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uMNGENI VLEI NATURE RESERVE

Protected Area

MANAGEMENT PLAN





BirdLife IBA IMPORTANT BIRD AREA

Ramsar

uMNGENI VLEI NATURE RESERVE

AND

GREATER uMNGENI VLEI EXPANSION AREA

KwaZulu-Natal

South Africa

Ramsar and Protected Area Management Plan

Developed in: 2012

Prepared by

Ezemvelo KwaZulu-Natal Wildlife Protected Area Management Planning Unit

Citation

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KwaZulu-Natal MEC: Department of Agriculture and Environmental Affairs	See the next page for MEC approval. The change is due to reconfiguration of provincial government departments.	

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This RAMSAR andProtected Area Management Plan for uMngeni Vlei Nature Reserve is approved:

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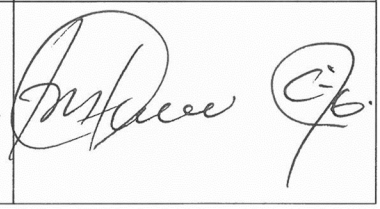
KwaZulu-Natal MEC: Department of Economic Development, Tourism and Environmental Affairs	Michael Mabuyakhulu	

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PREFACE

This Ramsar and Protected Area Management Plan for uMngeni Vlei Nature Reserve (UVNR) and surrounding expansion area is the primary and overarching management document for the protected area. It forms the framework within which the nature reserve will be managed and developed towards the achievement of its management objectives, derived in collaboration with the protected area's stakeholders during September, 2012.

The protected area management planning process has been designed to meet the statutory requirements of the National Environmental Management: Protected Areas Act and the Convention on Wetlands of International Importance Guidelines (commonly known as Ramsar Convention), as well as other relevant legislation.

The protected area management planning process requires participation from the protected area's stakeholders, the general public and specialists during the various stages of plan development and implementation. Although the management plan and its sub-components are five-year planning documents, an annual review process will ensure an active adaptive management planning approach.

A long-term business approach has also been introduced that ensures that the protected area's management objectives are operationalised and reflected through an Annual Plan of Operation. A Financial Plan will, at the same time, actively pursue additional and improved funding and income towards the achievement of the natural and cultural heritage conservation objectives of the nature reserve over the next five years.

Ezemvelo KwaZulu-Natal Wildlife, as the appointed Management Authority for uMngeni Vlei Nature Reserve, hereby commits itself to the implementation of this plan.

Dr. Bandile Mkhize
Chief Executive Officer

EXECUTIVE SUMMARY

Introduction

The uMngeni Vlei Nature Reserve (UVNR) and privately owned expansion area is situated en route to the Drakensberg approximately 22 km South-West from Nottingham Road in Kwa-Zulu Natal (KZN) with the Nottingham Road-Sani Pass road (P 27) passing adjacent to the reserve. The reserve falls within the uMgungundlovu District municipal area under the local municipality of Impendle. Negotiations are underway to secure properties within the expansion area through the KZN Biodiversity Stewardship Programme. The UVNR is currently a nominee RAMSAR site and the RAMSAR requirements have therefore been incorporated into this plan.

To the north west of the uMngeni Vlei Nature Reserve lays uMkhomazi Nature Reserve. uMngeni Vlei Nature Reserve is managed from uMkhomazi and staff and budgetary resources are acquired from uMkhomazi Nature Reserve. uMngeni Vlei Nature Reserve is located adjacent to the source of the uMngeni River and forms part of the uMngeni Catchment. The altitude ranges from 1828 metres a.s.l. which is at the outlet of the Vlei to 2081 metres a.s.l. which lies on the Drinkkop Mountain.

The nature reserve and expansion area plays an important role in conserving a number of critically endangered components as well as securing an area of refuge for fauna that occupy the surrounding landscapes. The Mooi River Highland Grassland, Drakensberg Foothill Moist Grassland, Eastern Temperate Wetlands, Drakensberg Wetlands and Eastern Mistbelt Forest vegetation types are conserved in the nature reserve and expansion area.

Two critically endangered species, the Wattled Crane and Oribi also occur and breed in the nature reserve and the expansion area. There has been significant activity of Wattled Cranes in the nature Reserve and expansion area which provides breeding ground for the species.

The uMngeni Vlei Nature Reserve supplies a range of ecosystem services which includes but is not limited to the protection of the hydrological system including a series of wetlands which forms part of the catchment of the uMngeni River. The uMngeni River supports two major cities in terms of water supply along its journey to the sea, namely, Durban and Pietermaritzburg.

Management issues, challenges and opportunities at uMngeni Vlei Nature Reserve

The uMngeni Vlei Nature Reserve was recently proclaimed in Government Gazette No 799 of 2012 - this is one of the factors that have delayed the declaration of uMngeni Vlei Nature Reserve as a Ramsar site. On the outskirts of the nature reserve, there have been a few incidents of poaching and with a lack of human and financial resources; it has been difficult to deter poachers. Access to the nature reserve is not formalised which inhibits staff entering and carrying out patrols. Wattled Crane conservation is a key function of the reserve and there are currently no tourism initiatives in the area.

Managing the issues, challenges and opportunities at uMngeni Vlei Nature Reserve

Key management interventions required will include the review of the grazing and fire management plans in order to increase the breeding pairs of Wattled Cranes within the reserve. The requirements of a Ramsar plan have been incorporated into this management plan along with the requirements for the biodiversity stewardship sites within the expansion area. The integration of management interventions for the nature reserve and the biodiversity stewardship sites will allow for improved management effectiveness within the nature reserve. The integration of the biodiversity stewardship sites and the nature reserve allows the reserve management committee to more effectively manage security, visitor management and other operational requirements. The reserve objectives can only be fully achieved if sufficient human and financial resources are dedicated to the effective management of the reserve.

ABBREVIATIONS

Amafa	Amafa aKwaZulu-Natali (KwaZulu-Natal Provincial Heritage Agency)
CCA	Community Conservation Area
CDP	Concept Development Plan (Component of Ezemvelo protected area management planning process)
CEO	Chief Executive Officer
CMS	Co-management Structure
DAEA	KwaZulu-Natal Provincial Department of Agriculture and Environmental Affairs
DCO	District Conservation Officer
DEA	National Department of Environmental Affairs
DWA	National Department of Water Affairs
EIA	Environmental Impact Assessment
Ezemvelo	Ezemvelo KwaZulu-Natal Wildlife
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EWT	Endangered Wildlife Trust
FP	Financial Plan (component of Ezemvelo protected area management planning process)
FPA	Fire Protection Association in terms of the National Veld and Forest Fire Act (No.1 of 1998)
GIS	Geographical Information System
IDP	Municipal Integrated Development Plan
IUCN	International Union for the Conservation of Nature
MEC	Member of the Executive Council
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NEMA	National Environmental Management Act
NPAES	National Protected Area Expansion Strategy
NSBA	National Spatial Biodiversity Assessment
OIC	Officer in Charge
OPSCOMM	Operations Committee
PA	Protected Area
ROC	Ezemvelo Regional Operations Committee
SAHRA	South African Heritage Resources Agency
SDF	Municipal Spatial Development Framework
SMME	Small, Micro and Medium Enterprises
SMP	Strategic Management Plan (component of Ezemvelo protected area management planning process)
SWOT	Strengths, weaknesses, opportunities and threats analysis
UDP WHS	UKhahlamba Drakensberg Park World Heritage Site
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UVNR	uMngeni Vlei Nature Reserve
WWF	Word Wide Fund for Nature

1) BACKGROUND

1.1 Purpose of the plan

Protected area management plans are high-level, strategic documents that provide the direction for the development and operation of protected areas. They inform management at all levels, from the staff on-site through to the CEO, the Board and the MEC. The purpose of the management plan is to:

- Compliance with the National Environmental Management: Protected Areas Act.
- Provide the primary strategic tool for management of uMngeni Vlei Nature Reserve and the expansion area, informing the need for specific programmes and operational procedures.
- Provide motivations for budgets and provide indicators that the budget is spent correctly.
- Build accountability into the management of uMngeni Vlei Nature Reserve and the expansion area.
- Provide for capacity building, future thinking and continuity of management.
- Enable Ezemvelo KZN Wildlife and its biodiversity stewardship partners to develop and manage uMngeni Vlei Nature Reserve and the expansion area in such a way that its values and the purpose for which it was established are protected.

1.2 Structure of the plan

Section 1:	Provides an introduction and background to the management plan and uMngeni Vlei Nature Reserve and the expansion area.
Section 2:	Establishes the context of the nature reserve, providing the basis for the strategic and operational management frameworks that follow.
Section 3:	Sets out the vision and objectives that must be achieved in efforts to effectively conserve the nature reserve.
Section 4:	Sets out the zonation of the nature reserve, outlining the permissible land uses in particular zones.
Section 5:	Describes the administrative structure required to effectively manage uMngeni Vlei Nature Reserve.
Section 6:	Sets out the detailed management targets that must be

	achieved in managing the nature reserve.
Section 7:	Sets out the monitoring measures required to determine if management targets are being met and the requirements for reporting on performance in implementing the plan.
Section 8:	Describes the components that must be included in the annual plan of operation.

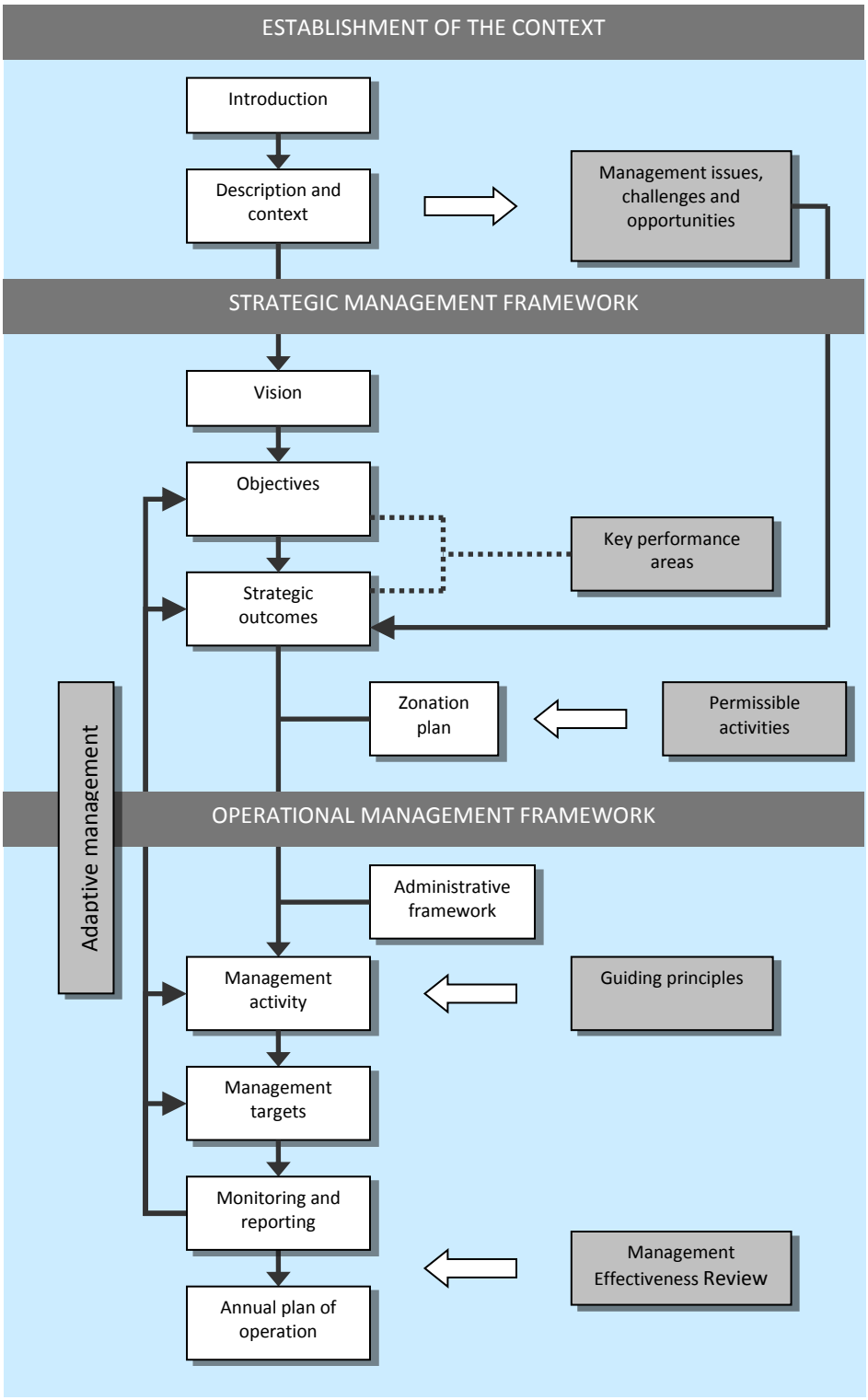


Figure 1.1 Structure of the Protected Area Management Plan

1.3 Introduction

The uMngeni Vlei Nature Reserve (UVNR, or "the nature reserve") and the expansion area are located in the Impendle District of KwaZulu-Natal (KZN) Province, South Africa.

uMngeni Vlei Nature Reserve is situated in the KwaZulu-Natal Province of the Republic of South Africa, located in a remote portion of the eastern fringes of the Maloti Drakensberg Transfrontier Project Area. It lies approximately 22 km south west of Nottingham Road, and is accessed either from a private road, which leads from the Nottingham Road-Sani Pass road (P 27) and passes through the farm "Castle Howard" or from the Lions River – Impendle road (D 130) though the farm "Ivanhoe" also along a private road. In either case, permission to cross the farm must be obtained, from the owner.

The nature reserve is shaped like an inverted 'B', at longitude 29˚ 29′ 34" S and latitude 29˚49′ 43'' E. It comprises portions of two properties, Sub 1 of Woodhouse No.1 6870 (443, 9756 ha) and Sub 1 of Woodhouse No.2 (514, 2870 ha).

uMngeni Vlei Nature Reserve has been legally declared as a nature reserve, and the intention is to declare it as a Ramsar site in terms of the Convention on Wetlands of International Importance due to its pristine condition and natural value. The total area of the nature reserve is 958ha and consists of grasslands, a few small areas of scrubby woodland and most importantly, a diverse and extensive range of unmodified wetlands. The latter form the principal source of the uMngeni River and are listed by Begg (1989) as being amongst the priority wetlands of the province. The nature reserve is one of the most important of the smaller provincial protected areas since it provides key ecosystem services. These include the conservation of water resources and maintenance of water flow into the uMngeni River and carbon storage and sequestration. The reserve is also important for the conservation of Wattled Crane (*Bugeranus carunculatus*) and according to Johnson et al. (1998), is regarded as the premier site in South Africa for protection of this rare and threatened bird species. At times some 20% of the South African population of the species may be present in and around the nature reserve.

The KZN Biodiversity Stewardship Programme is actively negotiating with surrounding landowners to expand the area under protection around the existing nature reserve. A plan has been developed for an expansion of approximately 5000 ha and this will be implemented in a phased process. The World Wide Fund for Nature, who is leading the process, is seeking to secure the expansion area through the biodiversity stewardship process for its biodiversity and ecosystem goods and services value. This management plan will form the overarching framework for management of the biodiversity stewardship sites.

In 1985, Breen et al. estimated that some 20% of the gross national product of the country was generated within the uMngeni River catchment, and

stated that as a consequence, the system was recognized as one of the most important river systems in the Republic and as the most important river in KZN. The area around the nature reserve is designated as an Important Bird Area, SA 075 (Johnson et al., ibid.). While specialist bird-watching opportunities are available, the area is not considered to hold significant potential for nature and culture-based tourism, both because of the risk of disturbance to the Wattled Cranes during the breeding season, as well as problems related to difficult public access.

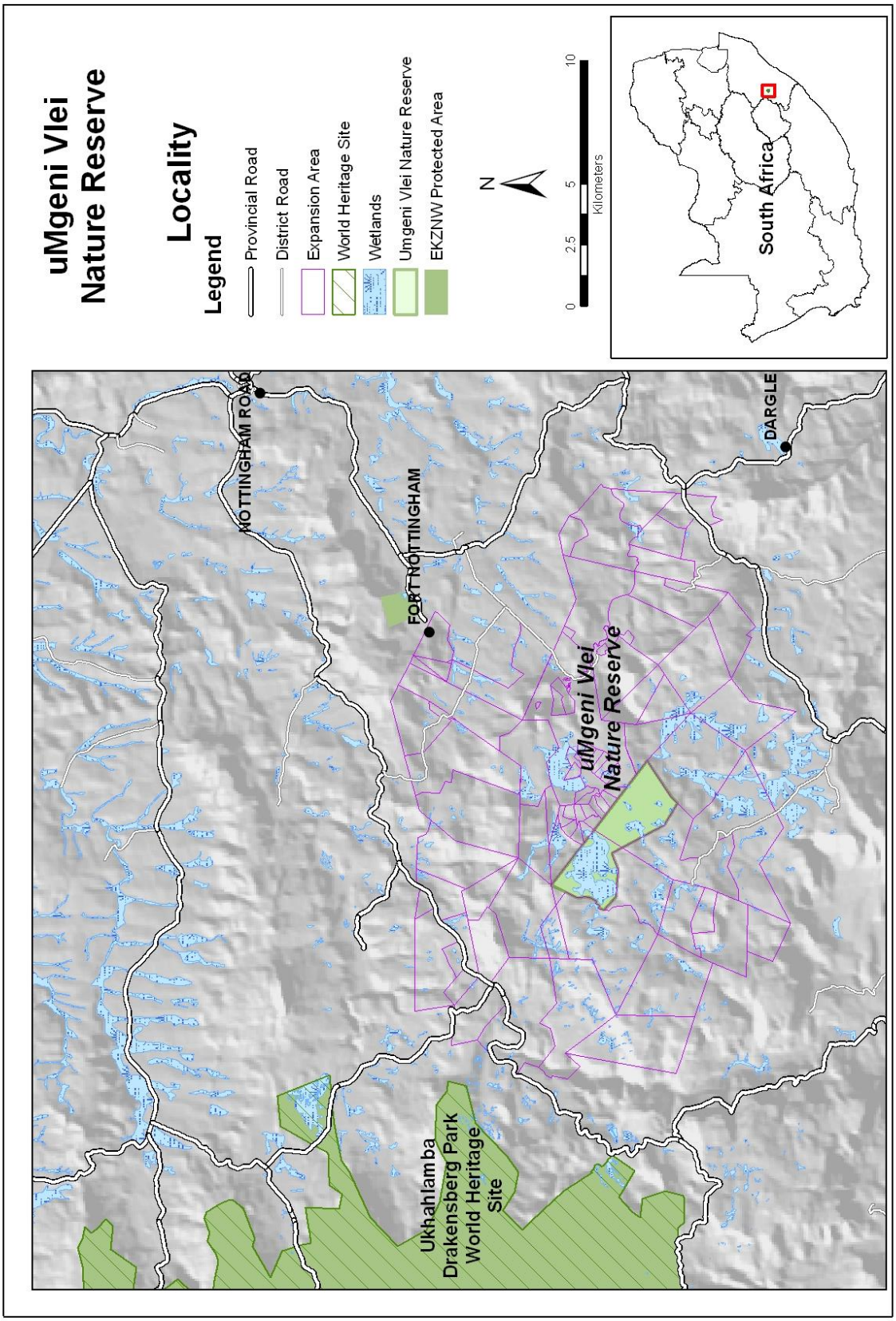


Figure 1.2 Regional location of uMngeni Vlei Nature Reserve and expansion area

1.4 The values of uMngeni Vlei Nature Reserve and expansion area

The values of a place are those remarkable attributes that exemplify it and are largely the reason that it has been proclaimed as a protected area. The values are important in planning and management, as they are the aspects of the place that must be protected. The values of uMngeni Vlei Nature Reserve include:

Natural values	▪ uMngeni Vlei and its surrounds has a rich biodiversity and a number of key species including threatened, protected and endemic species.
	▪ The reserve and expansion areas contribute to the conservation of the Mooi River Highland Grassland, Drakensberg Foothill Moist Grassland, Eastern Temperate Wetlands, Drakensberg Wetlands and Eastern Mistbelt Forest.
	▪ uMngeni Vlei Nature Reserve provides a natural biodiversity refuge in an extremely transformed and degraded area.
	▪ As a component of an internationally recognized biodiversity "hotspot" and a part of the most important water source area in the province (the Drakensberg Mountain System, which includes the Impendle Plateau), the natural and cultural values include the following:
	  ▪ An exceptional and diverse system of fully functional wetlands, largely in their natural state;
	  ▪ The nature reserve and the surrounding areas are regarded as the most important breeding area of Wattled Crane in the country.
	  ▪ The nature reserve and the surrounding areas support a population of Oribi and a number of other rare and threatened species.
	  ▪ The nature reserve is a protected area situated within an area that is internationally recognised as an Important Bird Area (IBA SA 075).

Water production	▪ The nature reserve and surrounding areas protect the principal source of the uMngeni River, which is of major significance for downstream users, including the two largest cities in the province. The management of the nature reserve strives to ensure that the water resources are conserved thereby sustaining a yield of high quality water.

Consistent with Section 17 of the Protected Areas Act, the purpose of uMngeni Vlei Nature Reserve and the expansion area is to:

- Contribute to the achievement of provincial and national nature conservation targets through protection of a portion of the landscapes of the eastern fringes of the Drakensberg Alpine Centre, or the Maloti Drakensberg Transfrontier Project Area, at its interface with the KwaZulu-Natal Midlands, and its associated biodiversity, including the ecological and evolutionary processes that generate and maintain this diversity.
- Protect the source of the uMngeni River; which is of major ecological and economic importance to the province.
- Protect endangered, rare and endemic species indigenous to the area, especially the breeding population of Wattled Crane, a threatened (Red Data Book) species.
- Provide for the sustainable resource use where appropriate.
- Promote awareness of the natural beauty and outstanding aesthetic value of the area.
- Contribute to local, regional and national economies through sustaining water production and other life support systems, limited eco-cultural tourism, and sustainable use of natural resources.

1.5 Planning approach

The preparation of this management plan has been undertaken based on the following guiding principles.

1.5.1 Adaptive management

Adaptive management is a structured, iterative process in which decisions are made using the best available information, with the aim of obtaining better information through monitoring of performance (Figure 1.3). In this way, decision making is aimed at achieving the best outcome based on current understanding, whilst accruing the information needed to improve

future management. Adaptive management can lead to revision of a part or if necessary the whole management plan.

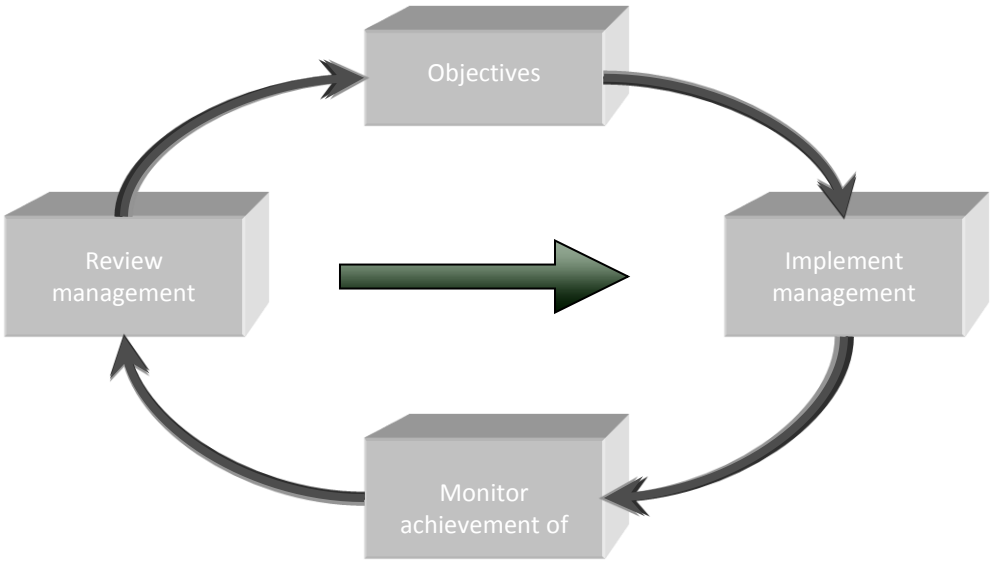


Figure 1.3 The adaptive management cycle

Adaptive management enables protected area managers to:

i) Learn through experience.

ii) Take account of, and respond to, changing factors that affect the protected area.

iii) Continually develop or refine management processes.

iv) Demonstrate that management is appropriate and effective.

