose of the EMF in Environmental Impact Assessment (EIA) is to provide decision-makers with adequate and appropriate information about the potential positive and negative impacts of proposed activities for development and associated management actions in order to make an informed decision whether or not to approve, proceed with or finance the development.

For ecological environmental aspects, an ecological study is conducted to determine the ecological value of the site based on biodiversity and ecosystem functioning prior to the proposed activity or development. To comply with the national, provincial, local and regional legislations and guidelines; the assessment is compromised of the two (2) components:

3.1. Desktop research and literature review

The available provincial biodiversity data sets, red listed and protected flora and fauna data were perused and used as references to support the findings of the study. Relevant national, provincial and regional environmental legislations, regulation and policies with regards to this assessment were used as guidelines in conducting this assessment.

Furthermore, previous conducted assessments (if any) of this nature were reviewed and used as reference and maps or any spatial data (where available) on biodiversity of the area were used to determine the occurrence, distribution and conservation status of observed flora and fauna at the site.

The information obtain during desktop research was then used to compile a checklist for field assessment/survey.

3.2. Ground trothing and field sampling

Ground trothing was conducted on the 15-18 March 2016 in order to understand the magnitude of the study area and its in-situ operations and verify the accuracy of the results yielded during the desktop research. Environmental changes (micro and macro) were assessed especially those that are not yet documented in existing data. This component entails a visual assessment of the area, monitoring of the faunal species activities and documenting other developmental activities within or adjacent to the proposed project area.

The findings from these components were used to compile this report and offer a constructive conclusive decision for the ecological assessment.

4. PRESENT ENVIRONMENTAL STATE

4.1. Topography

The study area is characterised by mountains particularly Engeli Mountains (**iintaba**) and cliffs (**amawa**), undulating hills (**iinduli**) and plains (**uqaqaqa**), which become more hilly and broken towards the coast. There are meandering rivers (**imilambo**) and streams (**imilanjana**) at the foot of these mountains and hills which connects to major rivers such as uMtamvuna River in the north and uMzimkhulu River in the south that are tributary of the Indian Ocean (Figure 4).

Figure 4: View of one of the areas within MLM.

4.2. Climate

The study falls within a warm to temperate climatic region, with rainfall occurring mostly in the summer in the form of heavy thunderstorms. Average rainfall varies according to altitude and topography, range from 1 000 to 1 300 mm per annum along the coast, to 700 mm per annum in the inlands and up to 1 500 mm per annum along the escarpment. The area is occasionally affected by tornadoes, a rarity in southern Africa. The temperature is mild along the coastal areas, with a mean annual temperature of 21 °C (ranging from 3 °C to above 30 °C), and a slightly wider range inland with a mean annual temperature of 16 °C (ranging from 3 °C to above 40 °C). Light snowfalls may occur in winter, melting within a day or two.

4.3. Geology

The regional geology of the study area is characterised by sandstones and brownish-red and grey mudstones of the Beaufort Group. From inland towards the coast the profile become dark grey shales with mudstones and sandstones of the Ecca Group. Exposures of Karoo dolerite intrusions are found throughout, but mostly in the higher lying areas.

4.4. Soils

The soils are mainly shallow, rocky and leached **Fa** land type. The erodibility of the soils is fairly high which results in the formation of the gullies or dongas (Figure 5).

The study area falls within the **Glenrosa/ Mispah** soil form which lacks the lime content. These soils are good for grazing but poorly suitable for arable lands.

Figure 5: Soils within the study site are very susceptible to gully formation or erosion during extreme weathering.

5. METHODOLOGY

5.1. Vegetation assessment

The vegetation surveys were undertaken within vegetation polygons identified by a combination of Mucina and Rutherford vegetation mapping (2006), photograph interpretation and mapping by the Eastern Cape Terrestrial Biodiversity Assessment Plan. Delineation of vegetation patches was based on the type and general condition of the vegetation which is often strongly influenced by land-use practices (e.g. level of grazing, history of disturbance, location of fence lines).

Vegetation surveys were conducted to:

- Assess the presence of an endangered ecological community under the IUCN Red list and
- Determine whether vegetation patches meet the endemic vegetation definition as defined under the NEMBA.
- GPS recording using Garmin Montana and photographs were taken.

5.2. Habitat resources

Savanna, grasslands and coastal belt biomes are likely to support a diversity of animals, including birds, reptiles, arboreal mammals and invertebrates. In the woodland communities, a structural complexity is created by the presence of tree hollows, fallen timber, trees of different ages, a mid-level shrub layer and a grassy under storey. These areas are considered to have high ecological value as they provide nesting sites, shelter and food resources for a variety of species.

6. STUDY LIMITATIONS

6.1. Vegetation

This study was not intended to provide an inventory of all species present within the study area but instead aimed to provide an overall assessment of the ecological values with particular emphasis on the endemic vegetation status, endangered ecological communities and condition.

6.2. Fauna

Faunal assessment was limited to desktop even though the sightings were intended during ground trothing, the incidents were limited and avifauna-survey was omitted due to time period allocated and extent of ecological aspects that were to be covered. Only species of ecological importance were identified and reported on.

6.3. Spatial Mapping

Spatial mapping of the areas of importance was done on a coarse scale.

7. RESULTS AND DISCUSSION

7.1. Biome

Mbizana Local Municipality falls within the Grassland and Savanna and Indian Coastal Belt biomes (see Figure 6 by Mucina & Rutherford, 2006). There are twelve (12) vegetation types covering and distributed within these identified study site biomes (Figure 7).