1.5.2 Collaboration and transparency

Stakeholder involvement and support is an important aspect of effective protected area management. It is also a requirement in terms of Sections 39(3) and 41(2) (e) of the National Environmental Management: Protected Areas Act (No.57 of 2003). Accordingly, the development of this management plan has been undertaken through a collaborative process, involving local communities and other key stakeholders.

An uMngeni Vlei Nature Reserve Key-stakeholder's Workshop[1] was held at the Kamberg Rock Art Centre on the 10th of September 2012, at which the Values, Vision and Management Issues and Interventions for the nature reserve were presented and additional issues were highlighted.

The public consultation has been undertaken through a series of meetings and discussion between key stakeholders and conservation organizations.

[1]Reference is provided in **Appendix D, Item 5.**

This process has ensured a great deal of valuable input into the review process of the management plan, the outcomes of such workshops and discussions have been incorporated into the management plan.

2) DESCRIPTION OF THE PROTECTED AREAS AND THEIR CONTEXT

2.1 Institutional and administrative framework for the management of uMngeni Vlei Nature Reserve

The KwaZulu-Natal Nature Conservation Board, established in terms of the KwaZulu-Natal Nature Conservation Management Act No.9 of 1997, was appointed by the KwaZulu-Natal MEC: Agriculture and Environmental Affairs as the management authority for all provincial protected areas in KwaZulu-Natal. The Board's implementing agency is Ezemvelo KZN Wildlife.

Management of uMngeni Vlei Nature Reservewill be undertaken in accordance with relevant legislation and the management policies of Ezemvelo KZN Wildlife, which includes a commitment to maintain the character and ecological, cultural and aesthetic integrity of the site.

The KwaZulu-Natal Nature Conservation Board will be responsible for reporting on the management of uMngeni Vlei Nature Reserve to the designated KwaZulu-Natal Provincial Member of the Executive Committee (MEC) and the Premier thus ensuring coordination of those matters that may affect the nature reserve through the relevant provincial departments, district and local municipalities.

2.2 The legislative basis for the management of uMngeni Vlei Nature Reserve and expansion area

There is a large body of legislation that is relevant to the management of protected areas, but the primary legislation guiding theirmanagementis the National Environmental Management: Protected Areas Act (No.57 of 2003).

The Protected Areas Act establishes the legal basis for the creation and administration of protected areas in South Africa, as its objectives include provisions "for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes". The Act sets out the mechanisms for the declaration of protected areas and the requirements for their management.

A detailed list of relevant legislation is provided in Appendix B. Managers and landowners are required to familiarise themselves with the purpose and contents of the statutes and their subsequent amendments and regulations.

2.2.1 Proclamation status of uMngeni Vlei Nature Reserve

uMngeni Vlei Nature Reserve was legally given its status as nature reserve in Gazette No. 799 of August 2012, but has been managed as a nature reserve since its expropriation on 31 January 1987.

The nature reserve's boundary description is contained in the Surveyor-General Diagrams that form part of Appendix H. It was recommended that this protected area be assigned the name 'uMngeni Vlei Nature Reserve' in

the declaration. Declaration details of the biodiversity stewardship sites will be appended to this management plan as they are formally declared.

2.2.2 Invasive species control in terms of the Biodiversity Act

In terms of Section 76 of the National Environmental Management: Biodiversity Act (No.10 of 2004), the management authority of a protected area must incorporate an invasive species control plan in the protected area management plan. This is addressed in Sections 3 and 6 below.

2.2.3 The Ramsar Convention

uMngeni Vlei Nature Reserve is a proposed Ramsar site in terms of the Convention on Wetlands of International Importance especially as Waterfowl Habitat (commonly known as Ramsar Convention). In terms of the convention, South Africa, as a contracting party, is required to formulate and implement planning so as to promote the conservation of wetlands included in the list (article 3). Article 4 of the convention requires and contracting parties establish nature reserves to protect their wetlands, encourage wetland research and provide competent personnel to manage their wetlands.

Guidelines for management planning for Ramsar wetlands were adopted in terms of Resolution VIII.14 of the 8th meeting of the Conference of the Contracting Parties to the convention. The guidelines provide a framework for the development of the management plans, not a prescription of their detailed contents. The development of this management plan will take into consideration the management planning requirements set out in guidelines. In particular, the following requirements have been considered and integrated into the plan:

- The adaptive management approach, which is similar to Ezemvelo KZN Wildlife's approach to developing integrated management plans.
- The layout suggested in the guidelines, which is similar to that adopted in this integrated management plan.
- The requirements for stakeholder participation, which seek to involve local communities and government structures.
- The requirements for inclusion of buffers and zonation within a protected area in an effort to limit inappropriate activities in ecologically sensitive areas.
- The operational limits described in the guidelines, which are similar to the indicators of concern set out in Section 6 below.

2.3 The policy framework guiding the management of nature reserves

In conserving and managing the biodiversity of KwaZulu-Natal, Ezemvelo KZN Wildlife operations are undertaken within a broad framework of policies. At a national level, overarching policy is set out in:

i) The White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity of 1997.

ii) The Bioregional Approach to South Africa's Protected Areas, 2001/2002.

iii) Community Based Natural Resource Management Guidelines, 2003.

iv) National environmental management principles set out in section 2 of the National Environmental Management Act.

v) Relevant norms and standards set by the Minister and MEC in terms of the Protected Areas and Biodiversity Acts.

vi) Convention on Wetlands of International Importance especially as Waterfowl Habitat

Within the province, Ezemvelo KZN Wildlife has adopted a Five Year Strategic Plan and Performance Plan for 2009-2014, which has developed the following corporate strategic profile:

VISION

"To be a world renowned leader in the field of biodiversity conservation"

MISSION STATEMENT

"To ensure effective conservation and sustainable use of KwaZulu-Natal's biodiversity in collaboration with stakeholders for the benefit of present and future generations."

STRATEGIC GOALS

i) To conserve indigenous biodiversity in KwaZulu Natal both within and outside of protected areas.

ii) To be a sustainable, well-resourced and capacitated biodiversity conservation and ecotourism organisation.

iii) To foster the value of biodiversity conservation with stakeholders.

iv) To be an efficient, effective and compliant organisation with good governance.

v) To effectively promote the mandate of the organisation to stakeholders.

CORE VALUES

Integrity	At all times we act morally, ethically and with honesty.
Respect	We treat stakeholders with patience, politeness and acknowledge and value their right and those of the environment.
Accountability	We involve stakeholders in the organisation's activities with a culture of openness and are answerable for the outcome of our actions and activities.
Team work	Working together to achieve our vision through goals.
Innovation	An adaptable organisation that embraces the culture of creativity and learning.
Excellence	We are a progressive organisation applying best practices to achieve the highest quality and standards.
Commitment	At all times we undertake our activities with passion, loyalty and dedication.
Productivity	We undertake to produce results timeously, efficiently and effectively.

A number of policies, specific to particular areas of operation, have also been developed by Ezemvelo KZN Wildlife (Appendix D). These policies have been considered and applied within the plan, where relevant. The nature reserve's managers are required to be familiar with them and to apply them in managing uMngeni Vlei Nature Reserve.

This management plan has utilised this body of policies to develop a strategic and operational management framework for uMngeni Vlei Nature Reserve that is consistent with the broad goals and specific policy requirements of Ezemvelo KZN Wildlife.

2.4 The regional and local planning context of uMngeni Vlei Nature Reserve and expansion area

The nature reserve and expansion area, although not an inclusive part of the uKhahlamba Drakensberg Park World Heritage Site (UDP WHS), falls within the buffer area linked to the UDP WHS. In addition, it is contained within the MDTP region. Further, it is not included in the Special Case Area Plan produced by the Town and Regional Planning Commission (now the KwaZulu-Natal Provincial Planning and Development Commission) which incorporates planning principles, regional zonation and recommendations (TRPC, 2001). This omission is seen as something of an oversight and the Plan is applied to the area surrounding it. Also of relevance in the area, is the Drakensberg Approaches Policy (TRPC, 1990).

In accordance with the Local Government: Municipal Demarcation Act (No.27 of 1998) and the Local Government: Municipal Structures Act (No.117 of 1998), uMngeni Vlei Nature Reserve and expansion area falls into the uMgungundlovu District Municipal Area. The local municipality is the Impendle (KZ 224) Local Municipality. Some of the expansion area falls within the uMngeni Local Municipality (KZ 222). This protected area management plan is to be aligned in terms of the requirements of the Local Government: Municipal Systems Act (No.32 of 2000) with the Integrated Development Plans of that municipality. The uMgungundlovu District Municipality and the Impendle Local Municipality have acknowledged the ecological importance of the area as their IDPs have highlighted the nature reserve and expansion area as a Strategic Water Production area also known as the uMngeni Catchment Area and vital water transfer schemes such as the Umkomass – Mgeni water transfer scheme.

2.4.1 The National Protected Area Expansion Strategy

In an effort to address a lack of effective protection and representation of all vegetation types within the protected areas system, a National Protected Area Expansion Strategy (NPAES, DEAT 2008) has been developed and approved at a national ministerial level. The purpose of the NPAES is to provide a national framework for the expansion and consolidation of the protected area system, focusing on priority areas for representation and persistence of biodiversity.

In terms of the NPAES, the areas around the borders of uMngeni Vlei Nature Reserve are identified as priorities for protected area expansion. The nature reserve falls within the National Protected Area Expansion Strategy focus areas, the Drakensberg and Midlands Focus Area in KwaZulu-Natal. The NPAES states that this focus area "provides opportunities for consolidating protection of moist high-altitude grasslands, protecting ecosystem services, and incorporating ecological gradients for resilience to climate change. It is the source area for several free-flowing rivers and includes critically endangered river types."

On the basis of the NPAES, at a national level, uMngeni Vlei Nature Reserve is a strategically important protected area that forms a critical nodal point for the expansion of protected area efforts in an important but currently underrepresented regional ecotype. This has been a primary motivation for the involvement of the KZN Biodiversity Stewardship Programme in the expansion area.

2.4.2 The Provincial Protected Area Expansion plan

The KwaZulu-Natal Protected Area Expansion Plan (Ezemvelo KZN Wildlife 2010) also identifies areas around the borders of uMngeni Vlei Nature Reserve as priorities for protected area expansion. The nature reserve forms a key hub in creating a connected protected area system, incorporating the uKhahlamba Drakensberg Park.

Many areas around uMngeni Vlei Nature Reserve are characterized by high levels of irreplaceability, largely due to losses of natural habitat within the grassland biome and the individual vegetation types in which they occur. This is exacerbated as the grassland biome and many of its vegetation types are poorly protected. Land identified as a priority for protected area expansion may be incorporated into uMngeni Vlei Nature Reserve either through land acquisition or through stewardship agreements, established with individual landowners or communities.

2.4.3 EIA Regulations in terms of NEMA

In terms of the National Environmental Management Act (No.107 of 1998) environmental impact assessment (EIA) Regulations, various activities require environmental authorization before they may commence. In addition, in terms of Regulation RN.546, Listing Notice No.3, there are a number of activities that require environmental approval specifically as a result of their proximity to a protected area. The implication of this is that if any of the activities listed in Appendix E are proposed in the nature reserve, or within five kilometres of it, they will be subject to either a basic assessment or a full scoping and EIA process. A number of general activities and those proposed for either tourism development or operational management within the nature reserve or its buffer areas will thus also require environmental authorization.

2.4.4 Local Agreements, Servitude Arrangements and Memoranda of Understanding / Agreement

Managers must familiarize themselves with the conditions of any agreements and arrangements and monitor compliance with any conditions.

Of particular importance is the decision to utilize the domestic stock of neighbouring farmers according to the grazing management plan(integrated with the fire management plans) developed by Ezemvelo which are intended to benefit the uMngeni Vlei Nature Reserve Wattled Crane population (See Par. 6.6.1). Currently this partnership has been formalized through a Memorandum of Understanding which has been entered into between Ezemvelo and the relevant land owners who annually assist with providing cattle to graze the reserve. A Grazing Management Plan (See Par. 6.6.5)(Appendix J) are put into place to avoid any future misunderstanding or unrealistic expectations.

2.5 The history of uMngeni Vlei Nature Reserve

2.5.1 Origins of the name of uMngeni Vlei Nature Reserve

The nature reserve takes its name from the uMngeni River as it lies within the catchment area of the river and forms an important source of the river. It has been known colloquially known as the 'uMngeni Vlei Nature Reserve' for many years since acquisition of the land by the then Natal Parks, Game and Fish Preservation Board in 1988.

According to Raper (1987), the name "uMngeni", given to this river (which is also variously spelled "Mgeni", "uMgeni", or "Umgeni") is said to be derived from the isiZulu for 'river of the thorn tree' (possibly *Acacia nilotica*).

"Vlei" is originally an Afrikaans term for a wetland. During the recent past, the term has become an acceptable and commonly used South African English word for a stretch of low-lying ground that is either permanently marshy or is flooded in the rainy season to form a shallow lake.

2.5.2 History of conservation in uMngeni Vlei Nature Reserve

Since the 1970s, apprehension had been expressed that the source of the uMngeni River, arguably "the most important river in the province" (Breen et al, ibid.), lay in private hands and was not given formal legal protection to guarantee protection of its water resources. There had also long been concern about the need for conservation of the biodiversity of this wetland, especially for the breeding population of Wattled Cranes. These sentiments led to the expropriation of the area in 1987.

The decision to expropriate the area was based on motivation submitted in May 1986 by the then Natal Parks, Game and Fish Preservation Board to the Executive Committee of the Natal Provincial Administration to secure this area in order to protect the source of water for the uMngeni River.

The reasons given in support of the need to expropriate the area (Natal Parks, Game and Fish Preservation Board, December 1983) included the following:

The rapid exploitation (drainage and cultivation) and bad management of wetlands was one of the factors contributing to the alarming shortage of water in the country in 1983 and the consequent need to impose water restrictions.

The fact that the two largest cities in the province, Durban and Pietermaritzburg, depended on the dams (Midmar, Albert Falls, Nagle and Inanda) constructed on the uMngeni River for their water supplies.

The most basic conservation of water resource conservation measures lies in the protection of the catchment area of rivers and the uMngeni River catchment, in particular its source, was still unprotected and vulnerable.

The catchment area of the uMngeni River is relatively small and river flow is dependent on a series of large wetlands, a number of which have already been drained for agricultural purposes. The uMngeni Vlei system of wetlands at that time was still in a largely unmodified state although some small dams had been built. It was considered to have been under threat, as its owner had submitted an application to plough the large wetland on Woodhouse No. 1 (although this was subsequently refused). Johnson et al. (1998) state that there was intent in the early 1980's to develop some of the surrounds for agriculture.

uMngeni Vlei Nature Reserve was a known breeding site for Wattled Cranes and it was considered important to protect "one of the main breeding sites" for this species, listed as Vulnerable (Globally) and Critically Endangered (South Africa). The area also provides habitat for a range of other wildlife species, and is a site of natural scenic beauty.

Following expropriation of the site, the number of breeding cranes declined over a period of a few years from seven pairs to just one pair. On investigation, it was decided, that management intervention was necessary to re-establish the type of conditions that had prevailed when more pairs bred successfully within the nature reserve. Included in the interventions, were the introduction of a more frequent fire regime, coupled with large herbivore grazing, in order to achieve the following:

- Reduction of phytomass, thereby facilitating movement of cranes, especially the juveniles;
- Reduction of cover for predators of crane eggs and nestlings;
- Promotion of access for the cranes to the geophytes, which form an important food source for adults.

Following a long period of decline (1988 – 2000), the number of cranes that attempted to breed increased from one to two in the first year of intervention and thereafter by an additional pair in 2003 and another in 2004 (Rushworth, 2005). Subsequently (until September 2008), no additional pairs have been recorded at uMngeni Vlei Nature Reserve. The reasons for this are not clear and could be linked to extraneous factors beyond the control of nature reserve management (I. Rushworth, personal communication, 22 September 2008).

It would seem that the decision to expropriate the nature reserve has been vindicated on at least two scores. Firstly, to secure a major wetland near the source of the uMngeni River in the face of the threats posed by commercial agriculture and by global warming. Acquisition into public ownership has ensured that this important wetland will not be subjected to the abuse suffered by the other large uMngeni wetlands through the construction of drains, and impoundments. It should, however, be noted that while the nature reserve protects one of the principal wetlands that form the source of the uMngeni River, Begg (ibid.) recommended that approximately 425 ha of the grasslands that form the entire catchment of the Vlei should also be expropriated. However, this recommendation (together with the other recommendations in Begg (1989)) have to date been ignored by the authorities.

The second aspect in vindication of the decision to expropriate the area is that an important breeding site for Wattled Cranes has been secured. Experience gained since the expropriation indicates that present conservation measures appear to be successful.

2.5.3 History of eco-cultural tourism in uMngeni Vlei Nature Reserve

The Drakensberg Region in general and the UDP WHS in particular, are recognized tourism destinations. In contrast, the location of the nature reserve is traditionally known as an agricultural area rather than as a tourist destination. However, the high scenic values and other natural attributes of the nature reserve, together with its proximity to the World Heritage Site, clearly indicate a potential role for the provision of nature based and awareness opportunities, subject to the caveat of the need to protect the cranes, one of the primary purposes of the nature reserve. No significant eco-cultural tourism development for uMngeni Vlei Nature Reserve is however envisaged during the timeframe of this management plan.

2.6 Ecological context of uMngeni Vlei Nature Reserve and expansion area

2.6.1 Climate and weather

No direct weather observations have been made from the nature reserve itself, but broad weather patterns may be inferred from measurements taken from adjacent areas. Subsidence inversion may rise above the

escarpment, resulting in an influx of humid air from the warm Mozambique current of the Indian Ocean in the form of south-easterly winds. Approximately 80% of the precipitation falls in summer and the remaining 20% in winter. In winter, air subsidence causes stability of the atmosphere and consequently, the area has a distinct dry season from May until August.

The mean annual temperature of the Drakensberg is about 16˚C, but variations are considerable both seasonally and diurnally. The mean for the summer months is about 18˚C. Winters are cold, with the mean minimum July temperature ranging approximately between 0˚C and 3.6˚C. The highest temperatures (rarely up to 35˚C) occur during summer on north-facing slopes, while the lowest temperatures, about -14˚C, and are regularly experienced on clear nights throughout much of the winter.

The nature reserve and the expansion area is in one of the best-watered, least drought-prone areas of the subcontinent. Annual precipitation varies between an estimated 980-1000 mm p.a. (the nearest weather station, from which rainfall records date back to 1921 is some 30 km away at Impendle). Approximately 80% of the precipitation falls in summer and the remaining 20% in winter. Both orographically induced and squall-line thunderstorms make up a substantial proportion of the precipitation in summer, but interception from mist in early summer also makes a significant contribution. Snowfalls may be expected mainly in winter, but may also occur in spring and autumn, with an average frequency of about eight days of snowfall per annum (Tyson et al. 1976, Phillips 1973, Schulze 1982, Camp 1997).

The Drakensberg generally and by inference, the nature reserve and expansion area, experiences amongst the highest incidence of lightning strikes in the country.

At a sub-regional scale, cool mountain-plain winds blow at night, whereas in the day, a warm up-valley wind blows towards the escarpment. Strong westerly pressure winds (known as “berg winds”) are prevalent in spring between August and September. They occur ahead of frontal disturbances and are of considerable significance with regard to the spread of wildfire.

2.6.2 Topography

The nature reserve has the following topographical features:

The south-eastern face of Drinkkop Mountain, the mountain itself is apparently a remnant the Cainozoic landscape;

Two large basins containing the wetlands, which are fringed by a series of Karoo dolerite ridges, separated by a central ridge all of which form a portion of the Impendle Plateau.

A dolerite dyke, or "keypoint"[1], which lies just outside the nature reserve in the expansion area, impedes further incision along the primary drainage line and so holds the accumulating sedimentary material, and maintains the integrity of the main wetland on Woodhouse No. 1.

The peak of Drinkkop Mountain is at an altitude of 2 081 m. The head of the vlei is at an altitude of 1840 m, and its outlet is at an altitude of 1828 m (Begg, ibid.), thus placing it within the Drakensberg Alpine Centre (DAC), as demarcated by Carbutt and Edwards, (2004).

[1]A natural obstruction that resists downward erosion of the river channel, and is referred to as a "nickpoint" in a geomorphological context.From Begg, (*ibid*).

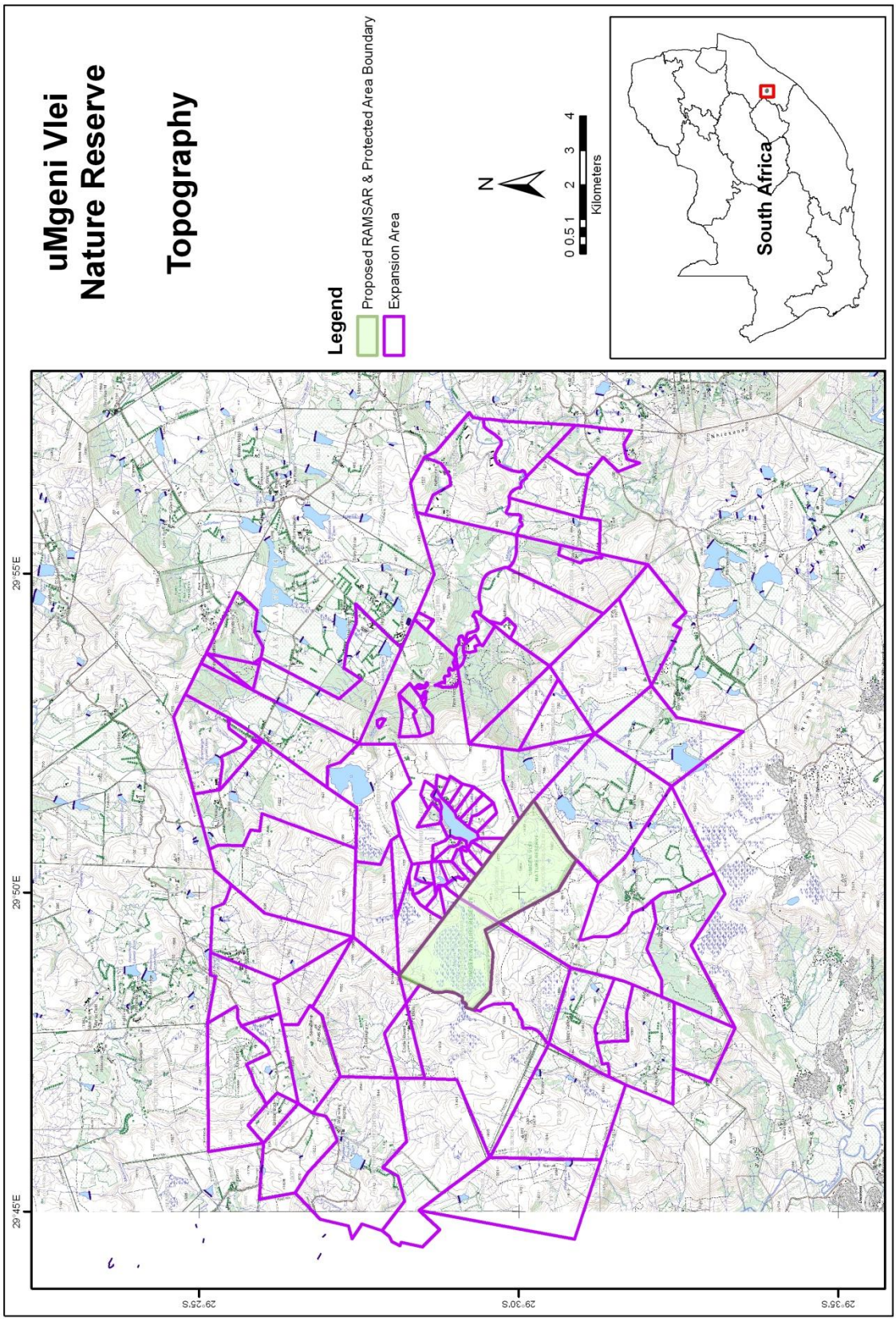


Figure 2.1 Topographical Map of uMngeni Vlei Nature Reserve

2.6.3 Geology and soils

The nature reserve is located in the ancient Great Karoo Basin in the Gondwana Supercontinent. Gondwanaland was fragmented by rifting, and in the process, massive basaltic outpourings started some 187 million years ago (mya), forming the Drakensberg volcanic group (Ezemvelo KZN Wildlife, 2005). The feeder pipes of these outpourings comprise a range of dolerite structures, includes dykes and sills formed during the extrusion of the magma, which congealed (solidified) under pressure as opposed to the basalt, which congealed on the surface after eruption, and therefore, not under pressure (Norman and Whitfield, 2006). The dolerite therefore has a fine-grained structure with no visible crystals or amygdales, while the basalt contains such features in abundance.