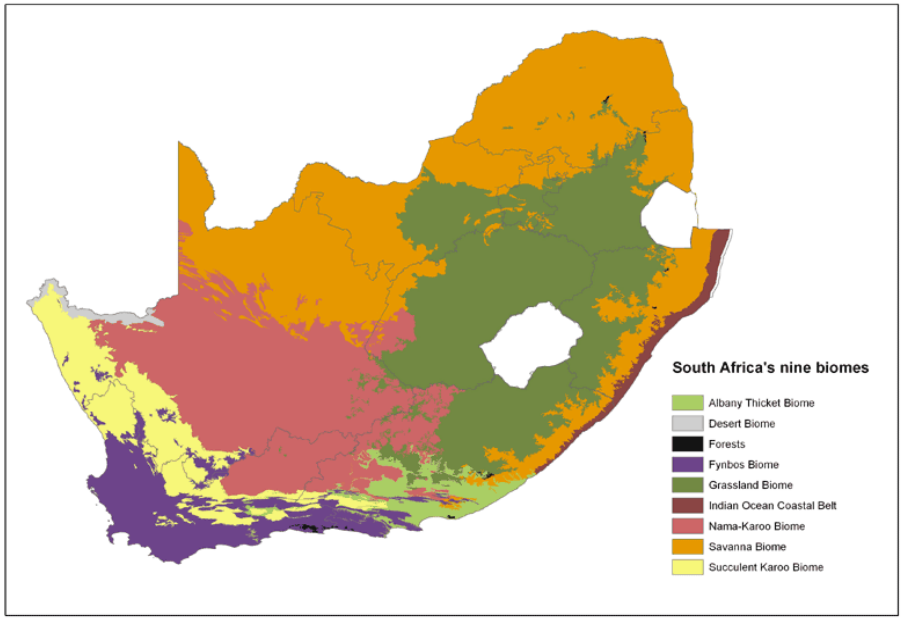

Figure 6: Biomes of South Africa, Lesotho and Swaziland, the project locality falls within a Grassland and Savanna and biomes (©Rutherford and Mucina, 2006)

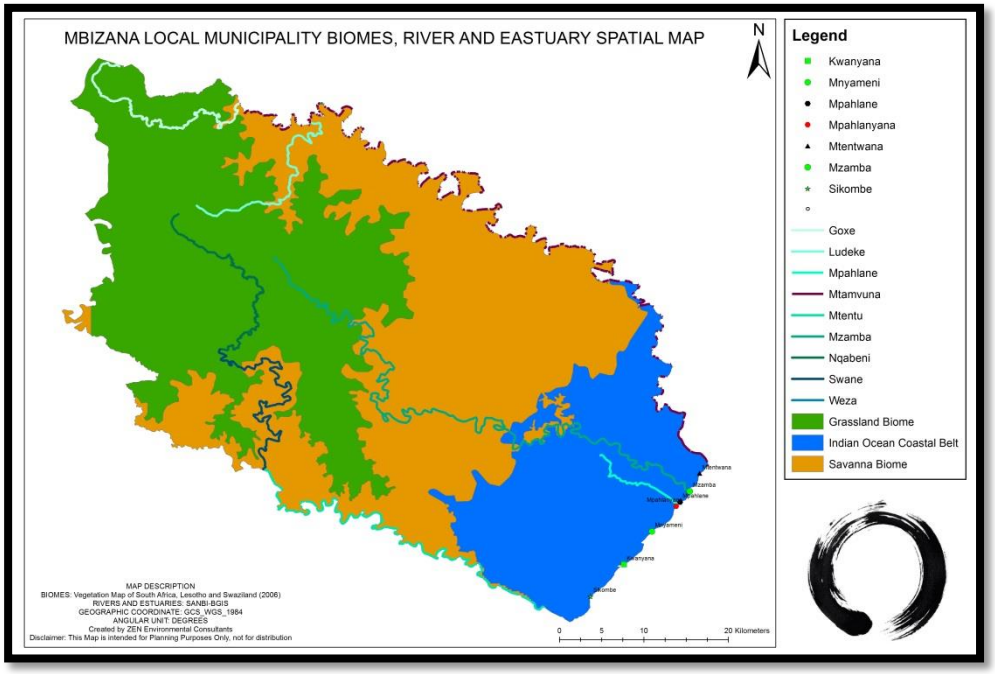

Figure 7: Biomes occurring within Mbizana Local Municipality.

7.2. Vegetation Types

The surveyed municipality falls within locus (QDS) **3029 DA**, **3029DB**, **3029DC**, **3029DD**, **3030CC**, **3129BA**, **3129BB** and **3130AA**. There are twelve (12) vegetation types (see Figure 8) covering the municipality of which six (6) are threatened ecosystem (Figure 9). There are 212 plants families identified and recorded within the study area. Furthermore, 96 plants of conservation (status) and ecological (endemism) importance and management are listed herewith. The listed plant species were classified according to the Red List using the conservation criteria (viz: **Vulnerable** (Vu), **Near Threatened** (NT), **Endangered** (EN), **Rare** (R), **Critical Endangered** (CE), **Declining** (D) and **Threatened** (T)). The results shows that the 95 conservation important plant species recorded for MLM 35 are **Vulnerable**, 20 **Near Threatened**, 14 **Endangered**, one (1) **Critical Endangered**, 12 **Rare**, 13 **Declining** and one (1) **Threatened**. The identified areas of high species richness were along the coastal belt, in the mountainous areas and along the rivers found within the municipality.

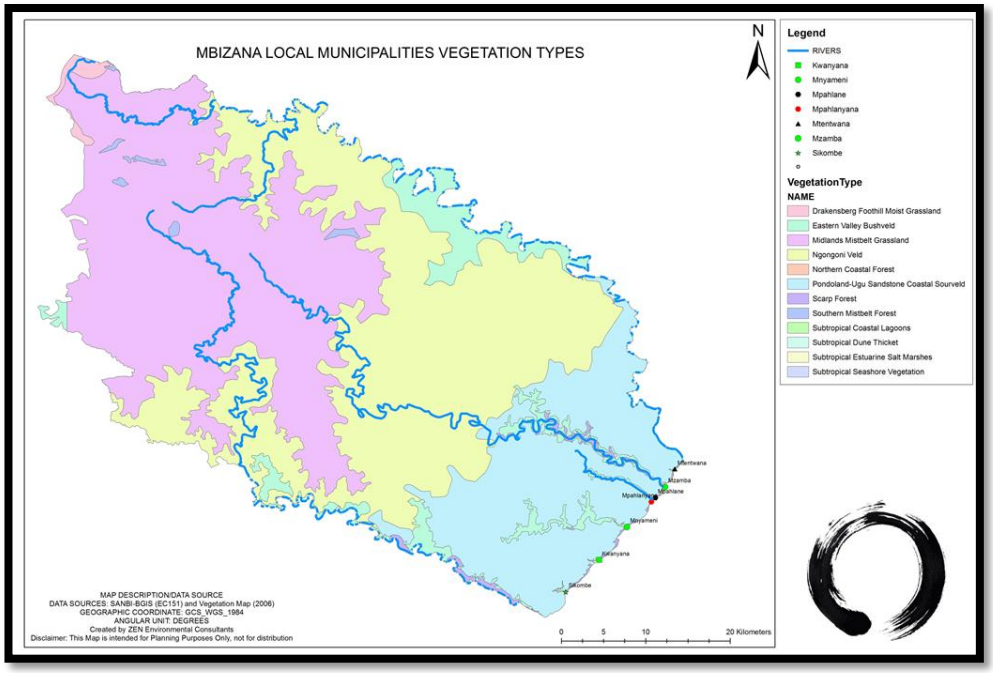

Figure 8: Vegetation Types within MLM.