The landscapes of the nature reserve are similar in character in many respects to those of the Maloti Drakensberg Mountains, in that they are ancient and soils reflect the age and high precipitation of the area (Bainbridge, 2004). The soils of the slopes of Drinkkop Mountain and the dolerite ridges are generally shallow and highly weathered. While these ferrallitic soils are inherently resistant to erosion, once they have been disturbed or cleared of cover (such as by trampling), they erode rapidly and erosion scars in the mountains do not readily heal naturally (Bainbridge et al., 1986). In several locations, incipient erosion dongas have been formed, as a result of badly sited vehicle and old wagon tracks.

Acid hydromorphic soils of the Katspruit form (Scotney, 1970), quoted in Begg, (ibid.) have formed in the depressions that constitute the wetland, but these soils vary widely with regard to texture, pH and organic matter content. According to Begg, (ibid.) at least three series of Katspruit soils occur within uMngeni Vlei Nature Reserve and frequently all three series occur in the same wetland system. The stability of these soils is maintained under natural conditions by the high moisture status and consequent accumulation of organic matter and they remain permanently waterlogged for most of the year. It follows therefore that the depressions filled by these soils are important water-yielding areas and that their water-producing capacity would be impaired by such activities as drainage or cultivation and that such activities could result in a loss of organic matter either by bacterial decay or by oxidation and increased susceptibility to erosion (Begg, ibid.).

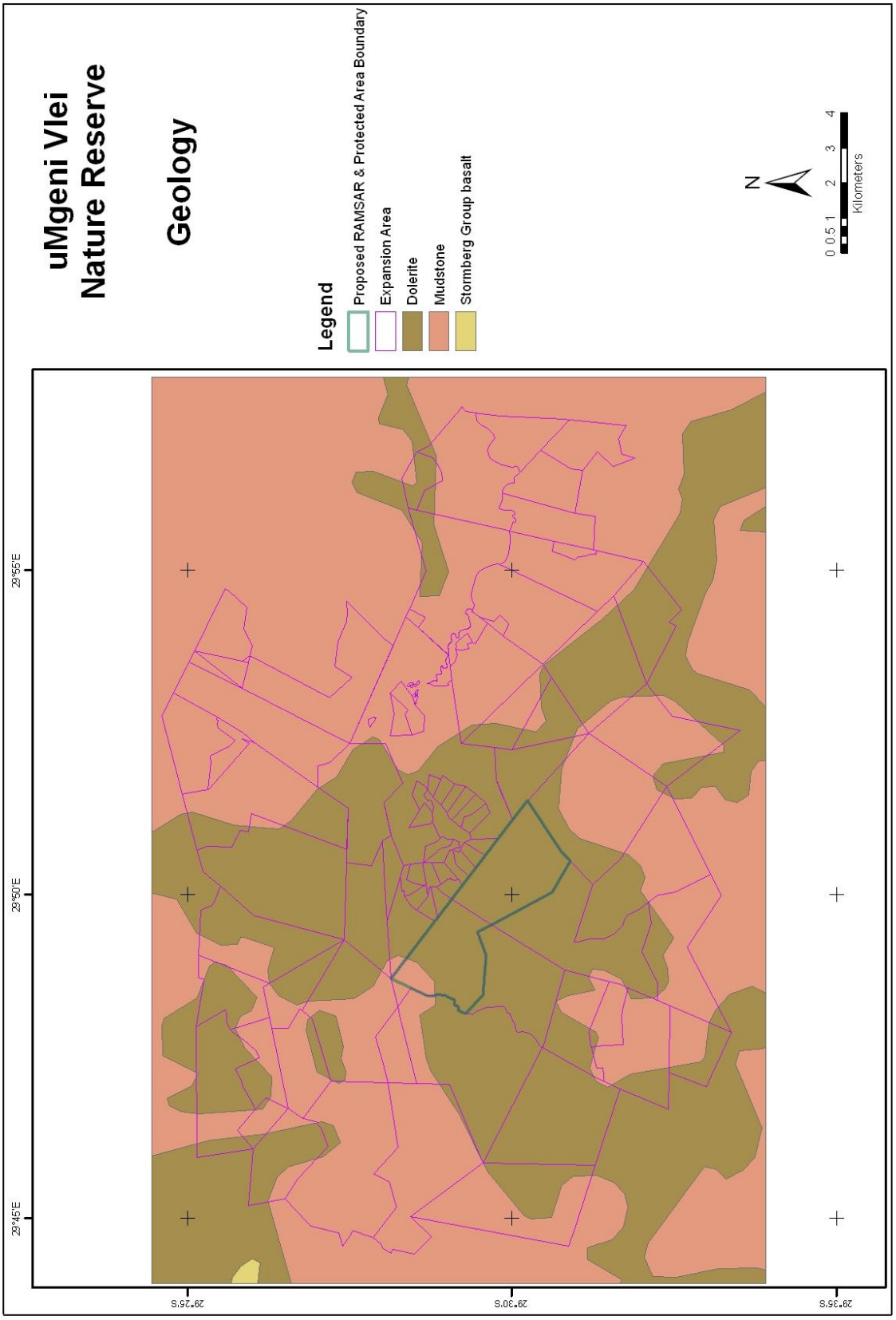


Figure 2.2 Geological Map of uMngeni Vlei Nature Reserve

2.6.4 Geomorphology

The nature reserve is located on the upper fringes of the Impendle Plateau, described as a massive undulating sheet of fractured dolerite (Turner, 1970, quoted in Begg, 1989). The basins in which the wetlands occur are the product of the natural shapes of the dolerite structures, modified by weathering and erosion over time.

2.6.5 Hydrology and Wetlands

The hydrology of the nature reserve is poorly understood, despite the pleas made by a variety of hydrologists, agriculturists and a technical committee and which according to Begg (ibid.) date back over fifty years from the present, for studies to be undertaken to improve understanding of the importance of the wetland for water production. The unfortunate situation at present is that the state of knowledge on the hydrological significance of the uMngeni wetlands is no better than when the first calls for such studies were made in the early 1950s.

It may however, be stated that:

- Present management appears to be favourable for the maintenance of the ecological integrity of the wetland and its dependent biodiversity; and

- The ecosystem services provided by the wetlands (in particular the yield of high quality water) are of considerable significance, especially in regard to regulating stream flow and maintaining the high quality of the water released which, together, are of major economic importance for downstream users.

- The wetlands on the two primary component sections of the nature reserve, Woodhouse No. 1 and No. 2 are not directly linked, but both form an important part of the network of wetlands that comprise the headwaters of the uMngeni River. The streams that emerge from the two wetland systems merge at lower altitude, outside of the nature reserve. A brief description of the vegetation of the wetlands follows in Section 2.6.6.

- Attention is drawn in Section 2.5.2 above to the recommendation of Begg (ibid.) that consideration be given to securing protection for the catchment area of uMngeni Vlei Nature Reserve, the source of the primary water supply for the major wetland on Woodhouse No. 1.

2.6.6 Vegetation

The Drakensberg Mountain range and its outliers, which include enclaves such as the Impendle Plateau, have been identified as a biodiversity hotspot - an area of high endemicity and species-richness, which is under threat (Myers, 1988). This is one of seven such areas on the sub-continent, known as the Eastern Mountain Hotspot (Cowling and Hilton-Taylor, 1994) or the Drakensberg Alpine Centre (DAC) (van Wyk and Smith, 2001, and Carbutt and Edwards, 2004). The DAC is a composite of high-altitude enclaves centred within the greater Drakensberg Range and has links to the Cape Floral Region. The floristic and vegetative diversity of the DAC may be accounted for by the altitudinal, climatic, topographic and edaphic gradients on a broad scale (Bainbridge et al, 1999).

The only published information on the vegetation of the nature reserve is provided by Begg (ibid.), and Johnson et al. (1998). There are a variety of classification systems that have been used and so the terminology has changed over the years. Thus it was considered to be Veld Type 44a, Highland Sourveld (Acocks, 1988), then Bioresource Group 8, Moist Highland Sourveld (Camp, 1997) and is now named as Mooi River Highland Grassland (Ezemvelo KZN Wildlife Conservation Plan). It was described by Begg (ibid.) as "well-conserved *Themeda-Trachypogon, Themeda triandra* and *Tristachya leucothrix* highland grassveld". Camp (ibid.) states that this veld type is "a fire-maintained grassland dominated by short bunch grasses, approximately 0.5 m high. In the absence or reduction of fire, a development towards Podocarpus forest occurs, with grasses such as *Cymbopogon* spp. and tall *Hyparrhenia* spp. and the trees *Leocosidea sericea*and *Buddleja salviifolia* being the initial forest precursors." He also states that forest patches occur mainly on the cooler and moister south-facing slopes, especially when they have been protected from fire. In such places, other tree species such as Halleria lucida, Rapanea melanophloeos and *Kiggelaria africana* are also to be found in the early successional stages.

The following primary vegetation formations are present within the nature reserve:

- Scattered communities of the succulent *Euphorbia clavarioides* on the upper rocky slopes of Drinkkop Mountain;
- Highland Sourveld grasslands (with associated forbs and low shrubs such as *Rubus ludwigii, Rhus* spp.and *Helichrysum* spp.) throughout the interfluve ridges, including the mid- and foot- slopes of Drinkkop Mountain and the upper edges of the wetland;
- A forest patch at the foot of the mountain, dominated principally by *Leucosidea sericea*; and other associated shrubs or small trees, such as *Halleria, Rapanea* and *Kiggelaria*;

- Seasonally-wet swamp communities, or peripheral sedge meadow, with *Pycreus, Scleria welwitschii, Andropogon appendicularis, Aristida junciformis* and *Festuca*, merging into wet grassland;

- Permanently-wet swamp communities of *Carex acutiformis* and *C. cognata* marsh, with hummock-depression morphology, and with *Cyperus unioloides, Pycreus cooperi* and *Juncus oxycarpus* intermixed with the *Carex*, and submerged vegetation such as *Largarosiphon* major and *Urticularia vulgaris*; and

- Widely scattered patches of alien invasive species, primarily American bramble (*Rubus cuneifolius*).

Areas of Protea savanna are present on properties surrounding the nature reserve and it is possible that further work will reveal the presence of this vegetation type within the nature reserve.

It might be expected that the nature reserve would contain a number of endemic or threatened plant species, by virtue of its location within the DAC biodiversity hotspot. However, it would seem that insufficient work has been undertaken to demonstrate whether this is the case. Scott-Shaw (1999) lists *Stachys rivularis* as a "Vulnerable" species occurring in the nature reserve and the following species as occurring in the areas of the two 1:50,000 maps (2929BD and 2929DB) which include the nature reserve:

Bowiea volubilis	Vulnerable **
Calpurnia woodii	Vulnerable **
Crocosmia pearsei	Vulnerable
Dierama luteoalbidum	Vulnerable
Ocotea bullata	Vulnerable **
Sisyranthus fanniniae	Vulnerable

** Unlikely to be present due to absence of suitable habitat.

Merwilla natalensis (Vulnerable) is known to be present but its status is not known. *Kniphofia brachystachia* and *K. breviflora* are KwaZulu-Natal endemic species, whose modelled habitat preferences are met in the nature reserve.

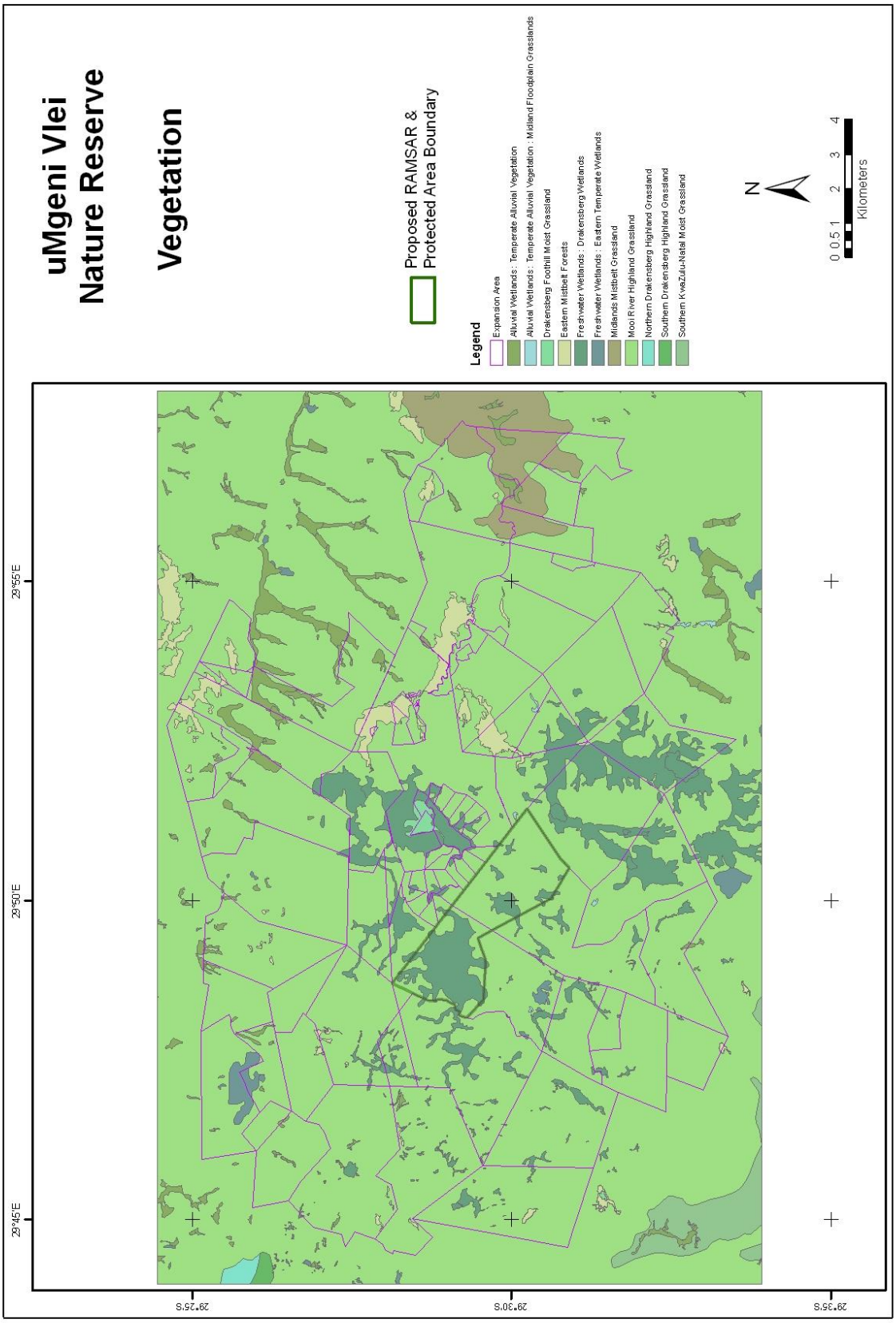


Figure 2.3 Vegetation Map of uMngeni Vlei Nature Reserve

2.5.7 Sourveld ecology

Most sourveld communities, such as Drakensberg Foothill Moist Grassland, are thought to be relatively ecologically stable, generally having a dense grass cover, soils that are not particularly susceptible to erosion and a relatively high and reliable rainfall regime (Hardy *et al*. 1999, O'Connor and Bredenkamp 1997, Snyman 2004).

Although sourveld grasslands are now largely utilised for livestock farming, it is unlikely that grazing was historically a major factor affecting the plant dynamics of these areas (Hardy *et al*. 1999, O'Connor 2005). This is because the density of herbivores before European colonisation was in all likelihood substantially lower than it is today, primarily because of the poor quality of forage during the winter months (Hardy *et al*. 1999, O'Connor 2005). O'Connor (2005) estimates that current stocking rates in these areas are six to 20 times greater than they were during pre-settlement times and grazing regimes are no longer dominated by small-bodied antelope species but by livestock that are substantially larger and spatially restricted in their movements in the landscape. As a result, most sourveld areas of grassland now experience markedly greater grazing and trampling pressure than would previously have been the case (O'Connor 2005). Due to increased grazing pressures, and possibly altered frequencies and intensities of fires, the community composition and ecological structure of many sourveld areas may have been significantly altered (Hardy *et al*. 1999).

The implication of this is that historical grazing practices of livestock uMngeni Vlei Nature Reserve and expansion area may have impacted negatively upon their ecological dynamics. The use of livestock in the area must thus be undertaken with this in mind and must proceed cautiously with the protection of the ecological integrity of the area being the overriding imperative.

2.6.8 Fire regime

The UDP WHS Conservation Manager: uMkhomazi who is also responsible for uMngeni Vlei Nature Reserve will attend the UDP WHS Fire Workshop held in February each year. At this workshop, the various burns of the previous fire season will be reviewed and, and a separate Fire management Plan for uMngeni Vlei will be developed in conjunction with surrounding stewardship sites; management compartments will be scheduled for burns in the upcoming fire season and will be recorded as the Annual Burning Plan for implementation. Fire management planning for uMngeni Vlei Nature Reserve must take into account the Wattled Crane breeding requirements, Oribi management requirements and in this respect must be integrated with the Grazing Management programme. In preparation for the Fire Workshop, all fire returns must be with Ecological Advice by 30 November each year to allow for digital capture and analysis of the data.

Fire plays an important role in the ecological dynamics of grasslands and wetlands, and has important effects on vegetation composition, primary productivity and nutrient cycling. In developing burning and fire management strategies for the nature reserve, the following guiding principles should be adhered to:

- Burning should be undertaken in such a way that it maintains spatial and temporal heterogeneity within the landscape.
- A patch mosaic of burnt and un-burnt areas should be maintained.
- The burning of areas should be undertaken in such a way that promotes patchy burns (i.e. within the block being burnt, some patches will remain un-burnt rather than aiming for a complete burn).
- Burning must be undertaken with due consideration to the biodiversity conservation requirements of the nature reserve and the need to protect rare and endangered species.
- Burning and fire management must be undertaken in a safe manner that is legally compliant with the National Veld and Forest Fire Act (No.101 of 1998).

In terms of Section 17 of the National Veld and Forest Fires Act, a landowner (in this case the nature reserve) must have such equipment, protective clothing and trained personnel for extinguishing fires as may be prescribed or, if not prescribed, reasonably required in the circumstances. It is therefore necessary to consider the following in relation to fire fighting:

- The need to maintain a system of firebreaks to enable the management of controlled burns and to effectively fight wildfires.
- The size of the nature reserve and the requirements necessary to access different areas in the event of a wildfire. This relates to both roads and vehicles.
- The number of personnel necessary to effectively fight wildfires.
- The equipment necessary to effectively fight wildfires. This would include:
    - Water tankers and pressure pumps mounted on or pulled behind tractors.
    - Fire fighting equipment mounted on the backs of vehicles.
    - Backpack sprayers.
    - Beaters.
    - Safety equipment for personnel involved in fire fighting.

- All nature reserves must become members of a Fire Protection Association in terms of the National Veld and Forest Fire Act.Therefore uMngeni Vlei Nature Reserve is a member of the local Fire Protection Association.

2.6.9 Grazing management

The decline in Wattled Crane productivity was attributed to the removal of cattle from the area. Cattle grazing facilitate the nesting of cranes by opening up the Vlei. Cattle being bulk grazers will cope with long grass and will naturally patch graze (like any ruminant) leaving pathways for cranes and patches for oribi.

A decision was taken in 2003 to reintroduce cattle to uMngeni Vlei as a management tool to benefit the cranes. Grazing within uMngeni Vlei Nature Reserve is undertaken in terms of a Memorandum of Understanding (see Section 2.44). Neighbouring farmers graze their cattle in the reserve at a set stocking rate.

In terms of grazing management for the area, uMngeni Vlei Nature Reserve and the expansion area fall within the Moist Highland Sourveld Bioresource Group (BRG 8) as defined by the Natural Resources Section of the KZN Department of Agriculture and Environmental Affairs. They also fall within Climatic Capability Class 4 (Scotney et. al. 1987). This class has a moderately restricted growing season due to low temperatures and severe frost, which means that there are limitations in terms of the types of crops that could be grown in areas that fall within it.

A veld assessment condition assessment was undertaken prior to the introduction to determine the condition of the veld. Veld condition can reflect management impact; therefore the assessment was required as baseline data for future assessments. The assessment was also used to determine the carrying capacity of the veld in terms of stocking units. Veld condition assessments were conducted in the nature reserve in the 2003, 2008, 2010 and 2012 growing seasons and on the some properties in the expansion area in 2012 (Appendix I).

Overall seven transects were established in the two management blocks in the reserve; three in Block A and four in Block B. The transects are oriented down slope and are of varied lengths. The nearest-plant-point technique using the step-point method (every two metres) with a spike was used in the survey. The total number of points for most transects exceeded 200 points. All grasses are identified whereas forbs and sedges are each lumped as separate categories. One transect was subsequently abandoned because it followed an old road, and two transects were split into two because of their length.

Results from the baseline (2003) survey indicated veld condition scores from 70-90%. Basal cover was generally good but lower than commercially grazed veld (estimated 15-20%). Productivity appeared very good. The initial

recommended *Agricultural* Stocking Rates for the reserve for 250 days (excluding wetlands) were: Block A (190 ha)- 112 Animal Units (1.7 /AU) and Block B (433 ha)- 271 Animal Units(1.6 ha/AU). Continuous light grazing was recommended in Block A and three grazing sessions were recommended in Block B.

The 2008 survey indicated that the veld, in general was in excellent condition. However, the abundance of *Aristida junciformis* and *Diheteropogon filifolius* in Block A was of concern since it may potentially increase and impact negatively on the carrying capacity of the veld. These species indicate historical overgrazing and the potential for future overgrazing. One section in block A was found to be poorly utilised. Block B was generally in excellent condition and the composition appeared to have changed little since 2003. The recommended agricultural grazing capacity was 2.6 ha/AU for 250 days for the whole property- a total carrying capacity of 240 AU.

The 2010 survey revealed the veld to be in good condition with slight variation in species composition compared with 2008. Some areas in Block A remain underutilized. Although the veld condition score of four transects have increased since 2008, two transects have decreased due to a higher abundance of Increaser II species.

The results of veld condition assessments conducted on the properties in the expansion area will be added to Appendix I as the properties are included within the broader expansion area.

Table 2.6.9.1: Veld Condition Scores for the uMngeni Vlei Nature Reserve

Year	Block A: Veld Condition Scores	Block B: Veld Condition Scores
2004	75%	78%
2008	79%	74%
2010	85%	67%

The grazing capacity for the rangelands of uMngeni Vlei Nature Reserve is largely affected by the range condition and effective rainfall. The recommended agricultural grazing capacity for 2004 till 2010 is presented in Table 2.6.9.2.

Table 2.6.9.2: Grazing capacity for the uMngeni Vlei Nature Reserve in 2004

Year	Block A Agricultural Grazing capacity (250days)	Block B Agricultural Grazing capacity (250days)
2004	2.7 ha/AU	2.6 ha/AU
2008	2.5 ha/AU	2.7 ha/AU
2010	2.2 ha/AU	2.8 ha/AU

In conservation farming situations grazing capacities should be reduced to 70% of agricultural grazing capacity. The provision of licks together with supplementary roughage is imperative for the wintering of the animals over the additional 115 days.

The management implications resulting from the current and future veld condition assessments on the nature reserve and the surrounding stewardship sites require the implementation of a management plan based on sound principles especially a resting regime during the growing season and affecting a non-selective graze post burn in an effort to improve veld condition.

2.6.10 Invasive species

A listed invasive species means any species, which is listed in terms of section 70 of the Biodiversity Act, whose establishment and spread occurs outside of its natural distribution range. Such plants are considered to be a serious threat to the ecological functioning of natural systems and to water production, and must be strictly controlled. In undertaking invasive plant control, the following guiding principles will be adhered to:

- Invasive plant control will require an ongoing programme that prioritizes key infestations along water courses, drainage lines and upper catchment areas.
- Initial clearing efforts should focus on containing infestations that are most likely to spread into new areas.
- All follow-up requirements must be strictly adhered to otherwise the problem will be exacerbated.
- Strategic partnerships and poverty relief programmes such as the Working for Water programme should be utilized in controlling invasive plants.

The species of relevance within and immediately around the nature reserve are the following:

- American bramble *Rubus cuneifolius*
- Wattle species Acacia spp. (Primarily *Acacia mearnsii*)

A further species, which is not known to be in the nature reserve at present, but which is spreading in the southern areas (uMkomazi, uMzimkulu and uMzimvubu catchments) of KZN is the grass *Glyceria maxima*. Of Eurasian origin, it is a rapid and serious invader of wetlands. In the Pholela River catchment near Himeville, it has extensively invaded a large wetland, which until a few years ago was used as a breeding site by Wattled Cranes but which has now been abandoned. It is not known whether the departure of the birds was linked to the plant invader but it is possible. It is recommended that all of the upper uMngeni Vlei area be monitored for its presence.

2.6.11 Fauna

Published information of the fauna of the nature reserve is restricted to the generalized account of the nature reserve by Begg (ibid.) and the description by Johnson et al. (ibid.) of the nature reserve as an Important Bird Area. From the limited information available from these, and the Ezemvelo Biodiversity Database for uMngeni Vlei nature reserve, four key aspects emerge. These are the following:

- By virtue of the small size of the nature reserve, the habitats of many of the faunal species observed within it, especially those of medium to larger mammals and birds, extend beyond the boundaries of the nature reserve. Consequently, many faunal species and individuals cannot and do not occupy the area permanently.
- Following from the preceding point, the conservation of such species must be seen in the context of partnerships with landowners of areas surrounding the nature reserve.
- A key function of the nature reserve is to protect the breeding sites and feeding grounds of a significant portion of the national and provincial population of a single species, namely Wattled Cranes although attention will also be given to conservation of all other faunal species for which the nature reserve forms a part of their territories or home ranges.
- Apart from the birds, very few animal species are listed on the Ezemvelo Biodiversity Database for uMngeni Vlei nature reserve. It is essential that a full faunal inventory survey be undertaken for the nature reserve and its immediate surrounds.

2.6.11.1 Mammalian fauna

Official records indicate the suspected presence of least one Critically Endangered species, the Rough-haired Golden Mole (*Chrysospalax villosus*).

The Ezemvelo Biodiversity Database for uMngeni Vlei nature reserve confirms the presence of two endangered species;

- Oribi *Ourebia ourebi*
- White-tailed Rat *Mystromys albicaudatus*

as well as a Near Threatened species;

- Serval *Leptailurus serval*

At least five antelope have been recorded in the area (Rowe-Rowe, 1994).

- Grey Rhebuck *Pelea capreolus*
- Mountain Reedbuck *Redunca fulvorufula*
- Southern / Common Reedbuck *Redunca arundinum*
- Common Duiker *Sylvicapra grimmia*

Eland (*Tragelaphus oryx*) are known to frequent the farmlands surrounding the nature reserve, but their presence within the nature reserve is not recorded in official records.

Predators that are known to be present in the general area include:

- Black-backed Jackal *Canis mesomelas*
- Caracal *Felis caracal*
- Clawless Otter *Aonyx capensis*
- Spotted-necked Otter *Lutra maculicollis*
- Serval *Leptailurus serval*

the latter having been recorded within the nature reserve (Rowe-Rowe, 1994).

The following mammal species would have probably also occurred in the nature reserve area in the past:

- Black Wildebeest *Conchaetes gnou*
- Red Hartebeest *Alcelaphusbuse laphus*
- Wild Dog *Lycaon pictus*

As with the adjacent UDP WHS, the natural carrying capacity for wild ungulates in the nature reserve is considered very low. In the period between spring and early autumn the grasslands are in an active growth period, the grazing is palatable and the carrying capacity is moderate to high. However, in the period in which the grasses become dormant (and are "sour" or no longer palatable) the carrying capacity becomes low.

2.6.12 Avifauna

The Ezemvelo Biodiversity Database lists approximately 100 bird species for the nature reserve but it is probable that more are present or utilize uMngeni Vlei nature reserve at times. While the list does not indicate the length of time each species spends within the nature reserve, it is clear that a number of the species listed are important migrants. It is necessary that the Ezemvelo Biodiversity Bird Database for uMngeni Vlei nature reserve be updated.

A primary purpose of the nature reserve is to protect part of an area considered to be the most important breeding site of the Wattled Cranes (*Bugeranus carunculatus*)in the country (vide Section 2.5.2 above, Johnson et al., ibid.). As an indication of the plight of this large bird species, listed as "Globally Vulnerable; Critically Endangered in S.A.", the current national population was reduced from an estimated 380 (160 breeding pairs) in 1982 to an estimated current population of 81 breeding pairs and 85 "floaters" (Hockey et al., 2005). The population in KZN is estimated at 68 – 70 pairs (maximum 140 individuals) and about 70 "floaters" (A. Rousseau, personal communication, 2007). According to McCann (personal communication, 2007) there are nine breeding pairs in the general vicinity of uMngeni Vlei nature reserve of which up to four or five pairs breed within the nature reserve itself. These, together with up to 20 "floaters", have regularly been seen foraging in uMngeni Vlei nature reserve. Accordingly, the nature reserve may at times support as much as 20% of the national population.

However, it is important to note that for a period of seven or eight years following expropriation, the number of Wattled Crane pairs that successfully bred within the reserve, declined steadily. Prior to expropriation, up to six pairs of cranes successfully bred there, but by the end of that period, only a single pair was still nesting. The decline was attributed to the new management regime, which differed from that previously implemented when the properties were managed for commercial agriculture, and there were regular burns and grazing by livestock.

Acquisition of the nature reserve as a provincial protected area has ensured that protection is afforded against the principal threats posed to this species listed by Hockey et al. (ibid.) as "damming, draining, afforestation, overgrazing, trampling and disturbance by livestock, too-frequent and inappropriately-timed burning, erosion, siltation and road building." However, Johnson et al. (ibid.) contend that cattle create some structural diversity in the vegetal cover that "appears to benefit the cranes". Rushworth (ibid.) supports intervention by large herbivore grazing (provided

by domestic cattle, in the absence of indigenous bulk and roughage foragers), in conjunction with regular applied burns, in order to reduce the height and density of the sward, and to improve access to the principal food source of the cranes, geophytes. Accordingly, the combination of controlled burns with controlled grazing has been implemented since 2001 (K. McCann, personal communication, 2007), and official records show a commensurate increase in the number of breeding pairs present. Following a long period of decline (1988 – 2000), the number of cranes that attempted to breed increased from one to two in the first year of intervention and thereafter by an additional pair in 2003 and another in 2004. Subsequently (until September 2008), however, no additional pairs have been recorded at uMngeni Vlei nature reserve. The reasons for this are not clear at present and could be linked to extraneous factors beyond the control of nature reserve management (I. Rushworth, personal communication, 22 September 2008).

Another important contribution to the conservation of this species that has followed acquisition of the area has been the protection of the breeding birds during their most vulnerable time which Tarboton (1989) describes as, "their inability to tolerate disturbance while nesting". However, Hockey et al. (ibid.) indicate that this is a long-lived species, with a relatively low breeding rate, i.e. a species which may not breed annually and which normally raises only a single chick. Thus, the time needed for the population to recover to historic levels may be considerable.

In the light of the discussion above, an integrated fire management and grazing programme will continue to be planned, implemented and monitored at uMngeni Vlei Nature Reserve in pursuance of the conservation target set for uMngeni Vlei Nature Reserve (Par. 6.6.8) with regard to Wattled Cranes according to the management guidelines indicated for the Fire management Programme (Par. 6.6.1) and the Grazing Management Programme (Par. 6.6.5.).

2.6.13 Herpetofauna (reptiles and amphibians) and Fish

2.6.13.1 Reptiles

No formal surveys have been undertaken but the following species have been seen (D.J. Alletson, personal communication, 2007) in the nature reserve:

- Striped Skink (*Mabuya striata striata*)
- Drakensberg Crag Lizard (*Pseudocordylus melanotus melanotus*)

The Ezemvelo Biodiversity Database does not list any amphibians for uMngeni Vlei Nature Reserve. It is imperative that a survey is undertaken to determine the reptile species present.

2.6.13.2Amphibians

The Ezemvelo Conservation Plan suggests that there is a possibility that the rare Natal leaf-folding Frog (*Afrixalis spinifrons intermedius*) may be present as well as the Yellow-Striped Reed Frog (*Hyperolius Semidiscus*).

The Ezemvelo Biodiversity Database is not able to provide a comprehensive list of amphibians for uMngeni Vlei Nature Reserve. However it will be imperative that a survey is undertaken to determine the amphibian species present.

2.6.13.3Fish

There are no records of any fish from within the nature reserve but two indigenous species may well be present. They are the Longfin Eel (*Anguilla marmorata*) and the Chubbyhead Barb (*Barbus anoplus*).

The nearby dams have been stocked with Rainbow Trout (*Onchorynchus mykiss*) and Brown Trout (*Salmo trutta*) for recreational angling purposes and these fish may occasionally enter the nature reserve but will be highly unlikely to establish permanent populations there as the habitat available is most unsuited to them.

It is important to verify the above assumptions by undertaking the appropriate surveys.

2.6.14 Invertebrates

Invertebrates play critical roles in the functioning of all ecosystems as they are responsible for maintaining soil fertility, waste disposal, water purification, pest control and pollination. Few studies quantifying the contribution of invertebrates to these processes have been carried out in South Africa, but internationally the complexity of the invertebrate interactions required to sustain ecosystems and even in influencing the structure of plant communities is becoming increasingly evident. Several invertebrates, such as termites, are considered to be keystone species. Termites recycle large quantities of plant biomass into the soil and keep the soil porous with their tunnelling, allowing water to infiltrate the soil profile. Earthworms play a similar role and are more diverse and widespread in the reserve grasslands than termites. The dung beetle fauna of the reserve are responsible for the removal of animal wastes and recycling of nutrients to the soil. Pollination of a large proportion of flowering plants, including endemics, is dependent on a range of insect groups, such as bees, wasps, flies, and beetles. In some cases the survival of locally endemic plant species is linked to pollination by a single insect species.

(Above paragraph is an extract, with amendments, from a report for the uKhahlamba Drakensberg Park World Heritage Site compiled by Dr. Michelle Hamer, University of KwaZulu-Natal dated 17 January 2005).

In the light of the potential important role that invertebrates can play in maintaining the ecological processes within uMngeni Vlei Nature Reserve, there is very limited knowledge of the exact invertebrates within the nature reserve. It is imperative that a survey is undertaken to determine the species present.

For a simple list of invertebrates, present in the nature reserve, refer to Appendix F.

2.7 Cultural context of uMngeni Vlei Nature Reserve

A Cultural Heritage survey of uMngeni Vlei Nature Reserve has been conducted and there are no known registered archaeological sites within the nature reserve, but there is much historical evidence of San activity in the "Upper Mngeni" (sic) area, which presumably included the nature reserve (Wright, 1971).

According to Prins (2006), the old farmhouse, which is located just south of the nature reserve and which is now largely in ruin, is said to have been built by an English soldier, who jumped ship while en route to India. He then made his way into the remote hinterland and spent the rest of his life there. The grave is near the house and is protected in terms of the KZN Heritage Management Act.

2.8 Socio-economic context

The fact that uMngeni Vlei nature reserve protects a significant portion of the uMngeni River's catchment area in itself makes the nature reserve a valuable economic asset for the region and for KZN.

Commercial agriculture has been the most important economic driver for this portion of the province. The nature reserve is surrounded by privately owned land, on which the most important commercial use is mixed farming, primarily livestock management. The Lake Lyndhurst property to the east has been divided into a number of residential stands for holiday homes. Areas of communally owned land, on which subsistence agriculture is practiced, lie some distance to the south-west but are not adjoining in any way.

The nature reserve is not a recognized eco-cultural tourism destination and such activity is therefore not economically important. According to the Impendle IDP, areas around the nature reserve have been graded as non-negotiableareas which create a buffer zone around the nature reserve.

2.9 Socio-cultural History

According to Prins (Ezemvelo, 2005), San hunter-gatherers were the first modern people to occupy the area in which the nature reserve is presently located. The earliest convincing evidence confirming the presence of San in the region dates back some 8000 years, but evidence from adjacent areas in Lesotho suggests that the San inhabited the area around 20 000 years ago.

During the last 200 years, various linguistic groups of San inhabited the Drakensberg region, but these populations were either displaced or assimilated by later immigrant groups, although their descendants still live in the area.

The first black farmers moved into the Drakensberg region about 400 years ago, although there is no information of the presence in or around the nature reserve, until colonial times.

2.10 Operational management within uMngeni Vlei Nature Reserve

2.10.1 Infrastructure

The only developed infrastructure at uMngeni Vlei consists of:

- A boundary fence with five vehicular entrance gates allowing vehicular entrance for fire control purposes and to facilitate cattle movement when grazing on the nature reserve is required.
- A vehicular management field track in Grazing Block B that is approximately few hundred meters long.
- An internal fence (with a barbed wire gate) that separates Grazing Blocks A& B in the nature reserve.

2.10.1.1 Entrance Gates

- uMngeni Vlei nature reserve western boundary of Grazing Block A (Woodhouse No. 1):

Three vehicular entrance gates are situated in this section. These gates facilitate the movement of cattle onto the nature reserve when required and allow convenient access during fire management operations.

- uMngeni Vlei nature reserve southern boundary of Grazing Block B (Woodhouse No. 2):

Two vehicular entrance gates are situated in this section. The more centrally situated gate serves as the main entrance gate to the nature reserve. They also facilitate the movement of cattle onto the nature reserve when required and allow convenient access during fire control operations.

All the entrance gates have being upgraded from 'barbed wire' gates to galvanised farm gates as the boundary fence was replaced.

Management must ensure that all entrance gates are effectively maintained and kept in good working order.

It is most unlikely that there will be a need to staff the main gate on a full time basis.

2.10.1.2 Signage

All existing and potential boundary entrance points to the nature reserve must have appropriate signage.

2.10.1.3 Roads, Tracks and Paths

There will be no public vehicle roads or tracks within the nature reserve. Visitors who approach the area in vehicles will do so on the neighbours' farm service tracks and will park at a point or points outside the nature reserve.

No further management vehicle tracks will be developed. The existing tracks must be regularly maintained (at least on an annual basis) to standards appropriate to their relevant use. Soil erosion as well as other negative impacts on the environment caused by these tracks must be rehabilitated timeously using the guidelines presented by Coetzee (2005) and the Ezemvelo Trails Manual (See Appendix D, Item 7).

If there is an urgent need to develop new management tracks and paths or close them, the intended operations must be described and accurately mapped in a submission to the NRPC for approval.

Any maintenance or other work done on roads, tracks and paths at uMngeni Vlei Nature Reserve must be done at a time out of the crane-breeding season.

2.10.1.4 Fencing

The boundary fence has been replaced. Boundary and internal fencing is cattle-proof fencing with a knee-high ground clearance gap under the bottom strand in order to allow juvenile cranes and small mammals to pass through.

The boundary fence must be subject to an on-going maintenance programme in order to minimise replacement costs.

Internal fencing will be kept to a minimum. At present, only the cattle fence, which divides the nature reserve into two grazing blocks, will be maintained for as long as that management intervention persists. This fence is to be constructed of four strands of wire, with only the top one being barbed wire. There is to be a knee-high gap under the bottom strand. A barbed-wire gate exists in this fence to assist fire management operations.

Should the need arise to erect new fences or remove fences; the intended operations must be described and accurately mapped in a submission to the NRPC for approval.

Any maintenance or other work done on fences must be done at a time out of the crane-breeding season.

2.10.1.5 Staff Accommodation

There are no temporary or permanent staff accommodations within the nature reserve.

If it becomes necessary for any reason to have temporary or permanent resident staff, they are to be accommodated outside the nature reserveand in line with the zonation of the nature reserve.

2.10.1.6 Offices, Workshops, Stables and other Management Infrastructure

There will be no offices, workshops, stables or other such management infrastructure in the nature reserve. Such facilities will be provided by the station at which the Officer in charge is based.

2.10.1.7 Radio communication and other communication equipment

If required, radio repeater stations or other similar communication towers must follow the set procedures forinternal as well as external environmental authorisation. Good two-way radio communication would be an advantage when conducting operations at uMngeni Vlei nature reserve and needs to be improved.

2.10.1.8 Waste Management

Waste disposal must link up with municipal systems and no waste may be disposed of in the nature reserve.

2.10.1.9 Air Space and Aircraft Landing Fields

No airstrips or helicopter pads will be allowed inside the nature reserve due to the possible disturbance of the Wattled Cranes.

Aircraft flying over uMngeni Vlei Nature Reserve are a potential disturbance threat to the cranes using the nature reserve and this activity should ideally be regulated. A policy, which makes provision for aerial crane counts or other such management-oriented flights, is also needed.

2.10.1.10 Staff and Visitor Safety

All requirements of the Occupational Health and Safety Act and other applicable legal requirements (including fire contingency plans) must be met to provide for the safety of staff and visitors in the nature reserve.

2.10.2 Conservation infrastructure

Conservation infrastructure consists of:

- Approximately 16 km of boundary fence: 1.2 m high.

- There have been fencing erected within the nature reserve to separate the area into grazing block A and grazing block B: 2.4 m high

2.10.3 Staffing establishment

At present, the uMngeni Vlei Nature Reserve is being managed by the Officer in charge of uMkhomazi. There is no permanent additional staff linked directly to the nature reserve, however during firebreaks and routine maintenance additional staffs are sourced from uMkhomazi.

2.10.4 Funding levels at uMngeni Vlei Nature Reserve

Currently there is no operational budget for uMngeni Vlei Nature Reserve, however uMngeni Vlei Nature Reserve is managed by the Officer in charge of uMkhomazi and funds for the nature reserve is secured from the operational budget of uMkhomazi Nature Reserve.

2.10.5 Management effectiveness in uMngeni Vlei Nature Reserve

In 2010 Ezemvelo KZN Wildlife conducted management effectiveness assessments for all of its protected areas (Carbutt and Goodman 2010). Management effectiveness assessments consider protected area design, the appropriateness of management systems and processes, and delivery of protected area objectives. Such assessments are intended to enable conservation organisations to refine their conservation strategies, re-allocate budget expenditures, and develop strategic, system-wide responses to the most pervasive threats and management weaknesses (Carbutt and Goodman 2010). They are not performance assessments of individuals but serve to reflect an organisation's proficiency for protected area management as a whole.

uMngeni Vlei Nature Reserve achieved a management effectiveness score of 63.56 % in the 2010 assessment. The following issues were highlighted through the assessment:

- The nature reserve scored low because of its lack of legal status.
- Knowledge and understanding of the biodiversity present in the nature reserve.
- The staffing numbers of the nature reserve.
- The operational budget of the nature reserve.
- Law enforcement within the nature reserve.
- The annual work plan of the nature reserve and biodiversity resource management such as control of alien organisms.

2.11 Summary of management issues, challenges and opportunities

The following specific issues have been identified associated with the infrastructure and operations within the nature reserve.

Table 2.9.1 Management challenges, issues and opportunities

Key performance area	Issue that must be addressed
Legal Compliance and Law Enforcement	Poaching of wildlife around nature reserve.
	Opportunity to integrate law enforcement activities and resources with surrounding expansion areas.
	Access is unreliable and not formalized.
Stakeholder Engagement	Stakeholder Relationships need to be maintained.
	Liaison forum needs to be established.
	Build and maintain relationships with organizations, stakeholders and stewardship sites.
Buffer Zone Protection and Regional Management	A portion of the uMngeni Vlei wetlands still remains outside of boundary.
	Alignment with municipal planning documents including IDPs and SDFs to facilitate compatible land uses around the nature reserve.
	Alignment with local and regional tourism initiatives in determining access roads to the nature reserve.
Eco-cultural Tourism Development	Inadequate information about potential nature based activities.
	Communication of the values of the reserve to the surrounding communities, stakeholders and stewardship sites.
Conservation Management	Soil erosion relating to grazing management.
	Removal of Alien and Invasive species.
	Role of grazing and fire in maintaining Wattled Crane populations
	The use of grazing and fire as an ecological management tool.
	Continued functioning of wetlands for water provision.
	Management of rare and endangered species that occur within the nature reserve.
Research Needs	Guidance on the conservation requirements of key rare and endangered species that occur within the nature reserve.
	Guidance on the use of grazing by game and livestock and managing the ecology of the nature reserve's wetland and grasslands.
	Guidance on the ecologically optimal burning patterns in undertaking fire management within the nature reserve.

	Guidance on the conservation and management of the hydrology of the wetlands within the nature reserve.
Operational Management	Lack of on-site field rangers to permanently patrol and carry out activities in the nature reserve.
	Lack of Financial Resources
	Inadequate directional and corporate signage.
	Lack of communication with neighbouring farmers through communication devices.

3) STRATEGIC MANAGEMENT FRAMEWORK

In an effort to ensure that uMngeni Vlei Nature Reserve and the expansion area are effectively managed, the following strategic framework has been developed. It is aimed at providing the strategic basis for the protection, development and operation of the nature reserve over the next five years and has been prepared collaboratively through a process involving stakeholders within Ezemvelo KZN Wildlife, the communities around the nature reserve, local and provincial government departments and other stakeholders.

The vision describes the overall long-term goal for the operation, protection and development of uMngeni Vlei Nature Reserve. The objectives and strategic outcomes that follow are intended to provide the basis for the achievement of the vision. The objectives provide a broad description of the goals for each key performance area. The strategic outcomes, which flow from the objectives, set out what is needed to achieve the objectives, based on the management challenges, issues and opportunities described in Section 2 above.

3.1 uMngeni Vlei Nature Reserve and expansion area vision

A Ramsar site set aside for the provision of a range of benefits that include the sustained flow of the uMngeni River, conservation of the biodiversity resources and various associated species.

3.2 Objectives and strategic outcomes

An objective has been identified for each of uMngeni Vlei Nature Reserve key performance areas, which follow from the management challenges, issues and opportunities, and relate to the important functions and activities necessary to protect, develop and manage it effectively. The objectives have then been translated into strategic outcomes, which form the basis for the management activities and targets set out in the operational management framework, described in Section 6 below.

Table 3.1 sets out the key performance areas, the objective for each key performance area and the strategic outcomes, required to realise the objectives.