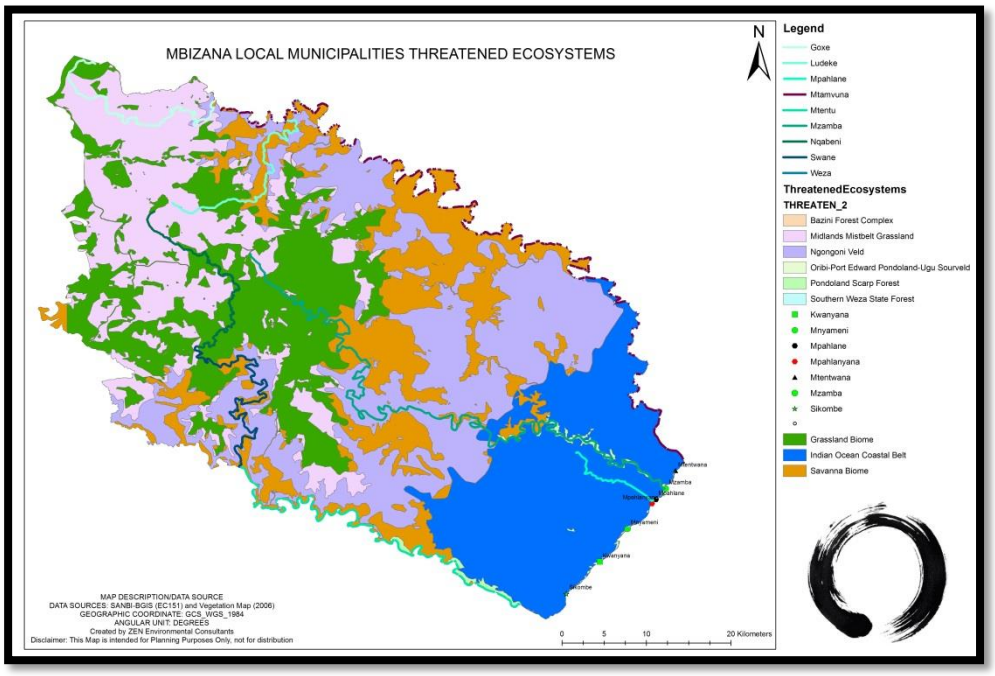

Figure 9: Vegetation types which are threatened within the MLM.

It should be mentioned that the surveyed study is undergoing major economic development project which is currently confined within the Central Business Districts (CBD); and it is envisage that more development will be extending to the outskirts as the need for service delivery to impoverish communities will be of importance to the municipality. Therefore, transformation of natural areas and removal of vegetation cover will be one of the impacts associated with most development activities currently taking place and those that are still in the pipeline.

The study area falls within the Pondoland Centre of Endemism (**Figure 10**)which is habitat of flora that are endemic and rare; below is the list of Vegetation Types within the Municipality and extent of coverage (Table 1), followed by the number of plants found within each QDS at the study site(Table 2); furthermore, the list of plant families within MLM (Table 3) and finally the list of plant species of ecological and conservation importance within the municipality area (Table 4).

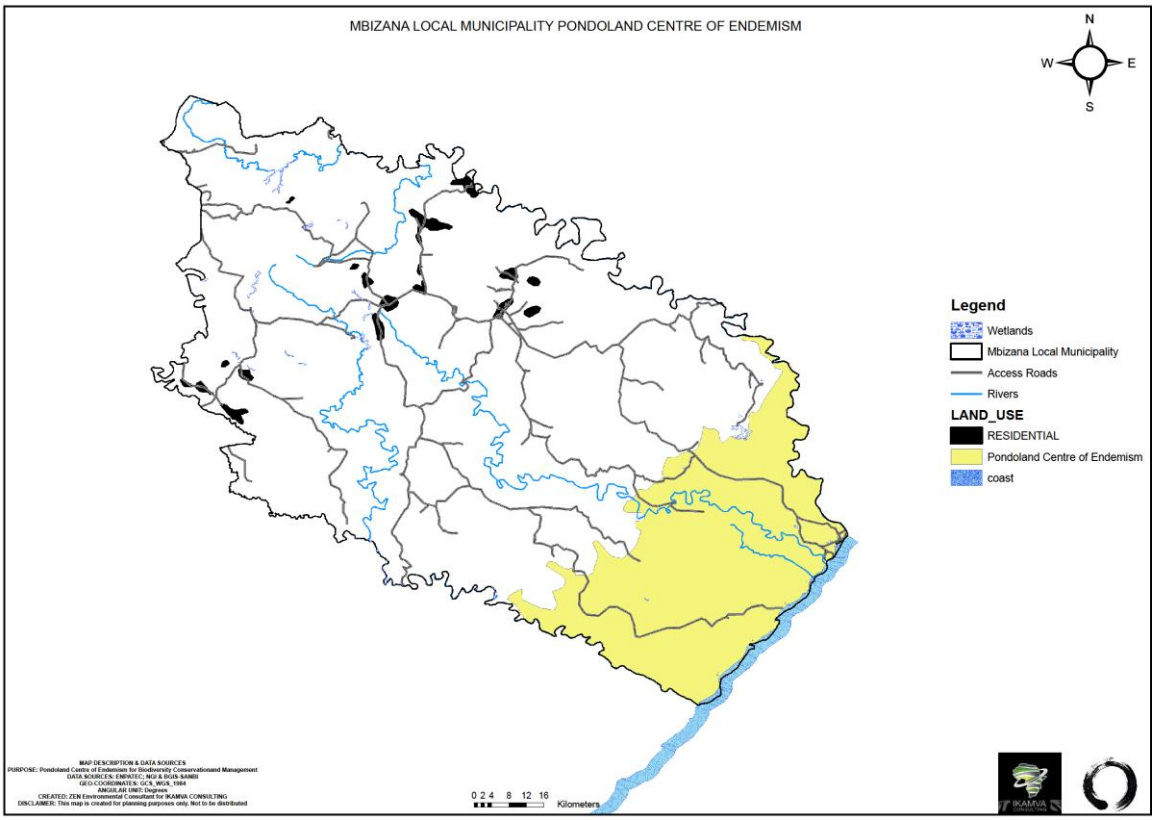

Figure 10: Pondoland Centre of Endemism also extends within the MLM.