Table 3.1 Objectives and strategic outcomes for uMngeni Vlei Nature Reserve

Key performance area	Objective	Strategic outcome
Legal compliance and law enforcement	Maintain a high level of security within uMngeni Vlei Nature Reserve and surrounding biodiversity stewardship sites, in order to protect the integrity and natural resources of it in collaboration with neighbours, security services and the justice system.	▪ Develop formal agreements of access with neighbours adjacent to the nature reserve. ▪ There is adequate law enforcement within the Nature Reserve and adjacent biodiversity stewardship sites.
Stakeholder engagement	Establish and maintain effective and cordial relations with affected neighbouring communities and other stakeholders, in order to ensure effective collaborative management of the nature reserve and surrounding biodiversity stewardship sites, to the benefit of both the environment and the landowners involved.	▪ Constructive community involvement in the nature reserve's management through an effectively functioning Community Liaison forum. ▪ Establish and maintain networks with other organizations that could jointly contribute to the achievement of the nature reserves objectives. ▪ Facilitate research and partnerships with educational institutions.
Buffer zone protection and regional management	Integrate the management of the nature reserve with surrounding biodiversity stewardship sites and neighbouring landowners in order to establish a buffer zone to the nature reserve.	▪ Securing the plateau and headwaters of the uMngeni River as an ecological entity that supports the integrity of the nature reserve through biodiversity stewardship. ▪ Coordinate management activities and the use of resources between the nature reserve and the surrounding biodiversity stewardship sites. ▪ Align the nature reserve and surrounding expansion area with the municipal and regional planning documents.
Visitor management	Investigate opportunities for low impact visitor activities and environmental education.	▪ Preparation of an assessment of potential visitor activities and supporting infrastructure. ▪ Promote public appreciation of the values of the nature reserve and its various resources.
Conservation management	Protect the ecosystem functioning, ecological integrity and species of the reserves through active interventions based on principles of adaptive management.	▪ Grazing management using livestock is implemented as an ecological management tool. ▪ Develop an understanding of the ecological implications of the use of livestock in managing uMngeni Vlei nature reserve. ▪ Development of an integrated Fire Management Plan for the nature reserve& surrounding biodiversity stewardship sites.

		▪ Adequate fire safety within the nature reserve is ensured through partnerships of neighbouring biodiversity stewardship sites. ▪ Reducing and controlling the levels of invasive plant infestations in the nature reserve as well as surrounding biodiversity stewardship sites. ▪ Development of an Invasive Species Control Plan for the biodiversity stewardship site. ▪ Mapping and prioritisation of invasive species infestations on biodiversity stewardship sites. ▪ Rehabilitation of areas that have been affected by soil erosion as a result of grazing. ▪ Implementation of procedures to identify, rehabilitate and manage areas that have been significantly impacted by soil erosion. ▪ Ensure the effective management of wetlands in the nature reserve and surrounding biodiversity stewardship sites. ▪ Ensure adequate rehabilitation of Wetlands in the surrounding biodiversity stewardship sites. ▪ Implementation of procedures to manage alien animals found within the nature reserve. ▪ Determine the value of the Eco-system goods and services that uMngeni Vlei Nature Reserve and the surrounding Plateau contributes to. ▪ If extractive resource use is undertaken, it is done legally and conforms to NEMBA Chapter 6, and the nature reserve's zonation plan. ▪ If bioprospecting is undertaken, it is done legally and conforms to NEMBA Act Nu 10 of 2004 Chapter 6, and the nature reserve's zonation plan. ▪ Implement a strategy for the management of wildlife in the nature reservein accordance with Ezemvelo KZN Wildlife policies. ▪ Implementation of a strategy for problem animal control for the nature reserve and surrounding biodiversity stewardship sites. ▪ Gain a better understanding of flora and fauna within the nature reserve and surrounding biodiversity stewardship sites.

		▪ Rare and endangered species management are undertaken at the highest level of Scientific Knowledge available. ▪ Effective management of the plateau to ensure vital functioning of the wetland system in the nature reserve through protected area expansion. ▪ Ensure the conservation targets of endangered and threatened species are met.
Operational management	Provide adequate human resources, equipment and funding to enable the effective protection, development and management of uMngeni Vlei Nature Reserve.	▪ Ensure the annual plans of operation include detailed budgetary requirements. ▪ The nature reserve is adequately staffed for its effective management and operation. ▪ All infrastructure in the nature reserve is adequately maintained. ▪ An effective radio communication system is maintained.

4) ZONATION PLAN

The purpose of zonation within a protected area is to identify types and levels of usage that are acceptable based on an area's sensitivity and resilience, and to manage visitor experience and inter-user conflict. Zonation is used to identify areas in which infrastructure may be located. Zonation for each of the biodiversity stewardship sites is addressed in the attached Appendix I.

4.1 Zonation of uMngeni Vlei Nature Reserve

A standardised zonation system has been developed for all of Ezemvelo KZN Wildlife's protected areas. This system enables a protected area to be zoned according to six categories, which are spread along a continuum, starting from pristine wilderness. The zonation system recognises and reflects:

- Sensitive features associated with a protected area (i.e. biophysical, cultural and sense of place).
- A general gradation in the zonation categories, in which the next use level provides a buffer to the lower use level.
- Influence of existing and historic facilities, infrastructure and use.
- Opportunities and constraints (biophysical, social or managerial constraints) for use.

The final management zonation is a composite of ecological zonation (based on natural resource sensitivity), sense of place, cultural features, patterns of environmental settings, and existing development and use patterns. The final zonation map is represented as a desired state, i.e. directing management towards a vision for each zone, which reflects and respects the broader conservation and eco-cultural tourism objectives for the protected area. Biophysical features that are readily located on the ground have been used to demarcate and delineate the zone boundaries.

The criteria used to determine each zone are described as:

Key feature protection overlay	An area that is vulnerable or scientifically important where specific additional controls are imposed in order to prevent undesirable impacts. This zone overlay other zones instituting site specific rules and regulations in addition to the restrictions of the underlying zone.
Low use zone	An area where the ecotourism principles of low human impact will prevail. This area is characterised by facilities of a rustic nature such as overnight hiking huts. Motorised access is low key and there are limited management roads and tracks.
Moderate use zone	This is also an area in which the ecotourism principles of low human impact will prevail, but higher levels of usage are

	permitted. This area includes the main tourism road network, including access and game viewing roads. Infrastructure is accessible by motorised access in this area.
Tourism development node	This is a node within the moderate use zone, which includes commercial tourism developments such as lodges, picnic and camping sites.
Park management node	This is a node within the moderate use zone, which includes facilities for staff accommodation, administrative offices and operational infrastructure.
Preliminary buffer zone	This is outside of a protected area, where actions and agreements are taken to protect its integrity. It is an area in which the protected area managers work collaboratively with neighbours and municipalities to try to ensure land uses that are compatible with the protected area.

4.2 Concept development guidelines

The purpose of the zonation of uMngeni Vlei Nature Reserve is to control the intensity and type of use within it, in efforts to ensure the overriding goals of biodiversity conservation are met whilst enabling acceptable levels of eco-cultural tourism and other resource use. On this basis, within some zones, the permissible intensity of use will be relatively higher than in others.

The majority of the nature reserve has been zoned as low use and a small area located towards the South Easterly portion of the nature reserve as, moderate use, which will be used for management purposes. The area over the wetland has addition protection through the addition of a Key feature protection overlay(figure 4.2a) and an overall Preliminary buffer zonefor the entire nature reserve (figure 4.2b).

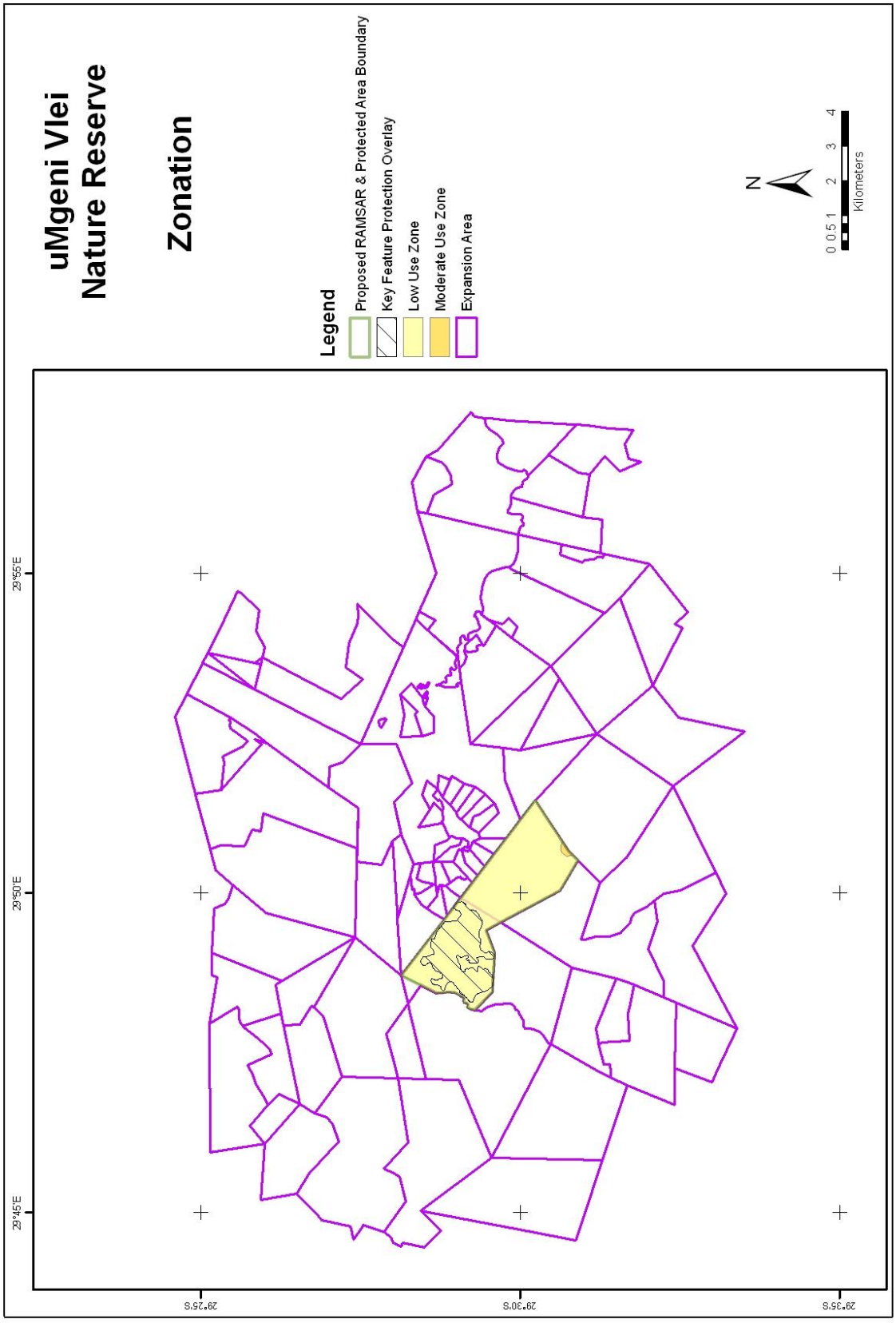


Figure 4.2a uMngeni Vlei Nature Reserve Zonation Map

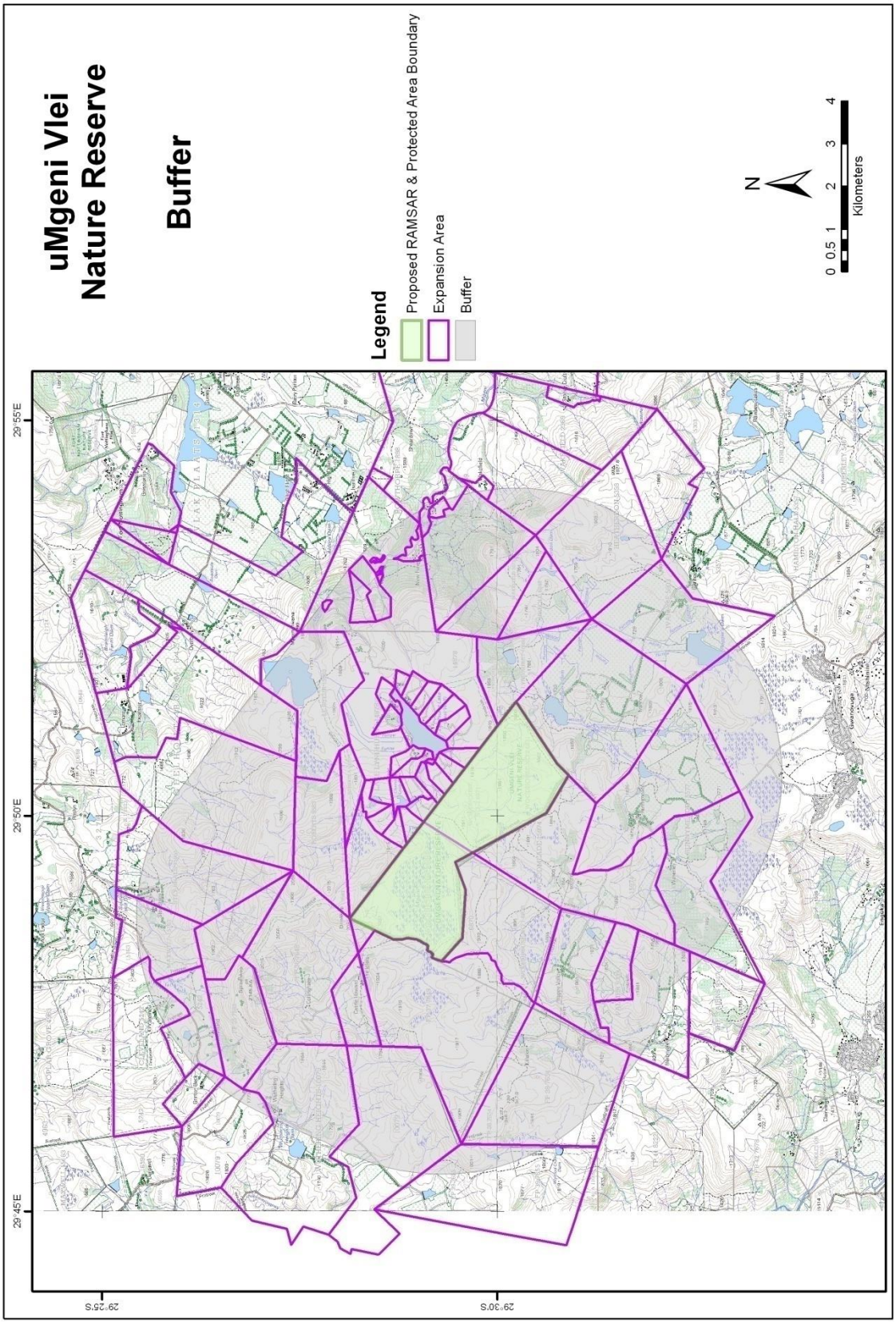


Figure 4.2b Buffer zone of uMngeni Vlei Nature reserve

4.3 Concept Development Plan

The concept development plan for uMngeni Vlei Nature Reserve (UVNR) seeks to provide a strategic operational framework for the development and maintenance of conservation management infrastructure and visitor facilities/activities within the nature reserve while always considering the constraints of the receiving environment.

The uMngeni Vlei Nature Reserve has been classified within several suitable zones according to the land use of the area, the mission and objectives of the nature reserve and bulk of this decision comes from the impacts of such infrastructure and activities on natural resources and the implications of these disturbances on such resources.

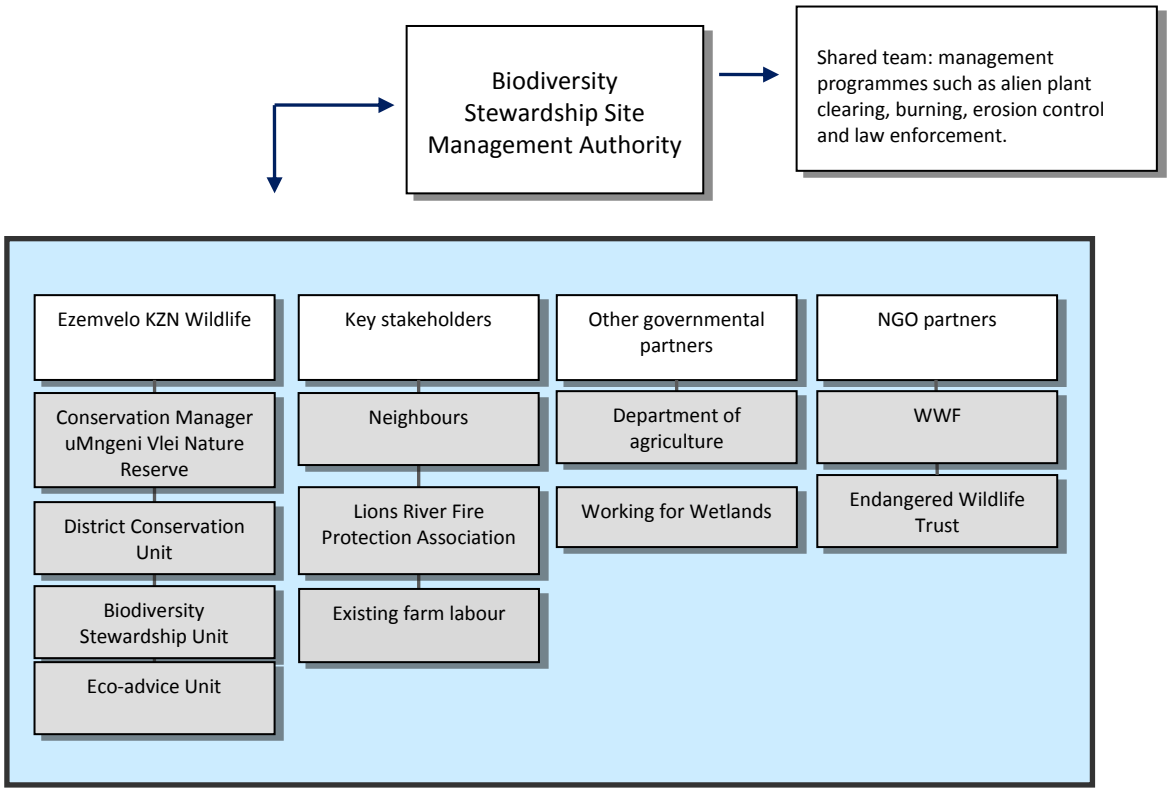
uMngeni Vlei Nature Reserve has been zoned within the Low use zone, Moderate use zone; Key feature protection overlay and Protected area buffer zone (see section 4.1). The nature reserve currently does not have any infrastructure built within the nature reserve besides a fence to demarcate the two different grazing zones and an outlining boundary fence. There are no activities within the nature reserve at present however if, in the future, hiking is permitted, it is probable that restrictions will be based on both seasonal and spatial criteria.

No future developments have been planned within the nature reserve in-order to maintain its pristine condition. This is essential in order to increase the number of breeding pairs of wattled cranes within the reserve. All future developments if any should be directed to exterior areas of the nature reserve.

5) ADMINISTRATIVE STRUCTURE

At present, uMngeni Vlei Nature Reserve is managed by the Officer in Charge of uMkhomazi Nature Reserve. All staff required to carry out basic fundamental duties for uMngeni Vlei Nature Reserve are sourced from uMkhomazi.

The administrative structure for the biodiversity stewardship sites is depicted below in Figure 5.1.



6) OPERATIONAL MANAGEMENT FRAMEWORK

This section translates the strategic framework described in Section 3 above into management activities and targets, which will be used to inform annual plans of operation and the resources required to implement them. The management targets will form the basis for monitoring of performance in implementing the plan and are thus measurable.

6.1 Determination of priorities for strategic outcomes

In the tables that follow in this section, a column has been included entitled "Priority", which is intended to convey the level of priority attached to its strategic outcome. The purpose of prioritising activities is to direct funds and resources to the most important activities, in the event that there are insufficient funds or resources to undertake all of the activities outlined in a particular year. Priorities are ordered in five categories, which have been determined on the following basis:

Priority 1:	A management target that is central to the responsibilities and mandate of Ezemvelo or that addresses an aspect of management that is fundamental to the protection of the values and purpose of the uMngeni Vlei Nature Reserve.
Priority 2:	A management target that addresses an aspect of management that contributes towards community involvement and support for the conservation of the uMngeni Vlei Nature Reserve, which is a key principle of effective protected area management.
Priority 3:	A management target that indirectly contributes towards the protection of biodiversity or the development of social and/or economic benefits and opportunities for the uMngeni Vlei Nature Reserve and/or its surrounding local communities.

The priorities are presented in the tables below using the colour system above, which depicts the level of priority shown for the particular strategic outcome. In addition, a date is indicated in the priorities column for each strategic outcome, which is intended to convey the end date by which the management target must have been achieved.

6.2 Legal compliance and law enforcement

Through its mandate to undertake the conservation and management of protected areas in KwaZulu-Natal, Ezemvelo KZN Wildlife must ensure that the province's protected areas are appropriately legally protected and that the laws governing the use of protected areas and the prohibition of particular activities are enforced. In fulfilling this role, the managers of uMngeni Vlei Nature Reserve will adhere to the following guiding principles:

- All reasonable efforts must be made to ensure the effective conservation of biodiversity within and on the boundaries of the nature reserve.
- Cooperative structures should be established to enable participation by key stakeholders such as local communities and the South African Police Service in addressing offences and breaches of the law.
- Law enforcement within the nature reserve will be undertaken through surveillance, monitoring and appropriate reaction in the event of an offence.

Due to its small size and the indirect protection afforded by the surrounding privately owned properties, safety and security are not major issues in the nature reserve. Despite this, it is known that some poaching is taking place. For this reason, attention does need to be given to various conservation-related issues such as protection of the Wattled Cranes, poaching, monitoring and arson fires.

Management must therefore initiate and implement a strategy that, not only develops in-house procedures, but also ensures participation in all relevant local security forums and networks. The Ezemvelo Board: Biodiversity Conservation Operations: Conservation Management Corporate Policy No. 2.10 (State Security Service Activities within Board Areas) applies (Appendix D – Ezemvelo Corporate Policies [Norms and Standards]).

6.3 Stakeholder engagement

Constructive relationships with adjacent landowners and communities are an important aspect of the effective conservation of protected areas. Stakeholder engagement should be aimed at developing a strong sense of partnership between the neighbours and communities around the nature reserve and its managers. The following guiding principles should be adhered to:

- Efforts should be made to ensure that the communities living around the nature reserve are aware of the role that it fulfils in biodiversity protection and the provision of ecosystem services to the region.

- Stakeholder engagement should be undertaken to engender a sense of ownership of the nature reserve, within the communities, and support for its biodiversity conservation objectives.

- A common understanding of the issues that affect both the nature reserve and the surrounding communities should be developed and efforts to resolve them should be undertaken cooperatively.

As the nature reserve does not have a continuous Ezemvelo management presence, participative management will be promoted with institutions and neighbouring landowners / communities that are willing to assist with conservation management in and around the nature reserve for the benefit of all in accordance with Ezemvelo reserve management guidelines provided by this IMP.

Neighbour relations and partnerships are guided by the Ezemvelo Board: Biodiversity Conservation Operations: Relationships Corporate Policies No. 4.1, 4.2 and 4.4 **(Appendix D** – Ezemvelo Corporate Policies [Norms and Standards]**)**.

Community involvement in the management of the nature reserve through collaboration in the following programmes and projects will be encouraged.

6.3.1 Local Board

The relatively small size of uMngeni Vlei Nature Reserve, coupled with the limited number of neighbours and the limited range of activities undertaken, suggest that the costs in terms of time and manpower to operate a Local Board would not be justified. However, because the nature reserve is managed from the UDP WHS, the Local Board of the latter will deal with the relevant matters.