Table 1: List of Vegetation Types and their coverage within Mbizana Local Municipality (data source: SANBI-BGIS).

Vegetation Type	Coverage (%)	Ecosystem Status
Ngongoni Veld	37.47	Threatened
Midlands Mistbelt Grassland	36.55	Threatened
Pondoland-Ugu Sandstone Coastal Sourveld	18.26	Threatened
Subtropical Dune Thicket	8.2	Least Concern
Eastern Valley Bushveld	5.95	Least Concern
Pondoland Scarp Forest	0.67	Threatened
Drankensberg Foothill Moist Grassland	0.55	Least Concern
Southern Mistbelt Forest	0.35	Threatened
Subtropical Estuarine Salt Marshes	0.3	Least Concern
Subtropical Coastal Lagoons	0.06	Least Concern
Northern Coastal Forest	0.02	Threatened
Subtropical Seashore Vegetation	0.01	Least Concern

Table 2: Number of plants found within each QDS at the study site (data source: SANBI-POSA v.3.0)

QDS Number	Number of Plants	Species of Ecological Conservation
3029DA	674	21
3029DB	139	4
3029DC	90	6
3029DD	152	5
3030CC	723	47
3129BA	105	5
3129BB	37	6
3130AA	939	54
TOTAL	**2859**	**148**

Table 3: List of plant families within MLM (data source: POSA and PlantZA).

PLANT FAMILIES IDENTIFIED WITHIN THE STUDY AREA							
Acanthaceae	Bruchiaceae	**Elephoglossaceae**	Lauraceae	**Onagraceae**	Rosaceae	**Fabroniaceae**	Velerianaceae
Achariaceae	Brycaceae	**Ericaceae**	Lentibulariaceae	**Orchidaceae**	Rubiaceae	**Gigaspermaceae**	Vellozaceae
Agapanthaceae	Buddlejaceae	**Equisetaceae**	Leucobryaceae	**Orobanchaceae**	Rutaceae	**Laskeaceae**	
Alliaceae	Buxaceae	**Eriocaulaceae**	Leucodontaceae	**Osmundaceae**	Scrophulariaceae	**Xyridaceae**	
Amaryllidaceae	Cactaceae	**Eriospermaceae**	Linaceae	**Parmeliaceae**	Sematophllaceae	**Brachytheciaceae**	
Anacardiaceae	Calymperaceae	**Erythoxylaceae**	Lobariaceae	**Passifloraceae**	Zamiaceae	**Chrysothricaceae**	
Anemiaceae	Camdunalaceae	**Euphorbiaceae**	Lobeliaceae	**Phyllanthaceae**	Verbenaceae	**Ditricaceae**	
Aneuraceae	Capparaceae	**Fabaceae**	Lomariopsidaceae	**Physiaceae**	Viscaceae	**Geoclycaceae**	
Anomodontaceae	Caryophyllaceae	**Fissidentaceae**	Loranthaceae	**Phytolaccaceae**	Oxalidaceae	**Jubulaceae**	
Annonaceae	Celestraceae	**Flacourtiaceae**	Lycopodiaceae	**Pittosporaceae**	Salvadoraceae	**Polygonaceae**	
Anthericaceae	Celtidaceae	**Funariaceae**	Maesaceae	**Piperaceae**	Salicaceae	**Primulaceae**	
Apiaceae	Cladoniaceae	**Gentianaceae**	Malpighiaceae	**Poaceae**	Salviniaceae	**Racopilaceae**	
Apocynaceae	Clusiaceae	**Geraniaceae**	Malvaceae	**Podocarpaceae**	Santalaceae	**Bacidiaceae**	
Aquifoliaceae	Colchicaceae	**Gesneriaceae**	Marattiaceae	**Polygalaceae**	Sapindaceae	**Balsaminaceae**	
Araceae	Collemataceae	**Glacheniaceae**	Melastromataceae	**Polypodiaceae**	Sapotaceae	**Behruaceae**	
Araliaceae	Combretaceae	**Graphidaceae**	Meliaceae	**Polytrichaceae**	Schizeaaceae	**Cornaceae**	
Arecaceae	Commelinaceae	**Gunneraceae**	Melianthaceae	**Pottiaceae**	Selaginellaceae	**Escalloniaceae**	
Asperagaceae	Connaraceae	**Haloragaceae**	Mesembryanthemaceae	**Prioniaceae**	Sinopteridaceae	**Fumariaceae**	
Asphodelaceae	Convolvulaceae	**Hamamelidaceae**	Meteoriaceae	**Proteaceae**	Smilacaceae	**Greylaceae**	
Aspleniaceae	Crassulaceae	**Hyacinthaceae**	Mniaceae	**Psilotaceae**	Solanaceae	**Grimmiaceae**	
Asteraceae	Cyathaeceae	**Hymenophyllaceae**	Molluginaceae	**Ptychomitriaceae**	Sphagriaceae	**Haemodoraceae**	
Avicenniaceae	Cyperaceae	**Hypericaceae**	Monimiaceae	**Pteridaceae**	Stangeriaceae	**Hedwigiaceae**	
Aytoniaceae	Davalliaceae	**Hyphaceae**	Moraceae	**Putrajivaceae**	Strychnaceae	**Mniaceae**	
Bertramiaceae	Dennsteadtiaceae	**Hypopterygiaceae**	Myricaceae	**Ramalinaceae**	Thelypteridaceae	**Monimiaceae**	
Bryaceae	Dicranaceae	**Iypoxidaceae**	Myrtaceae	**Ranunculaceae**	Thymelaeceae	**Ochniaceae**	
Begoniaceae	Dioscoreaceae	**Icacinaceae**	Neckeraceae	**Restionaceae**	Urticaceae	**Ophioglossaceae**	
Blechnaceae	Dipsacaceae	**Iridaceae**	Ochnaceae	**Rhamnaceae**	Violaceae	**Orthorichaceae**	
Behniaceae	Droseraceae	**Juncaceae**	Oleaceae	**Rhizophoraceae**	Vitaceae	**Rhizogoniaceae**	
Bignoniaceae	Dryopteridaceae	**Juncaginaceae**	Oleandraceae	**Rhynchocalycaceae**	Vittariaceae	**Samydaceae**	
Brassicaceae	Ebenaceae	**Lamiaceae**	Oliniaceae	**Ricciaceae**	Boraginaceae	**Thuidaceae**	

Table 4: List of flora species ecological and conservation importance within MLM and their current status (data source POSA, IUCN-Red List and PlantZA).