At a local level, a Neighbouring Community Liaison Committee for uMngeni Vlei Nature Reserve must be formally constituted in terms of the draft Ezemvelo Neighbour Relations Policy Implementation Guide (2008). This will build on the existing informal agreement with neighbouring landowners. It will further promote collaboration and communication with the neighbouring community in terms of the implementation of this IMP. Responsibility for convening of meetings and the other tasks associated with the committee will lie with the Officer in Charge: uMkhomazi.

6.3.2 Community Levy Fund

As uMngeni Vlei Nature Reserve presently has no commercial activities or any other form of income, it cannot contribute to any form of community fund. This will be revised should the nature reserve ever start to generate income. In the event that it happens, the funds are to be administered through the Community Levy Fund and provided to communities for development needs as prescribed by Ezemvelo Board Policies No. 4.16 and No. 4.6. In the interim, if it is necessary to obtain funding for a project,

application may be made for a part of the 10% of the fund, which is available for external projects.

6.3.3 Land Claims

There are no land claims on the nature reserve.

6.3.4 Transfrontier Partnerships

uMngeni Vlei Nature Reserve is a core protected area within the MDTFCA protected area network but does not lie on an international frontier. uMngeni Vlei Nature Reserve and Ezemvelo will wherever possible, contribute to the outcomes of the 20-Year (2008 – 2028) Conservation and Development Strategy for the Maloti Drakensberg Transfrontier Conservation Area and its associated Five- Year Action Plan. All Transfrontier initiatives in line with the above strategy will be supported wherever possible.

The operational requirements for legal compliance and enforcement, and stakeholder engagement are set out in Table 6.1 below.

Table 6.1 Framework for legal compliance and law enforcement, and stakeholder engagement

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
LEGAL COMPLIANCE					
Develop formal agreements of access with neighbours adjacent to the nature reserve.	▪ Engage with neighbouring landowners through biodiversity Stewardship Programme & formalise right of ways or servitudes on the title deeds of the nature reserve	▪ Secured and agreed upon access to the nature reserve.	▪ Staff and interested groups are unable to access the nature reserve.	***Year 1***	Officer in Charge and Biodiversity Stewardship Unit
LAW ENFORCEMENT					
There is adequate law enforcement within the nature reserve and adjacent Stewardship sites.	▪ Develop an integrated security strategy for neighbouring Stewardship sites and the nature reserve.	▪ Development of an integrated security strategy.	▪ Frequent recovery of snares. ▪ Regular dog hunting. ▪ Arson fires. ▪ Recorded losses of game species. ▪ Recorded losses of known rare and endangered plant species. ▪ Lack of field ranger outpost's. ▪ Recorded loss of livestock, farm infrastructure.	***Year 2***	Officer in Charge, District Conservation officer and Adjacent Stewardship site Landowners
	▪ Ensure that staff are equipped and trained to undertake patrols within the nature reserve& surrounding stewardship sties.(see table 6.9 – Human Resources) ▪ Implement a programme of patrols of the nature reserve and neighbouring stewardship properties. ▪ Investigate the feasibility of a field ranger outpost on surrounding stewardship sites as a long term goal (see table 6.9 - Infrastructure).	▪ Regular patrols covering the full extent of the nature reserve. ▪ Prosecution of any offender caught committing an offence. ▪ Field ranger outposts on surrounding properties.		***Ongoing***	Officer in Charge and Adjacent Stewardship site Landowners

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
STAKEHOLDER ENGAGEMENT					
Constructive community involvement in the nature reserve's management through an effectively functioning Community Liaison forum.	▪ Formalize relations with the nature reserve's stakeholders through the establishment of a Community Liaison Forum ▪ Establish a dedicated management forum for surrounding stewardship site landowners and the nature reserves Management. ▪ Undertake to re-vitalise the nature reserve Local Board through regular meetings and active involvement in community-related management issues. ▪ Implement and annually reassess the Memorandum of Understanding between Ezemvelo and the relevant landowners who annually assist the nature reserve by providing cattle to graze the reserve according to the Grazing Management Plan (see Table 6.8 – Wildlife Management). ▪ Develop and maintain a stakeholder register for the nature reserve.	▪ A continuous and active relationship between the local community, stakeholders and the nature reserve management team. ▪ A dedicated forum between adjacent Stewardship site Landowners and the nature reserves management team. ▪ The nature reserve Local Board is up to date with current information about the nature reserve and surrounding Stewardship sites. ▪ Stakeholders adhere to the Memorandum of agreement of grazing. ▪ Detailed information of stakeholders and their contact details.	▪ The nature reserve management team and stakeholders does not collaborate with each other. ▪ Inability to maintain a progressive relationship with stakeholders. ▪ Lack of regular meetings and community dissatisfaction with the nature reserve. ▪ Breech in the Memorandum of Agreement of Grazing between the management team and associated stakeholders. ▪ Inability to contact stakeholders	***Ongoing***	Officer in Charge
Establish and maintain networks with other organizations that could jointly contribute to the achievement of the nature reserves objectives.	▪ Identify possible co-learning opportunities with various relevant institutions & partner organizations (e.g. EWT, Birdlife, WWF, Working for Wetlands, Mondi Wetlands Programme, DUCT, which will help empower the nature reserves management & foster collaboration.	▪ Relevant external organisations are kept in contact frequently in-order to empower the nature reserve management team ▪ Working relationships with external partners are established & maintained.	▪ Inability to meet the learning outcomes and opportunities of the nature reserve. ▪ Unclear understanding of the functioning of the nature reserve.	***Ongoing***	Officer in Charge

Facilitate research and partnerships with heritage and educational institutions.	▪ Develop a priority list of research needs and communicate it with potential research institutions. ▪ Assess and monitor research requests based on agreed research needs.	▪ Process applications for research projects. ▪ Priority list of research requirements for the nature reserve and surrounding stewardship sites.	▪ Lack of understanding of natural resources within the nature reserve. ▪ Research does not address or guide management issues.	***Year 3***	Ecological Advice Unit

6.4 Buffer zone protection and regional management

6.4.1 Protected area expansion and buffer zone management

In terms of Ezemvelo KZN Wildlife's protected area expansion strategy, it has identified a number of areas as priorities for protected area expansion around the nature reserve. In order to safeguard the biodiversity within the nature reserve and to counter any threatening processes or edge effects, suitable buffer zones and appropriate land uses in these zones should be identified. Appropriate actions may then be taken to secure these buffer zones through protected area expansion mechanisms and local planning tools, as described in Section 6.4.2 below. In ensuring the protection of its biodiversity, the following guiding principles will be adopted in terms of protected area expansion and buffer zone management:

- If under threat, efforts must be made to formally protect the areas of critical habitat, located outside of the nature reserve.
- Threatening processes and edge effects on the nature reserve's boundary and beyond it must be identified.
- Appropriate actions must be taken to manage threatening processes and edge effects on the nature reserve's boundary and beyond it.

6.4.2 Local and regional planning

Opportunities may arise that will enable the establishment of new formally protected areas or other conservation management areas on land bordering or in vicinity of the nature reserve in collaboration and co-operation with the relevant communities and landowners. This would contribute to the MDTP conservation and development objectives through more effective biodiversity conservation and mountain catchment management. Indirectly, new eco-cultural tourism opportunities, with the resulting socio-economic benefits, could develop.

All Ezemvelo staff associated with the nature reserve should remain sensitive to these opportunities and be ready to engage with the relevant role-players, especially the members of the Biodiversity Stewardship Programme, assisting them with the most appropriate options for establishing conservation areas. This may be in the form of conservancies, private or local authority protected areas, and community conserved areas, contractual protected areas or even incorporation of land into the nature reserve and in so doing increasing the extent of core-protected areas within the MDTP. Alignment with the municipal IDP must also be actively sought, to ensure appropriate land use on the borders of the nature reserve.

The following are priority actions in this regard:

- An extension of a conservation area to incorporate all of the headwaters of the uMngeni River above the nature reserve. In order

of priority, the properties to be considered are those marked FP37 7649 and the remainder of Woodhouse No 2 6871 on Map Sheet 2929 BD.

- To ensure that the integrity of the hydraulic control (the "Keypoint" in Begg, 1989) of the wetland remains intact and, if possible, to incorporate it into the nature reserve.

- Areas that adjoin the nature reserve have been identified as priority conservation areas in terms of the MDTP and / or would contribute to developing a buffer area surrounding the nature reserve. In the case of failure to acquire the two properties listed above, attention should be focused on developing them as buffers.

It is important, in managing the buffer areas around the nature reserve, that Ezemvelo KZN Wildlife work with local government authorities to ensure that their land use planning considers the biodiversity conservation imperatives of uMngeni Vlei nature reserve. In this regard it is necessary to ensure that buffer zone considerations are captured in planning tools such as IDPs and SDFs. In developing relationships with the local and district municipality, Ezemvelo KZN Wildlife will adhere to the following guiding principles:

- Relationships with local government and other provincial and national departments will be developed in the spirit of cooperative governance.

- Ezemvelo KZN Wildlife will endeavour to assist the local and district municipality in determining appropriate land uses and development strategies in the areas surrounding the nature reserve.

Ezemvelo KZN Wildlife will endeavour to align its plans and strategies with the programmes and strategies of the local and district municipality, where appropriate.

The detailed operational requirements for buffer zone protection and regional management are set out in Table 6.2 below.

Table 6.2 Framework for buffer zone protection and regional management

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
PROTECTED AREA EXPANSION					
Securing the plateau and headwaters of the uMngeni River as an ecological entity that supports the integrity of the nature reserve through biodiversity stewardship.	▪ Determine the ecological impacts and edge effects that may influence the ecology of the area surrounding the nature reserve on its boundary. ▪ Prioritise the plateau area and secure its protection through the Biodiversity stewardship program. ▪ Incorporate the fire & grazing management needs of surrounding Stewardship sites into a co-ordinated plan that treats the greater plateau area as a whole.	▪ Identification of threatening processes that may jeopardise the ecological integrity of the nature reserve. ▪ Formal protection of the plateau area through the Biodiversity Stewardship Unit. ▪ Incorporation of fire and grazing management needs to that of the surrounding Stewardship sites.	▪ Edge effects such as invasive plant encroachment along the nature reserve's boundary. ▪ Not securing larger scale ecological processes. ▪ Management interventions are not aligned to that of surrounding stewardship sites.	***Year 2***	Ecological Advice with Biodiversity Stewardship Unit.
Coordinate management activities and the use of resources between the nature reserve and the surrounding biodiversity stewardship sites.	▪ Annually explore and investigate opportunities to broaden conservation-sensitive land use in and around the nature reserve through Biodiversity Stewardship Programmes. ▪ Integrate management activities of the nature reserve with these of the surrounding stewardship sites and vice versa.	▪ Private land adjacent to the nature reserve is incorporated into Biodiversity Stewardship Programmes. ▪ Alignment of activities of the nature reserve with that of surrounding Stewardship sites.	▪ Priority lands are not incorporated into the Biodiversity Stewardship Unit. ▪ Inconsistency in management approaches between the nature reserve and surrounding Stewardship sites.	***Year 2***	Officer in Charge with Biodiversity Stewardship Unit and Ecological Advice.

LOCAL AND REGIONAL PLANNING					
Align the nature reserve and surrounding expansion area with the municipal and regional planning documents.	▪ Make inputs into the development of local and district municipal IDPs and SDFs in an effort to promote compatible land uses around the nature reserve and its priority expansion land's buffer zone.	▪ Adoption of environmentally appropriate land uses in IDPs and SDFs in the areas immediately surrounding the nature reserve and priority expansion areas. ▪ Retention of existing low impact land uses in the areas immediately surrounding the nature reserve and its priority expansion area.	▪ Identification/approval of environmentally harmful land uses on the boundaries of the nature reserve and priority expansion area.	***Annually***	Planning Unit with assistance of Planning Committee

6.5 Visitor management

6.5.1 Visitor activities

There are no plans for eco-cultural tourism development within uMngeni Vlei nature reserve during the five year period. It is recommended that no such plans be made until the Wattled Crane population has stabilised at the target number. It is to be noted that there is potential for day visitor trips into the nature reserve. However, care must be taken that the presence of the visitors does not compromise the biodiversity conservation objectives in any way.

Where neighbours or special interest communities are to be provided with controlled access to the nature reserve, it must be in accordance with the Ezemvelo Board: Biodiversity Conservation Operations: Co-management Policy No. 3.5 [Neighbours' Access to Board Protected Areas] (Appendix D – Ezemvelo Corporate Policies [Norms and Standards]).

The following guiding principles should be adhered to in the future if the Wattled Crane population does increase to a satisfied number:

- Visitor activities within the nature reserve and expansion areas must be appropriate to the values and purpose for which it has been proclaimed and must not threaten its biodiversity or ecological function.
- In developing visitor infrastructure, requirements for environmental authorisation must be considered and adhered to.
- Visitor activities should be developed to generate appreciation and support for the biodiversity and conservation efforts underway in the nature reserve and expansion areas.

6.5.2 Environmental interpretation and education

Due to its small size, difficulty of access, and the particular emphasis on Wattled Crane conservation, the nature reserve will not be considered for any development in relation to environmental education. Instead, use will be made of nearby Kamberg nature reserve which is larger, easily accessible and which has many features in common with uMngeni Vlei Nature Reserve.

It is, however, of great significance to create an understanding and appreciation of the value of protecting this catchment area of the uMngeni River among the relevant authorities and regional stakeholders and public. This will assist in ensuring the integrity of uMngeni Vlei Nature Reserve and possible expansion of the nature reserve.

The detailed operational requirements for visitor management development and environmental interpretation and education are set out in Table 6.3 below.

Table 6.3 Framework for visitor management

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
VISITOR MANAGEMENT					
Preparation of an assessment of potential visitor activities and supporting infrastructure.	▪ Identify the activities that could be offered to visitors to the reserve and expansion area. ▪ Develop a map, outlining the location of infrastructure, including walking trails and hides, within the context of the nature reserves' zonation plan.	▪ An assessment of what visitor activities and supporting infrastructure could be developed at the reserve and expansion area.	▪ *Ad hoc* development of visitor infrastructure within the nature reserve and expansion area.	*Year 2*	
	▪ In accordance with the assessment and map, construct any infrastructure required to support visitor activities.	▪ Provision of supporting infrastructure for visitor activities.	▪ A lack of utilisation of the reserves for environmental education opportunities.	*Year 5*	
ENVIRONMENTAL INTERPRETATION AND EDUCATION					
Promote public appreciation of the values of the nature reserve and is various resources.	▪ Focus on environmental and education amongst the nature reserve's neighbouring communities. ▪ Develop a professionally produced PowerPoint presentation on the economic and natural heritage value and significance of uMngeni Vlei nature reserve as Wetland of International Importance that can be presented to be decision-makers / planners at relevant authorities, stakeholders and senior learners /students.	▪ A power point presentation to assist with planning and budgeting for the nature reserve.	▪ Absence of an effective environmental education program.	***Year 3***	Community Conservation Office

6.6 Conservation management

The management philosophy to be followed is one of adaptive management. This includes setting conservation targets, implementing management actions, monitoring progress towards achievement of these targets, and adapting the management strategy accordingly. A participatory and team-based approach is to be followed. The principle of sustainable use of natural resources is implicit in the philosophy.

Natural resource management will aim to conserve the valuable biodiversity, especially that of the important Drakensberg Alpine Centre, through addressing threats and ensuring the maintenance and/or re-instatement of the ecological processes that are considered the main determinants of ecosystem structure and function. Where these processes or regulatory mechanisms have been disrupted and cannot be re-instated, management should attempt to simulate their effects, otherwise management intervention in the system should be minimized. In particular, the function of sustained water delivery is paramount.

As the key conservation objectives for uMngeni Vlei Nature Reserve relate primarily to Wattled Cranes, maintenance of biodiversity at all possible levels and the sustained yield of high quality water, the primary management activities (or interventions) involve fire, grazing by large herbivores, and soil retention. Control of alien plant species is also a management activity, which is necessary but fortunately, the infestations are not very serious and therefore require regular but not significant management input.

Management will implement a system of planned controlled burns and a variety of grazing pressures in order to achieve the above objectives. Such action will create diversity in the vegetation and so will both provide key habitat for the cranes while also ensuring the conservation of biodiversity more generally. Other important activities requiring lesser input include the control of activities such as illegal hunting and plant collecting, as well as wildlife management through population control.

Implicit within the biodiversity conservation management activities are requirements for monitoring of all relevant species, systems, and processes and, perhaps, original research. The findings are to be used to direct the management strategies and planning processes.

6.6.1 Grazing and fire management

Grazing management must be carefully considered in conjunction with fire management, as the two are heavily inter-related and influence each other. In view of the envisaged grazing management, utilising neighbouring landowners' domestic stock, a grazing management programme will be appropriately updated for the five year period and implementation monitored.

This grazing intervention with domestic stock will take place in accordance with a five year, uMngeni Vlei Nature Reserve Domestic Stock Grazing Management Programme which in place and approved by the NRPC in collaboration with the relevant neighbouring landowners and in terms of the Memorandum of Understanding that will be drawn up with these landowners.

In implementing grazing within the nature reserve and expansion areas, the following guiding principles should be adhered to:

- Grazing must be managed to allow the recover of desirable perennial grass and non-grass species, which requires periodic periods of total rest during the growing season.
- Resting regime must be aimed at providing a periodic full growing season's rest – from first rain to first frost.
- Fire should be used as a management tool and high density, non-selective grazing applied, post-burning.
- Overall a conservation approach to the use of livestock must be taken – this requires an overall low stocking rate for the property.

The following specific grazing management recommendations should be adhered to:

- The proposed long term stocking rate for conservation farming should not exceed.
- Animals should preferably be run in large herds in order to affect a good clean graze and minimise selective grazing.
- Resting is more important than time of burning or rate of defoliation and an effective rest period constitute a full growing season i.e. from the first rain to the first frost. A camp or block is normally rested before it is burned as the rest buffers the reduction in production due to the deleterious effect of the fire.
- At least 20-30 percent of sourveld grazing should be rested for a full growing season each year. This amounts to a full growing seasons rest, at a rate of once every three to four years.

Grazing management plans for the properties in the expansion area will be updated in Appendix I as properties are included within the broader expansion area.

The fire and grazing management plan is currently being reviewed by the park ecologist in conjunction with the biodiversity stewardship unit. All amendments and changes will take place in the fire and grazing management plan. These plans will be added to the management plan of the nature reserve as appendices.

Fire management

Fire plays an important role in the ecological dynamics of grasslands and wetlands, and has important effects on vegetation composition, primary productivity and nutrient cycling. In developing burning and fire management strategies for the nature reserve, the following guiding principles should be adhered to:

- Burning should be undertaken in such a way that it maintains spatial and temporal heterogeneity within the landscape.
- A patch mosaic of burnt and un-burnt areas should be maintained.
- The burning of areas should be undertaken in such a way that promotes patchy burns (i.e. within the block being burnt, some patches will remain un-burnt rather than aiming for a complete burn).
- Burning must be undertaken with due consideration to the biodiversity conservation requirements of the nature reserve and expansion areas, and the need to protect rare and endangered species.
- Burning and fire management must be undertaken in a safe manner that is legally compliant with the National Veld and Forest Fire Act (No.101 of 1998).

Grazing and burning needs to be integrated as ecological management tools. Fire can have a significant deleterious effect on grassland as it destroys the growing point of the grass tiller which leads to a temporary reduction in grass growing vigour. Burning can reduce the total production of dry matter by up to 30%, which is why it is recommended that burning only takes place in the winter following the a season's rest. A full growing season rest will enhance the growing vigour of the grass plant which would then cancel out the effect of burning. Burning too early leads to unnecessary exposure of the bare soil surface, burning too late results in a drastic defoliation of new growth and burning too frequently reduces the organic matter necessary to ameliorate infiltration, the soil microbes that drive the nutrient cycles and basal cover, which reduces run-off and increases soil erosion. In order to achieve an effective burn to remove moribund vegetation a cool burn needs to be applied. This should take the form of a head fire which will remove standing material without being excessively deleterious to the plants' growth points. Cool fires can be achieved under the following set of circumstances:

- Sufficient fuel available > 1,500 kg/ha grass.
- Grass is wilted to 20% moisture.
- Air temperature below 20°C.
- Relative humidity higher than 50%.

- Steady wind present to propagate an even head fire.
- Preferably after first spring rains, within the 1 August – 30 September window period, but before new growth has commenced.

In terms of Section 17 of the National Veld and Forest Fires Act, a landowner (in this case the nature reserve) must have such equipment, protective clothing and trained personnel for extinguishing fires as may be prescribed or, if not prescribed, reasonably required in the circumstances. It is therefore necessary to consider the following in relation to fire fighting:

- The need to maintain a system of firebreaks to enable the management of controlled burns and to effectively fight wildfires.
- The size of the nature reserve and the requirements necessary to access different areas in the event of a wildfire. This relates to both roads and vehicles.
- The number of personnel necessary to effectively fight wildfires.
- The equipment necessary to effectively fight wildfires. This would include:
    - Water tankers and pressure pumps mounted on or pulled behind tractors.
    - Fire fighting equipment mounted on the backs of vehicles.
    - Backpack sprayers.
    - Beaters.
    - Safety equipment for personnel involved in fire fighting.

The manager of the nature reserve must become a member of the Fire Protection Association in terms of the National Veld and Forest Fire Act. uMngeni Vlei nature reserve must therefore become a member of the local Fire Protection Association and maintain this membership.

The detailed operational requirements for fire management are set out in Table 6.4 below.

Table 6.4 Framework for conservation management –Grazing and Fire Management

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
GRAZING MANAGEMENT					
Grazing management using livestock is implemented as an ecological management tool.	▪ Stocking rates are maintained below commercial stocking rates. ▪ Provision of adequate rest following grazing of a particular area. ▪ Efforts are made to ensure grazing of homogenous ecological units.	▪ Stocking rates are capped at a maximum amount according to the grazing memorandum of understanding. ▪ A full growing season's rest applied to each part of the site at least every four years. ▪ Grazing in accordance with the Veld Condition Assessment report.	▪ Decline in veld condition. ▪ Changes in species composition that favour annual species over perennial. ▪ Selective grazing.		Officer in Charge and Ecological Advice Unit
Develop an understanding of the ecological implications of the use of livestock in managing uMngeni Vlei nature reserve	▪ Update and maintain the previous Domestic Stock Grazing Management Programme for the nature reserve in collaboration with the landowners and in terms of the Memorandum of Understanding between the landowners and Ezemvelo. ▪ Implement the recommendations of the Veld Condition Assessment report. ▪ Review the Veld Condition Assessment report for the nature reserve and surrounding biodiversity stewardship sites every 5 years.	▪ An effective and up to date Domestic Stock Grazing Management Programme. ▪ Recommendations of the Veld Condition Assessment Report are incorporated by management interventions.	▪ Breech of agreement regarding the domestic stock grazing management programme between relevant parties. ▪ Grazing stock rates that impact negatively on the nature reserve and surrounding stewardship sites.		

FIRE MANAGEMENT					
Development an integrated Fire Management Plan for the nature reserve& surrounding Stewardship sites.	▪ Develop an Annual Integrated Burning Plan for the nature reserve and surrounding stewardship sites at the annual UDP WHS Fire Workshop Planning, taking into account the requirements of the threatened species, and ensuring an integrated approach with the Grazing Management Programme. ▪ Annually reassess the year's burns and up date appropriately. ▪ Alignment of the Fire Management Plan with that of the Domestic Stock Grazing Management Programme.	▪ Develop an integrated fire management plan for the nature reserve and surrounding stewardship sites. ▪ The fire management plan should take in the requirements of threatened species and grazing management. ▪ An up to date fire management plan for the nature reserve.	▪ Burning regimes that result in ecological degradation of the nature reserve. ▪ Unpredictable and spontaneous veld fires. ▪ Inconsistent burns between the nature reserve and surrounding stewardship sites.	***Year 1***	Officer in Charge and Ecological Advice Unit
Adequate fire safety within the nature reserve is ensured through partnerships of neighbouring stewardship sites.	▪ Maintain a system of firebreaks within the nature reserve in compliance with National Veld and Fire Protection Act and in collaboration with neighbouring stewardship sites and neighbours. ▪ Maintain membership of the local Fire Protection Association annually. ▪ Ensure that staffs are trained and that adequate fire fighting equipment is available within the nature reserve (see table 6.9 Human resource).	▪ Enable the nature reserve to have efficient firebreaks in place. ▪ Compliance with the National Veld and Fire Protection Act. ▪ A member of the Local Fire protection Association. ▪ Staffs are capable of handling situations regarding fires appropriately.	▪ Inadequate fire breaks. ▪ Wildfires spreading from the nature reserve to neighbouring properties. ▪ Management intervention's does not conform to the National veld and Fire Protection Act. ▪ Inadequate personnel, equipment or an inability to communicate effectively in fighting fires.	***Ongoing***	Officer in Charge

6.6.2 Invasive plant control

A listed invasive species means any species, which is listed in terms of section 70 of the Biodiversity Act, whose establishment and spread occurs outside of its natural distribution range. Such plants are considered to be a serious threat to the ecological functioning of natural systems and to water production, and must be strictly controlled. In undertaking invasive plant control, the following guiding principles will be adhered to:

- Invasive plant control will require an ongoing programme that prioritizes key infestations along water courses, drainage lines and upper catchment areas.
- Initial clearing efforts should focus on containing infestations that are most likely to spread into new areas.
- All follow-up requirements must be strictly adhered to otherwise the problem will be exacerbated.
- Strategic partnerships and poverty relief programmes such as the Working for Water programme should be utilized in controlling invasive plants.

An ongoing time-bound programme to effectively control these alien weeds and invader plants within uMngeni Vlei Nature Reserve must be developed and maintained. State poverty relief programmes such as “Working for Water”, “Working on Fire” and “Working for Wetlands” should be used to full effect to complement the nature reserve budget for this management task.

6.6.3 Soil erosion control

Soil erosion is a process, which takes place naturally in the nature reserve. However, in the case of human-induced and / or accelerated soil erosion, appropriate remedial management action must be taken.

Human-induced and / or accelerated soil erosion in the nature reserve is primarily the result of poor alignment and management of footpaths and vehicle tracks as well as the creation of paths by livestock. Areas that have been cleared of invasive alien vegetation are also at risk and must be rehabilitated as appropriate. If a system of paths or trails is ever to be set up it must be effectively designed in a manner that will require minimal maintenance and to have the lowest possible risk of causing soil erosion.

In addressing soil erosion, the following guiding principles should be adhered to:

- Areas impacted by soil erosion should be stabilized and re-vegetated with indigenous plant species to prevent the spread of listed invasive plant species.

- Areas susceptible to soil erosion, or showing early signs of soil erosion such as loss of vegetation cover, must be managed to prevent soil erosion.

Soil erosion control and rehabilitation measures may include the need to re-vegetate disturbed areas. A detailed assessment of the nature and extent of soil erosion within the nature reserve will determine the appropriate responses required and the costs associated with them.

Extensive sites of existing or potential aggravated soil erosion must be mapped, and the rehabilitation prioritized annually.

Rehabilitation of soil erosion sites should follow the guidelines presented by Coetzee (2005) and the Ezemvelo Trails Manual (See Appendix D, Item 7).

The detailed operational requirements for invasive plant and soil erosion control are set out in Table 6.5 below.

Table 6.5 Framework for conservation management – invasive plant control, soil erosion control and habitat restoration

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
INVASIVE PLANT CONTROL					
Reducing and controlling the levels of invasive plant infestations in the nature reserve as well as surrounding stewardship sites.	▪ Maintain the Invasive Species Control Plan in accordance with the Biodiversity Act. ▪ Outline the measures required to monitor, control and eradicate the listed invasive species. ▪ Continuous evaluation during ranger patrols. ▪ Monitor for the presence of new emerging weeds & encroaching indigenous plants e.g. *Leucosidea sericea* and *Glyceria maxima* in uMngeni Vlei Nature Reserve and around the surrounding plateau. When detected, the eradication of these species must be regarded as a priority and be included in the uMngeni Vlei Nature Reserve invasive alien vegetation control programme. ▪ Develop a detailed inventory of invasive and alien plants within the nature reserve and surrounding Stewardship sites.	▪ Invasive Species Control Plan conforms to the Biodiversity Act. ▪ Monitoring reports and records of control. ▪ Minimal level of invasive plant species which may effect the growth of threatened species. ▪ Levels of Invasive species to be at maintenance level. ▪ Reduced levels of *Leucosidea sericea*and *Glyceria maxima*around the nature reserve and plateau.	▪ Invasive species Control Plan has loop holes. ▪ Unrecorded invasive species. ▪ Further spread of existing listed invasive species. ▪ New infestations of listed invasive species. ▪ Further reduction in the number of Wattled Crane species if *Glyceria Maxima* invades the open water in the wetland. ▪ Budget becomes inadequate for the Invasive plant species management plan to operate efficiently.	***Year 1***	Officer in Charge, Field Rangers, Ecological Advice Unit and Alien Plant Control Unit

Development of an Invasive Species Control Plan for the biodiversity stewardship sites	▪ Develop an Invasive species control plan for surrounding stewardship sites. ▪ Monitor the effectiveness of alien plant operations. ▪ Secure future funding for invasive plant control (see Table 6.9 – Financial Resources) ▪ Ensure the invasive species control plan is in compliance with the biodiversity Act for the stewardship sites.	▪ Implementation of the Invasive Species Control Plan for the surrounding Stewardship sites. ▪ Reports and records of monitoring programme. ▪ Adequate funding for the removal and maintenance of Invasive species. ▪ Control plan conforms to the biodiversity act for stewardship sites.	▪ Increasing numbers of invasive species. ▪ Unaccountable issues regarding invasive species. ▪ In-adequate funding for the removal of invasive species. ▪ Control plan does not comply with the Biodiversity Act for stewardship sites.	***Year 1***	Stewardship sites land owners, Biodiversity Stewardship Unit, Field Rangers, Ecological Advice Unit
Mapping &prioritisation of invasive species infestations on Stewardship sites.	▪ Map all invasive and alien plant infestations on stewardship sites ▪ Identify the sources of possible alien species spread into the reserve from neighbouring properties. ▪ Map and prioritize the clearing of these areas, with particular focus on uMngeni river banks.	▪ Map indicating location of invasive and alien plants in surrounding stewardship sites. ▪ Further prevention of inflow of invasive and alien species from neighbouring areas. ▪ Headwaters of the uMngeni River are clear of invasive alien species. ▪ Priority areas are clear of alien and invasive species.	▪ Influx of alien species from surrounding properties. ▪ Discovery of alien and invasive species that are not mapped.		Relevant landowners & WWF Water Balance Programme
SOIL EROSION CONTROL AND HABITAT RESTORATION					
Rehabilitation of areas that have been affected by soil erosion as a result of grazing.	▪ Ensure cattle grazing are rotated during grazing periods as per grazing agreements (see Table 6.6 – Alien Animal Management).	▪ Control and reduction of soil erosion caused by previous overgrazing.	▪ Further erosion of impacted areas. ▪ Development of tracks, path-ways, gulleys and donga's.	***Ongoing***	Officer in Charge

Implementation of procedures to identify, and manage areas that have are likely to be significantly impacted by soil erosion.	▪ Once an area of accelerated soil erosion has been identified, an approach will be developed and implemented to rehabilitate the area	▪ Soil erosion problems are identified on the nature reserve& surrounding stewardship sites. ▪ Implementation of accelerated soil erosion procedures in areas identified.	▪ Areas experiencing erosion not identified. ▪ Further erosion of impacted areas.	***Ongoing***	Officer in Charge
Ensure the effective management of wetlands in the nature reserve and surrounding stewardship sites.	▪ Conduct WETHEALTH assessments for the nature reserve and surrounding wetlands on stewardship sites. ▪ Maintain or improve WETHEALTH scores for wetland sites. ▪ Conduct assessments as to whether the open water in the Vlei of the nature reserve has changed. ▪ Identify surrounding land uses and management practices that could have impacts on stewardship site wetlands (refer to WETHEALTH reports).	▪ Knowledge of the condition of wetlands and associated recommendations. ▪ Monitoring records of wetlands. ▪ Knowledge of the condition of water in the Vlei. ▪ Land uses surrounding wetlands in stewardship sites and how they affect the wetlands themselves.	▪ Unknown condition of wetlands and recommendations for the most effective management interventions. ▪ Deterioration of wetlands on surrounding stewardship sites. ▪ Land use surrounding wetlands in stewardship sites that may effect the vital functioning of wetlands.	***Ongoing***	Stewardship site Landowners, Biodiversity Stewardship unit, Associated external organisations
Ensure adequate rehabilitation of Wetlands in the surrounding stewardship sites.	▪ Rehabilitation of priority wetland areas in stewardship sites. ▪ Ensure wetland rehabilitation interventions are monitored and maintained ▪ Ensure wetland rehabilitation, aims at achieving its desired WETHEALTH score objectives. ▪ Implement a wetland monitoring system before and after rehabilitation has taken place. ▪ Enhance Wattled Crane nesting opportunities by creating artificial nesting habitats. ▪ Secure future funding opportunities for wetland rehabilitation on stewardship sites through the Springgrove Dam offset scheme (see Table 6.9 – Financial Resources)	▪ Priority wetlands in stewardship sites are rehabilitated. ▪ Records of the progress of rehabilitation interventions. ▪ WETHEALTH score objectives will be maintained. ▪ Increased nesting opportunities for Wattled Cranes in surrounding stewardship sites. ▪ Future funding to carry out rehabilitation interventions on wetlands.	▪ Deterioration of wetlands on surrounding stewardship sites. ▪ WTHEALTH score objectives decreases. ▪ Decrease in nesting opportunities leads t a reduction in the number of Wattled Cranes. ▪ Inadequate funding to carry out rehabilitation interventions on wetlands.	***Ongoing***	Stewardship site Landowners, Biodiversity Stewardship unit, Associated external organisations

6.6.4 Alien animal control

Alien animal species can threaten the ecological, genetic or natural aesthetic integrity of uMngeni Vlei Nature Reserve and can be vectors for the spread of diseases. In dealing with the control of alien animals, procedures to deal with animals that stray into the nature reserve should be developed. In addressing alien animal control, the following guiding principles should be adhered to:

- Domestic animals such as horses and donkeys will only be allowed if kept at the nature reserve for official purposes such as patrolling.
- Feral animal species that pose a threat to indigenous species will be destroyed (as humanely as practicably possible with due regard to the tourist experience).
- Animals that become a danger or excessive nuisance to persons and property due to either habituation or aberrant behavior may be destroyed humanely or captured and removed from uMngeni Vlei nature reserve. This also applies to animals that escape or leave and return periodically and cause damage outside.

To minimize the need to control problem animals, pro-active and preventative measures (*e.g.* fencing) should be considered a priority, while affected visitors or neighbours need to be informed appropriately regarding the relevant animal behavior and / or dangers. Where the only solution to the problem lies in destroying or capturing animals, the methods decided upon must be with due regard for possible public criticism.

When dealing with uMngeni Vlei Nature Reserve animals that are causing damage to neighbours, the matter should be dealt with according to the principles of the National Policy and Strategy for Problem Animal Control in South Africa (Appendix A, Item 8). If neighbouring landowners contact the uMngeni Vlei Nature Reserve Officer in Chargetimorously and are able to demonstrate clearly that animals originating from the nature reserve are causing them damage, the Officer in Charge must attempt to capture or destroy that animal according best-practice guidelines for this type of control work.

Any control actions in terms of Red Data Book species need authorization of the NRPC.

Rabid animals must be destroyed as soon as they are detected.

6.6.6 Resource utilisation

It is an accepted tenet of biodiversity conservation in South Africa and KwaZulu-Natal that the sustainable use of natural and biological resources may be undertaken within a protected area, provided that it does not compromise its ecological functioning or biodiversity conservation imperatives. Accordingly, applications for the extractive use of resources

within the nature reserve will be considered, based on the following guiding principles:

- The context of the nature reserve's zonation plan, in particular the ecological sensitivity of particular areas.
- The benefits that such resource use will provide to the neighbouring communities around the nature reserve.
- The equitable access of members of the neighbouring communities to such resource use opportunities.
- Whether activities such as the collection of biological materials/samples are for legitimate scientific purposes, are from bone fide South African research institutions and are undertaken legally and in accordance with relevant Ezemvelo KZN Wildlife policies.
- The ability of the nature reserve's managers to effectively control and monitor such resource use.

Ezemvelo will consider requests for extractive use of plant and animal resources provided that the natural and cultural heritage conservation management objectives are not compromised, and there is no long-term detrimental effect on the ecological and managerial functioning of the nature reserve.

Illegal activities within uMngeni Vlei Nature Reserve and illegal utilization of natural resources are realities that are ever- present. In addition, it must be assumed that such threats have the potential to increase significantly.

It is policy to maintain an ongoing vigilance through cost-effective surveillance monitoring programmes and reaction capabilities. It is noted that the neighbours are potentially of key importance in this regard. To further assist in maintaining the ecological integrity of uMngeni Vlei Nature Reserve, it is essential that the situation be regularly and critically recorded and assessed in terms of a well-kept statistical incident register (See also monitoring and Evaluation under Par. 7).

The main effort towards resolving illegal utilization of natural resources by communities for purposes of subsistence will be to create understanding and awareness through pro-active and reactive environmental awareness programmes. Management will however be ruthless with those that illegally utilize natural resources for commercial or other purposes.

The detailed operational requirements for alien animal control and resource utilisation are set out in Table 6.6 below.

6.6.6.1 Plants and Animals

Extractive resource use applications must be considered within the framework of the Ezemvelo Board: Biodiversity Conservation Operations: Resource-use Corporate Policies No. 3.12 to 3.18 (Appendix D – Ezemvelo Corporate Policies [Norms and Standards]).

The NRPC must evaluate applications according to accepted guidelines that ensure:

- sustainable and wise use of the resource,
- ecological and social acceptability,
- benefit to neighbouring communities,
- equitable access to the resource,
- that the transaction is within the conditions of the PFMA,
- that the harvesting operations are effectively controlled and monitored,
- a written agreement stipulating resource price and conditions of harvest, and
- Due consideration of alternatives.

6.6.6.2 Bioprospecting

Requests to collect biological material / samples from uMngeni Vlei nature reserve will only be considered in accordance with the Ezemvelo Board: Biodiversity Conservation Operations: Integrated Environmental Management Corporate Policy No. 2.15 (Appendix D – Ezemvelo Corporate Policies [Norms and Standards]) and in accordance with NEMBA chapter 6 (Bioprospecting, Access and Benefit Sharing).

Bioprospecting activities within the nature reserve must be closely monitored and regulated in terms of present environmental legislation.

Table 6.6 Framework for conservation management – alien animal control, grazing management and resource utilisation

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
ALIEN ANIMAL CONTROL					
Implementation of procedures to manage alien animals found within the nature reserve.	▪ Together with neighbouring communities, agree on the approach to dealing with stray livestock and domestic animals found in the nature reserve, particularly dogs, which may be used for illegal hunting. ▪ Analyse the entry points for formal dog hunts into the area and "soft target" sites. ▪ Monitor and record effectiveness of control measures and policies. ▪ Engage with EWT regarding their dog-hunting prevention project.	▪ Creation of cooperative structures between Ezemvelo KZN Wildlife, local communities and law enforcement officials. ▪ Control of any alien animals found within the nature reserve. ▪ Secure Entry points and areas that may be soft targets of entry. ▪ Records of incidents and actions taken to address incident. ▪ Assistance from EWT regarding dog hunting prevention.	▪ Uncontrolled access of domestic animals or livestock within the nature reserve. ▪ No relative control over alien animals although Control measures and policies in place. ▪ Incidents not reported or monitored. ▪ Illegal and unlawful entry into the nature reserve via areas known to be soft targets due to there location.	***Ongoing***	Officer in Charge and EWT
RESOURCE UTILISATION					
Determine the value of the Eco-system goods and services that uMngeni Vlei Nature Reserve and the surrounding Plateau contributes to.	▪ Initiate a study to identify and quantify the value of the ecosystem goods and services of uMngeni Vlei Nature Reserve and expansion areas.	▪ Concise knowledge of the value of goods and services that uMngeni Vlei Nature Reserve has to offer.	▪ Lack of understanding of the value of the goods and services contributed by the nature reserve.	***Year 4***	Resource Use Ecologist
If extractive resource use is undertaken, it is done legally and conforms to NEMBA Chapter 6, and the nature reserve's zonation plan.	▪ Consider, with relevant scientific and management staff request, for extractive resource use in accordance with relevant National and provincial Legislation, norms, standards and guidelines.	▪ An agreed upon approach to any extractive resource use. ▪ Approved resource use records	▪ Uncontrolled or unsustainable resource extraction ▪ Resource use not	***If required***	Officer in Charge and Resource Use Ecologist

	▪ If resource use is approved, communicate with neighbouring communities on the agreed approach to sustainable resource use in the nature reserve. ▪ Approved resource use is managed, monitored and reported. ▪ Ensure that resource use is in line with zonation of nature reserve.		monitored or reported.		
If bioprospecting is undertaken, it is done legally and conforms to NEMBA Act Nu 10 of 2004 Chapter 6, and the nature reserve's zonation plan.	▪ Only allow the collection of biological materials or samples if the appropriate permits or permission has been given in accordance with Ezemvelo KZN Wildlife policy and in accordance with national legislation.	▪ No illegal collection of biological material or samples.	▪ Illegal collection of biological material or samples.	***If required***	Officer in Charge and Resource Use Ecologist

6.6.7 Wildlife management

Management interventions related to indigenous wildlife will be limited to those that are for the purposes of safeguarding populations of rare and endangered species or to meet set conservation targets. Interventions may also be required for problem animal management. In addressing wildlife management, the following guiding principles should be adhered to:

- Wildlife management must be focussed primarily on protecting the ecological functioning of the nature reserve and meeting set provincial conservation targets for species and vegetation types.
- The introduction of indigenous species into the nature reserve must be undertaken in accordance with relevant Ezemvelo KZN Wildlife policies.
- Population management of wildlife species may be required to ensure that such species are not causing ecological degradation of the nature reserve.
- Animals that become a danger or excessive nuisance to persons and property due to either habituation or aberrant behaviour must be managed in accordance with relevant Ezemvelo KZN Wildlife policies.

Because of the relatively harsh climatic and environmental conditions that prevail at uMngeni Vlei Nature Reserve, most wildlife populations, from invertebrates to large ungulates, are self-regulatory. The vegetation of the nature reserve is therefore generally considered not to be over-utilized.

If ever any game introductions are to be considered, then only species known to have historically occurred in the nature reserve or its immediate surrounds will be permitted.

Minimum or no management intervention strategies will be applied with regard to indigenous wildlife populations except for any strategies that may be agreed to by the NRPC to safeguard populations of rare or endangered species, to meet the set conservation targets, or to meet the specific management guidelines detailed in this IMP.

uMngeniVlei Nature Reserve Annual Burning Plan must be integrated with the Grazing Management Programme.

6.6.8 Conservation targets

The KwaZulu-Natal systematic biodiversity plan identifies the provincial conservation targets. The conservation of uMngeni Vlei Nature Reserve contributes towards the achievement of a portion of some of these targets. Targets will continue to be updated as knowledge develops about the ecology of areas, connectivity between them, and other process requirements for ecosystems, communities and species. On this basis, the conservation targets should be viewed as a set of working hypotheses around which conservation planning and evaluation can take place. An

advantage of developing strategies around targets is that this process highlights critical knowledge deficits thus guiding future research.

6.6.8.1 Catchment management

The high Impendle Plateau on which the nature reserve is a significant water catchment area for the region and for the uMngeni River catchment area, in particular. In recognition of the importance of this resource for the sustained livelihoods of people in the region, it is essential that nature reserve management practices do not threaten sustained natural flow regimes of good quality water with low sediment loads.

It is important that water flow and quality are effectively monitored over the long-term and this must be included in uMngeni Vlei Nature Reserve's monitoring programme.

Table 6.7 Systematic biodiversity planning conservation targets to which uMngeni Vlei Nature Reserve contributes

Feature Name	Description	Percentageof target located within UVNR	Notes
Drakensberg Foothill Moist Grassland	Vegetation Type	0.5	Very small presence
Eastern Temperate Wetlands	Vegetation Type	3.1	Percentage of historic distribution
Drakensberg Wetlands	Vegetation Type	2.9	Percentage Of historic distribution
Poker Plant (*Kniphofia brachystachya)*	Plant	15.9	Percentage Of historic distribution
Short Flowered Red Hot Poker *(Kniphofia breviflora)*	Plant	4.8	Percentage Of historic distribution
Eremidium erectus	Grasshoper	7.0	Percentage Of historic distribution
Transvaaliana draconis	Grasshopper	18.0	Percentage Of historic distribution
Euonyma lymneaeformis	Molusc	2.6	Percentage Of historic distribution
Lepidochrysops pephredo	Butterfly	0.0	Target accounted for in other pseudo-species
Capys penningtoni	Butterfly	1.3	Percentage Of historic distribution
Chrysoritis oreas	Butterfly	1.2	Percentage Of historic distribution
Capys penningtoni	Butterfly	0.0	Target accounted for in other pseudo-species
Centrobolus tricolor	Millipede	0.8	Very small presence
Doratogonus montanus	Millipede	0.4	Very small presence
Spinotarsus triangulosus	Millipede	52.7	Percentage Of historic distribution
Bugeranus carunculatus	Ave	2.2	Percentage Of historic distribution
Anthropoides paradiseus	Ave	0.7	Very small presence
Bugeranus carunculatus	Ave	0.3	Very small presence

The detailed operational requirements for wildlife management and the achievement of conservation targets are set out in Table 6.8 below.

Table 6.8 Framework for conservation management – wildlife management and conservation targets

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
WILDLIFE MANAGEMENT					
Implement a strategy for the management of wildlife in the nature reserve in accordance with Ezemvelo KZN Wildlife policies.	▪ Implement the strategy in order to manage wildlife within the nature reserve in accordance with Ezemvelo norms and standards.	▪ An implemented strategy to manage wildlife present in the nature reserve.	▪ No records of management strategies to base future management on.	***Year 3***	Officer in Charge and Ecological Advice
	▪ Ensure that adequate population control measures are included in the strategy for the management of wildlife in the nature reserve.	▪ Control population numbers of species that are exceeding identified carrying capacities.	▪ Ecological degradation as a result of over-stocking of wildlife species	***Ongoing***	
Implementation of the strategy for problem animal control for the nature reserve and surrounding Stewardship sites.	▪ Implement the strategy for problem animal control. ▪ Records of all incidents reported and actions taken. ▪ Gain an understanding of landowner perceptions of the extent of problem animals ▪ Encourage research projects around problem animal control.	▪ An implemented strategy for problem animal control ▪ Records of incidents taken place and actions taken. ▪ Effective procedures and relationships with neighbours in dealing with problem animal control. ▪ Research and understanding of problem animals in and around the nature reserve.	▪ No records of incidents taking place. ▪ Frequent complaints from neighbours with no clear response. ▪ Unknown management interventions for problem animals.	***Year 1***	Officer in Charge and Biodiversity Stewardship Unit
Gain a better understanding of flora and fauna within the nature reserve and surrounding Stewardship sites.	▪ Conduct a full botanical and faunal inventory survey. ▪ Prioritise the survey for endangered and threatened species.	▪ Botanical inventory survey report on which to base management decisions. ▪ Faunal inventory report on which to base management decisions.	▪ Lack of knowledge regarding the composition of fauna and flora within the nature reserve.	***ongoing***	Officer in Charge and Resource Use Ecologist

Rare and endangered species management are undertaken at the highest level of Scientific Knowledge available.	▪ Manage rare and endangered species to the best knowledge available. ▪ Monitor the location and quantity of rare and endangered species throughout the management intervention process. ▪ Maintain the Wattled Crane and Oribi monitoring programme and correlate with the fire and grazing management plans. ▪ Ensure Wattled Crane and Oribi counts are conducted on stewardship sites. ▪ Successfully network with various non-governmental organizations to adapt management plans from these species. ▪ Consider optimal management interventions needed for Oribi.	▪ Continued effort to retain and improve the number of rare and endangered species. ▪ A record of wattled cranes and Oribi present in the nature reserve and neighbouring stewardship sites. ▪ Implementation of successful management plans. ▪ Alignment of Wattled Crane and Oribi monitoring programmes with fire and grazing management.	▪ Decline in rare and endangered species. ▪ Lack of knowledge of positive management regimes. ▪ Fire and grazing management plans being inconsistent with Wattled Crane and Oribi populations.	***Ongoing***	Officer in Charge with Ecological Advice Unit
CONSERVATION TARGETS					
Effective management of the plateau to ensure vital functioning of the wetland system in the nature reserve through protected area expansion.	▪ Initiation and implementation of stewardship agreements between surrounding neighbours and Ezemvelo KZN Wildlife	▪ Biodiversity stewardship agreements are developed for the buffer zone for the nature reserve.	▪ Gaps in the buffer zone around the nature reserve results in negative impacts on conservation targets.	***Year 1***	Officer in Charge, Biodiversity Stewardship Unit, WWF facilitator
Ensure the conservation targets of endangered and threatened species are met.	▪ Ensure all management interventions outlined in Table 6.8 – Wildlife Management is carried out to full capacity.	▪ Conservation targets are met.	▪ Decline in the number of endangered and threatened species.	***Ongoing***	Officer in Charge

6.7 Operational management

6.7.1 Financial and human resources

uMngeni Vlei Nature Reserve cannot be effectively managed without adequate sustained funding and sufficient human resources. In addressing the financial and human resource needs of the nature reserve, the following guiding principles should be adhered to:

- Adequate funding must be provided for the management of the nature reserve to ensure the protection of its biodiversity and cultural values and the continued provision of its ecosystem services.
- Adequate, properly trained and experienced staff must be employed at the nature reserve to undertake the operations required for its effective management.