Family	*Species Name*	Common Name (English/Vernacular)	Conservation Status
THYMELAEACEAE	*Struthiola anomala*	Anomala grass	Vulnerable
RUBIACEAE	*Alberta magna*	isiqalana	Near threatened
RIZOPHORACEAE	*Cassipourea flanaganii*	umemezi	Endangered
PROTEACEAE	*Protea subvestita*	Umnqwane/isiqalaba	Vulnerable
LAURACEAE	*Ocotea bullata*	Umhlungulu/umtungwa	Endangered
IRIDACEAE	*Dierama tysonni*	Fairybells/angels fishing rod	Vulnerable
IRIDACEAE	*Dierama ambiguum*		Endangered
HYACINTHACEAE	*Merwilla plumbea*	Wild squil	Near threatened
HYACINTHACEAE	*Bowiea volubilis*	Umaqana/umagaqana	Vulnerable
FABACEAE	*Psoralea abbotti*	Umhlonitshwa	Vulnerable
FABACEAE	*Crotalana dura*	Wild lucerne/jagsiektebossie	Near threatened
ERICACEAE	*Erica albospicata*	Tree Heath	Rare
DIOSCOREACEAE	*Dioscorea brownii*	ingcolo	Vulnerable
CORNACEAE	*Curtisia dentata*	Umgxina/umdlebe	Near threatened
AMARYLLIDACEAE	*Clivia gardenii*	Bush Lily	Vulnerable
COLCHICACEAE	*Sandersonia aurantiaca*	Christmas Bells/Chinese Lily Latern	Declining
CELASTRACEAE	*Eleadendron croceum*	Umbovane	Declining
ASTERACEAE	*Senecio poseideonis*	Idwara/iyeza lomoya	Rare
ASPHODELACEAE	*Kniphofia drepanophylla*	ixonye	Vulnerable

ASPHODELACEAE	*Aloe kniphofioides*	Ikhala/intelezi	Vulnerable
APOCYNACEAE	*Asclepias xysmalobioides*	Milkweed	Rare
AMARYLLIDACEAE	*Nerine bowdeni*	Cape flower	Rare
ERICACEAE	*Erica ebracteata*	Heath	Rare
BEGONIACEAE	*Begonia homonyma*	idlula	Endangered
APOCYNACEAE	*Esclepias disparilis*	Milkweed	Vulnerable
AMARYLLIDACEAE	*Haemanthus deformis*	Intlokotshane/umathunga	Vulnerable
SALICACEAE	*Pseudoscolopia polyantha*	False red pear	Near threatened
ROSACEAE	*Prunus africana*	umkakase	Vulnerable
MYRICACEAE	*Rapanea melanophloeos*	Isiqalathi/umemezi	Declining
FABACEAE	*Eriosema latifolium*	-	Vulnerable
BRYACEAE	*Pterocelastrus rostratus*	itywina	Declining
AQUIFOLIACEAE	*Ilex mitis*	Ubhubhubhu/isidumo	Declining
AMARYLLIDACEAE	*Boophane disticha*	ishwadi	Declining
SAPOTACEAE	*Manilkara nicholsonii*	-	Endangered
ZAMIACEAE	*Encephalartos ghellinckii*	Umphanga/umngwavu	Vulnerable
RUBIACEAE	*Eriosemopsis subanisophylla*	-	Vulnerable
RUBIACEAE	*Canthium wanwykii*	umnyushulube	Near threatened
RUBIACEAE	*Anthospermum streyi*	-	Rare
ROSACEAE	*Cliffortia vindis*	Unwele/umnwele	Vulnerable
RHYNCHOCALYCACEAE	*Rhynocalyx lawsoniodes*	-	Near threatened
RHIZOPHORACEAE	*Cassipourea gummiflua*	Large Leaf Onion Wood	Vulnerable
RHIZOPHORACEAE	*Cassipourea malosana*		Declining
RHAMNACEAE	*Phyllica natalensis*	Hardleaf Phyllica	Vulnerable
RHAMNACEAE	*Colubrina nicholsonii*	Pondo Weeping Thorn	Vulnerable
PROTEACEAE	*Leucospermum innovans*	Pondoland pincushion	Endangered
PROTEACEAE	*Leucadendron spissifolium* subsp. *oribium*	Pondo spearleaf conebush	Vulnerable
PROTEACEAE	*Leucadendron spissifolium* subsp. *natalense*		Near threatened
PROTEACEAE	*Faurea macnaughtonii*	Icubalethole/isifa	Rare
PRIONIACEAE	*Prionium serratum*	intsikani	Declining
MYRTACEAE	*Syzgyium pondoense*	Umdoni wehlathi	Rare
MYRTACEAE	*Eugenia erythrophylla*	Myrtle	Near threatened
MYRTACEAE	*Eugenia umtamvumesis*		Endangered
MYRTACEAE	*Eugenia verdoorniae*		Near threatened
MORACEAE	*Ficus bizane*	uluzi	Vulnerable
MESEMBRYANTHEMACEAE	*Lampranthus fugitans*	unomatyumtyuma	Vulnerable
MALVACEAE	*Grewia pondoensis*	Umhlolo/umnqabaza	Near threatened
LENTIBULARIACEAE	*Dahlgrenodendron natalense*	Natal quince	Endangered
LAURACEAE	*Cryptocarya wyliei*	inqayana	Near threatened
LAURACEAE	*Cryptocarya latifolia*	umthungwa	Declining
LAMIACEAE	*Syncolostemon ramulosus*	Sage bush	Vulnerable
LAMIACEAE	*Plectranthus ernistii*	Ucakuse/iboza/irhajojo	Near threatened
IRIDACEAE	*Watsonia indinata*	Igobitya/ithembu	Vulnerable
IRIDACEAE	*Watsonia umtamvunae*		Vulnerable
IRIDACEAE	*Watsonia bechmannii*		Vulnerable
IRIDACEAE	*Dietes bicolor*	Peacock flower	Rare
ICACINACEAE	*Opodytes abbotti*	White pear	Near threatened
GUNNERACEAE	*Gunnera perpensa*	Uthangazana/uphuzi	Declining
GESNERIACEAE	*Streptocarpus porphyrostachys*	Cape primrose	Near threatened

GESNERIACEAE	*Streptocarpus formosus*		Rare
FABACEA	*Erythopleum lasianthum*	-	Near threatened
FABACEAE	*Umtiza listeriana*	umtiza	Vulnerable
FABACEA	*Lotononis bachmanniana*	-	Near threatened
FABACEA	*Eriosema umtanvunense*	-	Vulnerable
ERICACEAE	*Erica aspalathifolia* var. *aspalathifolia*	-	Declining
ERICACEAE	*Erica abbotti*	-	Vulnerable
CRASSULACEAE	*Crassula obovata* var. *dregeana*	Intelezi/iphewula	Vulnerable
CRASSULACEAE	*Crassula streyi*		Rare
CELASTRACEAE	*Myterius abbotti*	-	Endangered
CELASTRACEAE	*Putterlickia retrospinosa*	umqaqoba	Near threatened
CELSTRACEAE	*Pterocelastrus rostratus*	itywina	Declining
CELASTRACEAE	*Pseudolacia streyi*	-	Endangered
CELASTRACEAE	*Maytenus oleosa*	Umngqi/umnana	Rare
CELASTRACEAE	*Gymnosporia bachmannii*	Myterius/Willow Myterius	Vulnerable
BEGONIANCEAE	*Begonia dregei*	idlula	Endangered
ASTERACEAE	*Helichrysum pannosum*	Impepho/icholachola	Endangered
ASTERACEAE	*Senecio erubescens*	uvelemonti	Threatened
ASPHODELACEAE	*Kniphofia pauciflora*	Ixonya/incachane	Critical endangered
ASPHODELACEAE	*Kniphofia codiana*		Near threatened
ASPHONDELACEAE	*Gasteria croucheri*	intelezi	Vulnerable
ARECACEAE	*Jubaeopsis caffra*	inkomba	Endangered
APOCYNACEAE	*Brachystelma rubellum*	-	Vulnerable
APOCYNACEAE	*Brachystelma sandersonii*		Vulnerable
APOCYNACEAE	*Sisyranthus fanniniae*	-	Vulnerable
ANACERDIACEAE	*Searsia acocksii*	Umhlankothi/intlokotshane	Near threatened
ANACARDIACEAE	*Loxostylis alata*	Wild pepper/tarwood	Declining

7.3. Exotic species

During the survey, it was observed that alien plant species have invaded the areas of high ecological importance along the coastal belt, the infestation of Black Wattle on the open pastures and residential area that are infested by lantana, tithonia and yellow bells were sighted. It is recommended that the municipality with assistance from Working for Water raise awareness in controlling and managing the alien plant invasion within the MLM areas especially near the watercourses. Random exotic species such as gum tree, black wattles, lantana, cocklebur, sesbania and prickly pear were observed to occur in some of the yards or in the open spaces within the settlements.

7.4. Medicinal and cultural used plant species

Most of the plant species that were observed in the areas such as *Helichrysum sp.*, *Schotia afra* and *Aloe ferox* are used in some form of unconventional medicine for minor ailments such as stomach-aches, treatment of boils and wounds. Furthermore, most wild fruits growing in the area are edible and consumed by locals. It is important to note, that traditional plant use in rural areas and its economic value, although difficult to estimate, is significant and entirely dependent on natural biodiversity. Many plants used in traditional medicine are slow growing and, once lost, are unlikely to return to an area.

7.5. Fauna

Findings for fauna of special conservation and management concern (Figure 11) recorded (see Table 5) five (5) amphibians that occurs and extend their distribution within the municipality; of the recorded species two (2) are considered

ENDANGERED, one (1) CRITICAL ENDANGERED, one (1) VULNERABLE and the last one to be ENDEMIC within the study area.

Four (4) mammal species of concern were identified; they are recorded as one (1) ENDAGERED, one (1) VULNERABLE and the last two (2) NEAR THREATENED. Four reptile species were also found to occur and extend its distribution in the study area and of importance, four (4) species of concern were identified of which two (2) are considered VULNERABLE, one (1) NEAR THREATENED and the last one (1) ENDANGERED.

Three (3) Lepidoptera species of conservation and management importance are found to occur within the study site and one (1) is considered ENDANGERED, the other one (1) species VULNERABLE and the last species is found to be CONSERVATION DEPENDANT which means that its continuous existence and prevention from being threatened depend on conservation efforts and programmes that are in place around its area of occurrence.

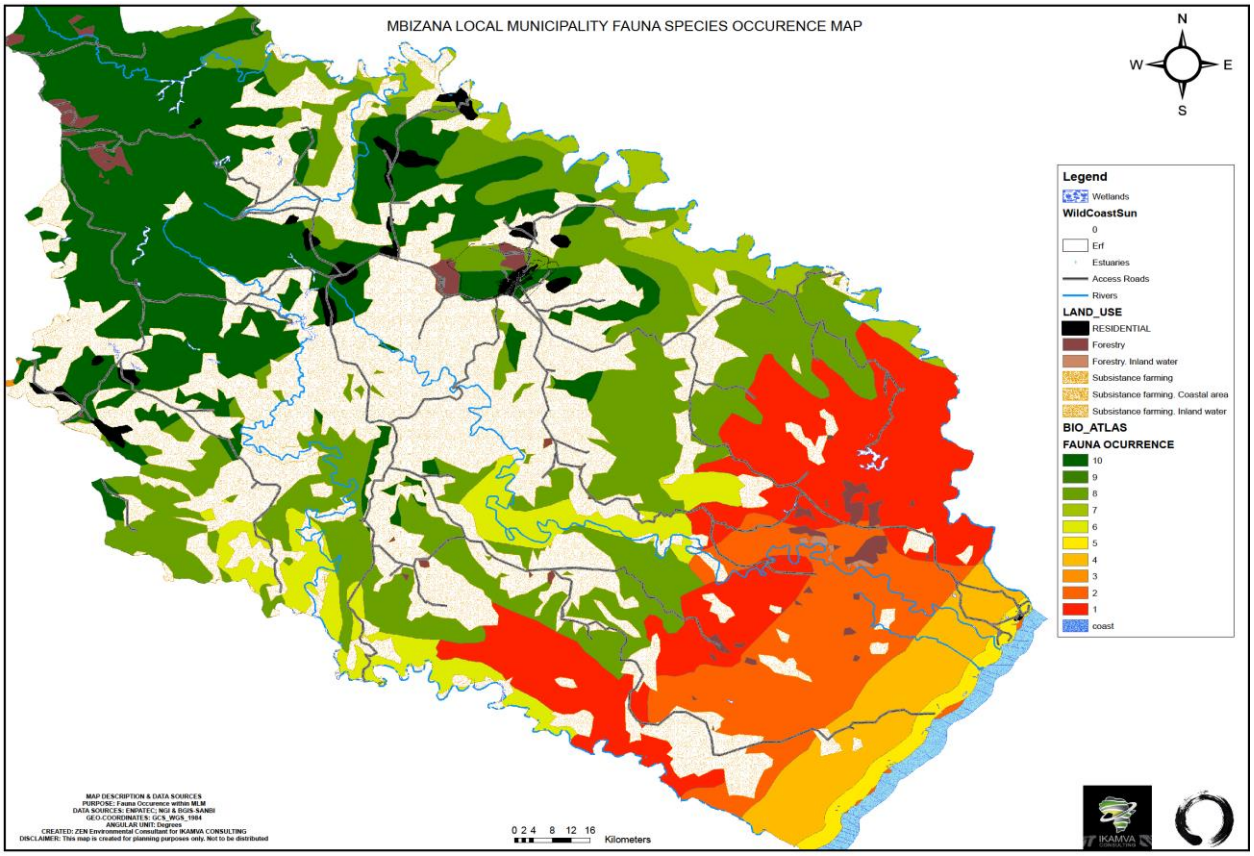

Figure 11: Fauna occurrence index map within MLM.

Table 5: List of faunal species of conservation importance within MLM (data source: ADU and IUCN-Red List).

Family	*Species Name*	Conservation Status
Pyxicephalidae	*Anhydrophryne ngongoniensis* (**Mistbelt or Ngongoni Frog**)	Critically Endangered
Arthroleptidae	*Leptopelis xenodactylus* (**Long toed tree frog**)	Endangered
Pyxicephalidae	*Amietia quecketti* (**Quecketti River Frog**)	Endemic
Pyxicephalidae	*Natalobatrachus bonebergi* (**Kloof frog**)	Endangered
Hyperoliidae	*Afrixalus spinifrons* (**Natal Leaf folding frog**)	Vulnerable
Bovidae	*Ourebi ourebi* (**Oribi**)	Endangered
Bovidae	*Philantomba monticola* (**Blue duiker**)	Vulnerable
Felidae	*Leptailurus serval* (**Serval**)	Near Threatened
Verpertilionidae	*Hypsugo achietae* (**Achieta's pipistrelle**)	Near Threatened

Chamaeleonidae	*Bradypodion melanocephalum (***KwaZulu dwarf chameleon***)*	Vulnerable
Elapidae	*Deridroaspis angusticept (***Green Mamba***)*	Vulnerable
Lamprophiidae	*Macrelaps microlepidotus (***Natal Black snake***)*	Near threatened
Scincidae	*Acontias poecilus (***Legless skink***)*	Endangered
Geometridae	*Durbana setinata (***Setinata***)*	Conservation Dependent
Lycaenidae	*Durbania amakosa albescens (***Amakoza Rocksitter***)*	Vulnerable
Lycaenidae	*Lepidochrysops ketsi leucomcula (***Ketsi Blue***)*	Endangered

7.6. Sensitive areas

The Eastern Cape Biodiversity Conservation Plan (ECBCP) is to map critical biodiversity areas through a systematic conservation planning process. The current biodiversity plan includes the mapping of priority aquatic features, land-use pressures, critical biodiversity areas and develops guidelines for land and resource-use planning and decision-making. Its outputs are "Critical Biodiversity Areas" or CBAs, which are allocated the following management categories:

- Maintain in a natural state
- Maintain in a near-natural state

Critical biodiversity areas (CBAs) are terrestrial and aquatic features in the landscape that are critical for conserving biodiversity and maintaining ecosystem functioning (see Figure 12)). The ECBCP divides the Eastern Cape into Natural Areas and transformed areas. With regards to natural areas, these are further classified into terrestrial Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA). With CBA identified areas, there are CBA1 and CBA2 areas.

CBA 1 areas include important forest clusters, national critically endangered vegetation types, and irreplaceable vegetation units, while CBA 2 areas comprise of endangered vegetation and forest areas, the whole 1km coastal buffer and other important ecological sites and corridors. Mbizana Local Municipality is dominated by a CBA 1 area for all the remaining natural land at the coastal belt and along the mountainous area on the Northern boundary of the municipality while the middle part of the municipality is dominated by CBA 2 area (Berliner and Desmet, 2007).

Environmentally Sensitive Areas (ESAs) and Critical Biodiversity Areas (CBAs) are land and water areas containing natural features or ecological functions of such significance as to warrant their protection in the best long-term interest of the people and environment.

The areas that could be considered critical are situated in the inland of the study site and inclusive of the mountains, cliffs and areas considered to be sensitive extend from inland towards the coastal belt and river banks and the edges of the municipality where most threaten plant species of sensitive nature are found to occur (Figure 13).

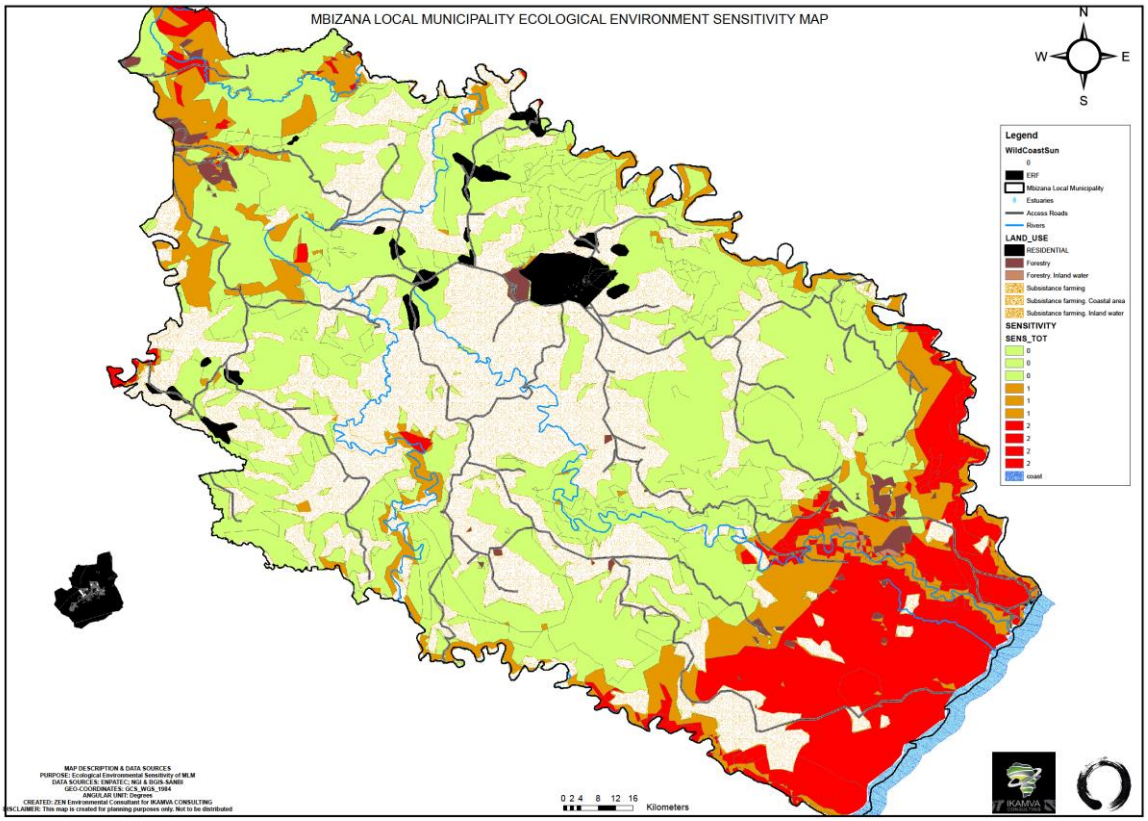

Figure 12: Ecological sensitivity map for MLM.

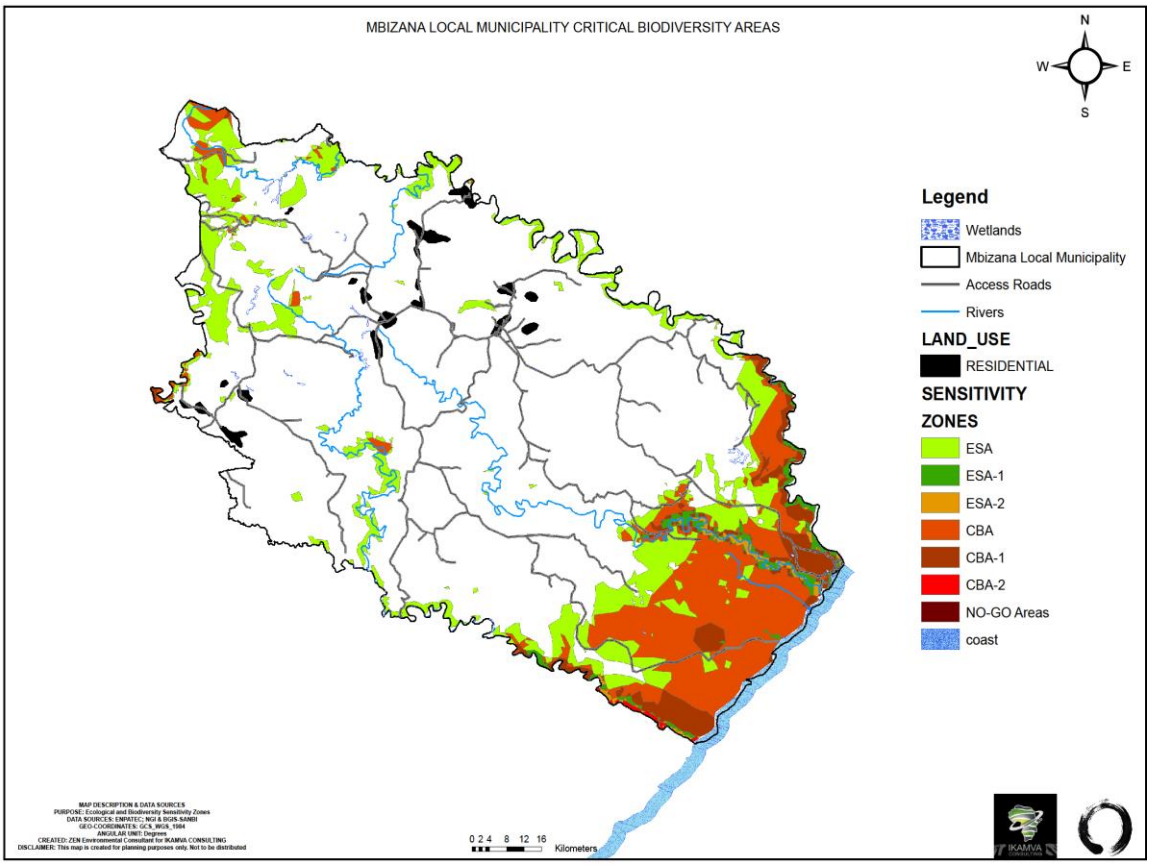

Figure 13: Ecological Sensitivity Zones within MLM.

8. CONCLUSION

In conclusion, areas within Mbizana Local Municipality are mountains, except for Central Business District (CBD) which is Bizana where major development and transformation is taking place. The outskirts of the area have minimal developmental impact but it is envisaged that as the municipality is gearing towards improving its areas and implementing service delivery to the communities those areas will experience impacts as a result. Therefore, as part of providing informed decision making, these areas must be assessed to establish the occurrence of the above mentioned species and to prevent unnecessary habitat removal.

Furthermore, the areas around the Coastal belt experience a high impact due to alien plant invasion that threatens to outcompetes and replace indigenous plant species; and the impact of over exploitation of natural plant species for medicinal and subsistence.

Recorded areas of conservation importance within the study area were as follows:-

- Mountains; the Engeli mountains, cliffs and hills that extend its range within the Municipality are habitats of endemic and important flora and fauna and serves as ecological corridor for biodiversity functioning.
- Rivers, meandering rivers and natural functioning wetlands within the study site are habitats and keepers of flora and freshwater fauna. Areas like Riparian's and floodplains are important for ecosystem functionality and species conservation.
- Estuaries and associated dunes within the study area serve as habitat for special flora and fauna and play a vital role in ecosystem functioning and biodiversity of the area.

It is recommended that the municipality initiate management measures that could minimize the effect of indigenous plant illegal exploitation and prepare a regulation and guidelines that aim to address this impact

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