6.7.1.1 Financial Resources

Capital and operational funding for uMngeni Vlei Nature Reserve is sourced primarily from the KwaZulu-Natal Provincial Government. There is no income from any form of commercial operation. In order to ensure that the management of the nature reserve is sustained over time it is necessary to develop a realistic five-year financial plan in order to secure the necessary funding on a year-to-year basis.

The value of ecosystem services that the nature reserve provides as well as the direct and indirect economic value of the nature reserve to the local and regional economy must be determined in order to market the nature reserve effectively, ensure continued government funding and where appropriate, attract additional funding from other sources.

6.7.1.2 Human Resources Capacity

The existing human resource structure and capacity are insufficient to meet uMngeni Vlei Nature Reserve management requirements, although neighbouring landowners are making important contributions in certain respects. The following management functions in particular are emphasised:

- nature reserve security including the control of illegal activities (poaching) within the nature reserve;
- Community liaison forum;
- Research and monitoring (staff may be shared with other nature reserves).

To effectively address the full spectrum of nature reserve management functions, an investigation must be undertaken and the outcome must inform the nature reserve Financial Plan.

6.7.2 Facilities and infrastructure

Any physical development or maintenance of infrastructure for management or eco-cultural tourism purposes must be undertaken cognisant of and in accordance with legal requirements and procedures regarding Environmental Impact and Cultural Resource Assessments. Placing infrastructure outside the boundaries should always be considered, where practical, as an option to reduce the amount of infrastructure within the nature reserve.

In order for uMngeni Vlei Nature Reserve to operate appropriately, adequate facilities and infrastructure need to be developed and maintained both for management and eco-cultural tourism purposes. In addressing facilities and infrastructure needs in the nature reserve, the following guiding principles will be adhered to:

- Facilities and infrastructure must be maintained to avoid any damage to the environment and ensure the safety of staff and visitors to the nature reserve.
- Facilities and infrastructure must be provided to ensure the effective management and operation of the nature reserve.
- Practical solutions to the provision of electricity should be sought at the nature reserve based on available renewable energy technologies.
- Facilities and infrastructure must be provided to support the eco-cultural tourism activities in the nature reserve.
- Any projects of this nature must also be recommended by the NRPC and be approved by the Ezemvelo Board's Development Committee.
- nature reserve management is responsible for uMngeni Vlei Nature Reserve infrastructure and must at all times ensure that it is maintained in a safe, sound, clean, serviceable and aesthetically acceptable condition and that it does not provide opportunity for establishment of invasive alien plant species.
- Any structures must as far as possible be harmonised with the surrounding environment and landscape character through appropriate siting, use of colour, building materials, landscaping and screening.

No new major physical development is, however envisaged for the nature reserve during the five year period. Only a few minor, mostly maintenance, projects will be undertaken.

The detailed operational requirements for financial and human resource, and facilities and infrastructure development and management are set out in Table 6.9 below.

Table 6.9 Framework for Research – financial and human resources, and facilities and infrastructure

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
FINANCIAL RESOURCES					
Ensure the annual plans of operation include detailed budgetary requirements.	▪ Detailed annual budgets must be prepared for each key performance area in the integrated management plan. ▪ Secure future funding to implement the ideal staff structure as determined by the review committee (see Table 6.9 – Human Resources). ▪ Secure future funding opportunities for wetland rehabilitation on stewardship sites through the Springgrove Dam offset scheme (see Table 6.5– Soil Erosion and Habitat Restoration). ▪ Secure future funding for invasive plant control (see Table 6.5– Invasive Plant Control).	▪ Adequate funding for the completion of the action s set out in the annual plan of operation. ▪ Funds to implement the ideal staff structure. ▪ Future funding to carry out rehabilitation interventions on wetlands. ▪ Adequate funding for the removal and maintenance of Invasive species.	▪ Inadequate funding to complete the actions sets out in the annual plan of operation. ▪ Inadequate staff at the nature reserve. ▪ Inadequate funding to carry out rehabilitation interventions on wetlands. ▪ In-adequate funding for the removal of invasive species.	***Annually***	Officer in Charge
HUMAN RESOURCES					
The nature reserve is adequately staffed for its effective management and operation.	▪ Investigate the human resource structure of the nature reserve with a view to improving effectiveness and efficiency in achieving the nature reserve management objectives and to inform the Financial Plan. ▪ Investigate the feasibility of appointing 3 mounted field rangers for the greater nature reserve area (see Table 6.1 – Law Enforcement). ▪ Apply for future funding to implement the ideal staff structure as determined by the review committee (see Table 6.9 – Financial Resources).	▪ nature reserve is adequately staffed. ▪ Appointment of staff in all positions in the nature reserve. ▪ Allocate staff in positions that are best suited towards them in-order for them to carry out their duties efficiently (i.e. staff with previous horse patrol experience).	▪ Inadequate staff numbers or skills for the effective management of the nature reserve. ▪ Inability to react timeously to crises with the Nature reserve due to an absence of staff on site.	***Year 5***	Regional Management Unit

INFRASTRUCTURE					
All infrastructures in the nature reserve are adequately maintained.	▪ Ensure that the boundary fence is regularly inspected and adequately maintained to ensure security and to contain game species within the nature reserve. ▪ Boundary and corporate signboards are to be placed at existing and potential boundary entrance points to the nature reserve. ▪ Remove the bottom strand/s of the 5 strand boundary fence to allow movement of small game species (see Table 6.8 – Wildlife Management).	▪ Scheduled maintenance of the boundary fence. ▪ A report on the condition fence and its level of maintenance. ▪ The nature reserve's boundaries and entrance points are clearly demarcated.	▪ Dilapidated, worn out and damaged fences in the nature reserve. ▪ Unlawful entry into the nature reserve ▪ Decline in game species ▪ New and unfamiliar game	***Ongoing***	Officer in Charge
An effective radio communication system is maintained.	▪ Integrate current radio system with that of other stakeholder's e.g. neighbouring farmers, stewardship sites and fire protection. (see Table 6.1 – Law Enforcement)	▪ Effective communication throughout nature reserve.	▪ Inability to communicate with neighbouring farmers.	***Ongoing***	Officer in Charge

6.8 Research

The biodiversity components, the functioning of the ecosystems and water resources, and in particular the hydrological characteristics of the wetland and surrounding sponge system, that the nature reserve was acquired to conserve are presently inadequately understood. Research is necessary to provide information that will assist in ensuring that the various management objectives and conservation targets of the nature reserve are realised.

Priority will be given to research that provides information and understanding that is of direct benefit to the nature reserve and will guide the management interventions required to achieve the protected area's management objectives and conservation targets in the most cost-effective manner. Opportunities will however, be considered and provided for both applied and theoretical research.

Long term research and monitoring of both the biotic and non-biotic (*e.g.* factors affecting the sustained flow of good quality water from the nature reserve) environment are desirable and necessary as a result of the dynamic and stochastic nature of the ecosystem and to ascertain whether management actions are having their desired effect in terms of achieving their conservation objectives.

Partnerships and agreements with appropriate academic and research institutions will be promoted to stimulate and encourage the desired research in the nature reserve. In order to achieve this, the following will be undertaken:

- Management and scientific staff as well as external researchers must identify and prioritise research requirements. This research priority list will then be circulated to tertiary research institutions and made available on the web site.

- All baseline abiotic and biotic data collected must be collated and stored in databases as well as GIS data layers to assist researchers in the planning of research projects and interpretation of data.

All proposals to undertake research within the nature reserve will be submitted and evaluated using the procedures outlined in the Guidelines for the Registration and Administration of Research Projects Undertaken by or through Ezemvelo (August 2002) (Appendix D Item 9). Where research requires the collection of biological material, a collection permit will also be required.

A copy of all publications pertaining to uMngeni Vlei Nature Reserve must be lodged within the Regional Office and the Head Office library. Their details must be captured, using appropriate keywords, into uKhahlamba Region's bibliography.

7) MONITORING AND REPORTING

Monitoring and reporting is a critical component of the adaptive management cycle. It enables the effective assessment of management interventions and, if necessary, can be used to direct modifications of management in an effort to achieve the outcomes required.

7.1 Annual monitoring

The annual monitoring schedule should be designed to monitor the implementation of aspects of the management plan. It should be designed to be straightforward and relatively easy to implement by on-site staff. In accordance with the Ezemvelo KZN Wildlife norms and standards for surveillance and monitoring (Goodman 2011), monitoring is characterised by:

- An objective, target or desired state of the attribute or resource (as described in the management targets in Section 6 above).
- Being part of a formalised adaptive management cycle.
- Establishing and repeatedly evaluating the measures of success of conservation project or management intervention.

Records should be maintained of all key management interventions and of problem events or incidents such as uncontrolled access, poaching, illegal plant collection or uncontrolled/arson fires. In terms of the norms and standards set for surveillance and monitoring (Goodman 2011) these incidents would be deemed to be surveillance.

Scientific monitoring programmes may be established to monitor specific management interventions such as measures for the protection of flagship species. Not all of the management interventions will be monitored through the monitoring schedule. For example, it will only be necessary to report back on the installation of signage and on the preparation and implementation of plans like the concept development and business plans; these do not have specific monitoring requirements. Most of the outcomes of the monitoring process will be captured in an annual report, which will be used to inform the following year's annual plan of operation.

Baseline data collection, monitoring and evaluation are essential in order to determine whether conservation, as well as any eco-cultural tourism objectives and targets, are being achieved and to ascertain the effectiveness of management interventions. Much of this information is required in order to meet the legal reporting requirements of the NEM: BA, NEM: PAA, and the Ezemvelo Corporate Business Plan.

Due to (a) the stochastic nature of the environment, (b) the effects of long-term climate cycles and change, and (c) the length of time for treatment effects to manifest themselves, it is desirable and necessary to implement

long-term baseline collection and monitoring programmes. It is also important to monitor and record all management interventions and the biophysical environment in order to understand the causes for any biological and environmental changes.

An appropriate monitoring and evaluation programme must be developed for the nature reserve and be implemented. This must include a fixed protocol for compiling and maintaining checklists in order to ensure that the lists provide accurate, comparable and contemporary baseline data for management and scientific purposes.

All existing monitoring programmes must be maintained unless there is a specific written decision by Management to terminate a particular programme.

The Ecological Advice component is responsible for:

- Designing all biodiversity monitoring and baseline collection programmes (including the data capture and storage procedures) and ensuring that these will provide data of the right precision and accuracy, and at the right frequency, in order to guide management decision making and to allow for reporting at the required frequency.
- Biodiversity data management, secure storage, analysis, reporting and regular feedback to management.
- Undertaking advanced scientific monitoring and data collection.

The Management component is responsible for:

- The accurate collection of biodiversity baseline data, monitoring and data storage as agreed with the Ecological Advice component;
- Monitoring the use of natural areas by visitors through Limits of Acceptable Change criteria;
- Monitoring development or land use change in the nature reserve and in its buffer zone for compliance with set environmental conditions linked to authorisation.

On this basis, a monitoring schedule for uMngeni Vlei Nature Reserve is set out in Table 7.1.

Table 7.1 Annual surveillance and monitoring schedule for uMngeni Vlei Nature Reserve

Management issue	Parameters to be monitored	Monitoring measures	Monitoring frequency	Responsibility	Reporting requirements
Law enforcement	Schedule of patrols	Written record	Weekly	Officer in Charge	Annual report
	Recovery of snares	Photographs/written record	Weekly		Annual report
	Illegal incidents	Photographs/written record	Per event		Record of event
Stakeholder engagement	Minutes of meetings of the local board and local community liaison forum	Written record	Bi-monthly	Officer in Charge	Annual report
Buffer zone management	Influx of listed invasive vegetation on the nature reserve's boundaries.	Surveillance plan	To be determined	Officer in Charge supported by Ecological Advice Unit	Annual report
Local and regional planning	Land uses that are approved in the areas around the nature reserve in local and regional IDPs and SDFs	Written record	Annually	Ezemvelo KZN Wildlife Senior Officer in Charge	Annual report
Visitor management	visitor statistics	Completion of questionnaire	Ongoing	Officer in Charge	Annual report
Fire and Grazing management	Burning of firebreaks as part of fire management	Written record/map/photography	Annually	Officer in Charge	Annual report
	Burning of blocks as part of controlled burning		Annually		Annual report
	Unplanned wildfires	/map/photography	Per event		Record of event
	Grazing stocking rates	Written record	Per rotation		Per rotation
	Grazing according to Veld Assessment Recommendations	Written record/map/photography	Per rotation		Per rotation
Invasive plant control	Areas subject to invasive plant control	Monitoring plan	To be determined	Officer in Charge supported by Ecological Advice Unit	Annual report
	State of areas in which invasive plants have been				

Management issue	Parameters to be monitored	Monitoring measures	Monitoring frequency	Responsibility	Reporting requirements
	eradicated				
	Records of labour hours/days	Written record	Annually		Annual report
	Herbicide usage	Written record	Annually		Annual report
Soil erosion control	Areas subject to erosion control	Monitoring plan	To be determined	Officer in Charge supported by Ecological Advice Unit	Annual report
	State of rehabilitated areas of erosion				Annual report
Conservation targets	Incidents related to flagship species	Photographs/written record	Per event	Officer in Charge	Record of event
	Status of key rare and endangered species, particularly those for which conservation targets have been set	Monitoring plan	To be determined	Officer in Charge supported by Ecological Advice Unit	Annual report
Resource utilisation	Extraction of resources from the nature reserve	Photographs/written records	Per event	Officer in Charge	Annual report
Facilities and infrastructure	State of roads, 4x4 tracks and paths	Photographs/written records	Quarterly	Officer in Charge	Annual report
	State of the boundary fence	Photographs/written records	Monthly		Annual report
	Weather data	Surveillance plan	To be determined	Ezemvelo KZN Wildlife Ecological Advice Unit	Annual report

As set out in Table 7.1 the following issues require a surveillance plan:

- The influx of listed invasive vegetation on the nature reserve's boundaries.

In addition, the following issues require a monitoring plan:

- Measures taken to control invasive plant species.
- Measures taken to control soil erosion.
- Measures taken to manage rare and endangered species, particularly those for which conservation targets have been set.
- The ecological status of the wetlands within the nature reserve.

These surveillance and monitoring plans must be developed and implemented in accordance with the Ezemvelo KZN Wildlife Norms and Standards: Surveillance and Monitoring Plans for Biodiversity (Goodman 2011).

The preparation of these plans must be undertaken by the Ezemvelo KZN Wildlife Ecological Advice Unit with the support of the Surveillance and Monitoring Working Group of Ezemvelo KZN Wildlife.

7.2 Annual protected area management plan implementation review

The purpose of undertaking an annual performance review of implementation of the protected area management plan will be to:

- Determine how effectively the management plan has been implemented.
- Assist in determining the focus for the annual plan of operation and the setting of appropriate time frames and budgets.
- Enable effective adaptive management by identifying changes and modifying management interventions.

The report produced from the annual protected area management plan implementation review should be submitted to the Regional Operations Committee, prior to the annual management meeting for [Insert PA name], for its review and comment. Records of recommendations for update/changes to the five-year plan should be kept so that when the five-year plan is revised for the subsequent five years, these recommendations can be assessed and included where necessary. This should be undertaken in the form of a running list, which is updated in each annual report so that the final annual report before the five-yearly review of the management plan contains the complete list of recommendations. The review process should include:

- Any recommended minor amendments to the management plan that do not affect the substance of the vision, objectives or zonation.
- The results of an evaluation of the management effectiveness achieved for the protected area, calculated using the WWF and World Bank Protected Area Management Effectiveness Tool (Stolton *et al*. 2007).

Any proposed significant changes to the management plan that are likely to result in amendment to the vision, objectives and zonation must be supported by the Regional Operations Committee and the Biodiversity Conservation Operations Management Meeting (OPSCOMM) before being subjected to the appropriate stakeholder participation process and before OPSCOMM recommends that the proposed amended protected area management plan be submitted for authorisation to the Ezemvelo KZN Wildlife Board and to the MEC.

8) UMNGENI VLEI NATURE RESERVE ANNUAL PLAN OF OPERATION

Each year an annual plan of operation will be prepared, based on the objectives, strategic outcomes, management activities and targets contained in the protected area management plan.

8.1 Implementation of the protected area management plan

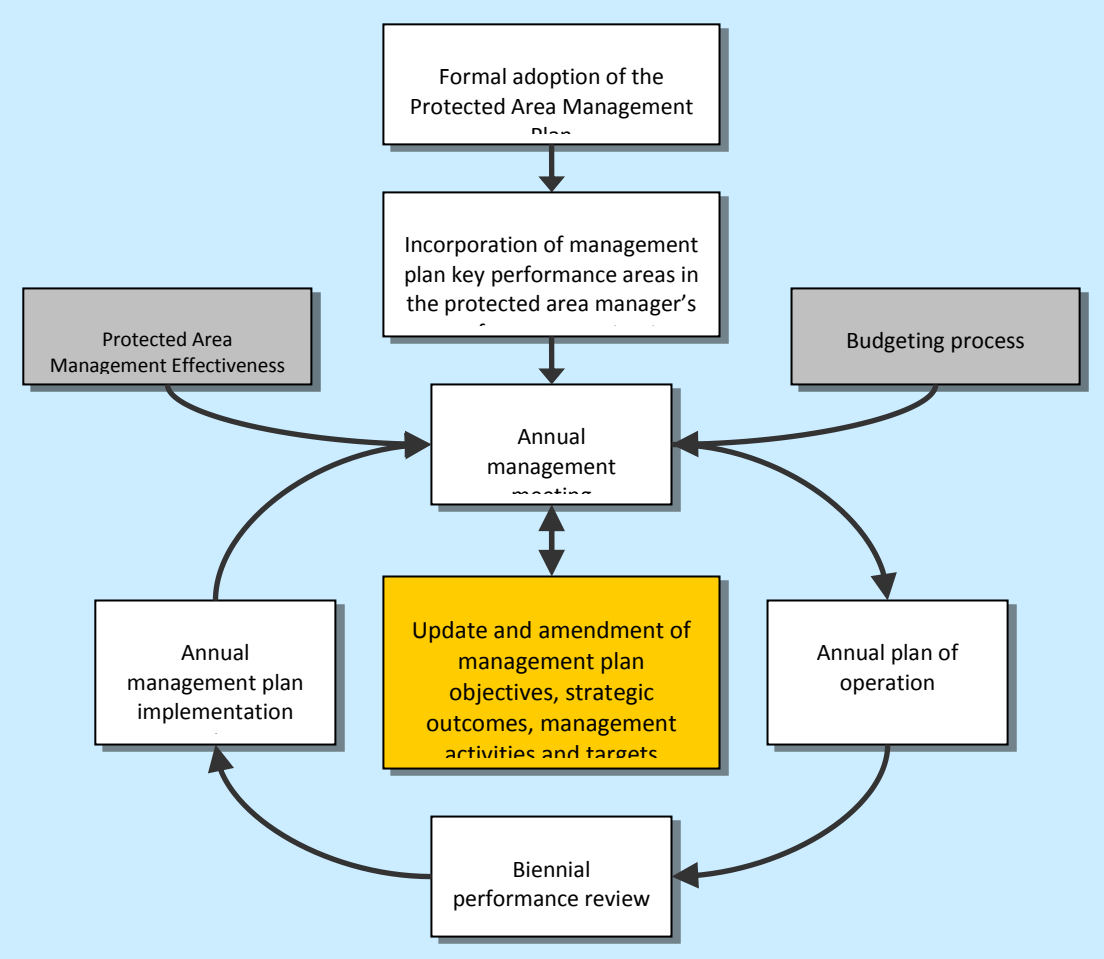


Figure 8.1 Process for the implementation of Protected Area Management Plans

Each year an annual management meeting is held for each protected area managed by Ezemvelo KZN Wildlife. In terms of the implementation of the protected area management plan, the purpose of the annual management meeting for uMngeni Vlei Nature Reserve will be to:

- Achieve consistency and integration of management issues within the nature reserve and biodiversity stewardship sites.
- Finalise the annual report, as part of the annual protected area management plan implementation review described in Section 7.2 above.

- As part of the annual performance review, determine the need to modify or change any of the management plans objectives, strategic outcomes, management activities or targets.

- Determine management activities for the coming year and to set goals for each quarter, based on the key performance areas set out in the management plan, in accordance with the uMngeni Vlei Nature Officer in Charge's performance contract.

- Determine how budgets will be spent in an effort to achieve the goals for each of the quarters of the coming year.

The minutes and notes of the annual management meeting will be compiled in an annual plan of operation, which will include all of the information, set out above, and will determine what management activities need to be completed for the coming year, based on the management plan. The annual plan of operation will be tied to staff performance contracts, and goals set in them will be categorised within the same key performance areas as the integrated management plan. A pro forma annual plan of operation is set out in Appendix G.

8.2 Responsibilities in implementing the protected area management plan

In the tables of the operational management framework, the responsibilities for the completion of management activities are identified. In many cases the people responsible for implementing the activities will be in attendance at the annual management meeting and the requirements for the achievement of the management activities can be discussed and agreed to at the meeting. In some cases, however, the management activities may be required to be referred to the Regional Operations Committee and the Biodiversity Conservation Operations Management Meeting (OPSCOMM) in order to assign responsibility for the completion of the management activity. In the case of uMngeni Vlei Nature Reserve, an example of this would be in the determination of the Ramsar status of the nature reserve. In this instance an action of the annual management meeting would be to refer this management activity to the OPSCOMM so that the correct unit can be assigned responsibility to complete the management activity.

8.3 uMngeni Vlei Nature Reserve resource requirements

In developing annual plans of operation for uMngeni Vlei Nature Reserve the resource requirements, associated with management activities and targets set out in the operational management framework must be considered and budgeted for. The following section broadly identifies the issues that must be considered in determining adequate human resources, funds and equipment for the nature reserve.

8.3.1 Staff and equipment

Annual plans of operation must consider the staff and equipment needs to undertake the following activities:

- Administration and management of the nature reserve.
- Patrolling of the nature reserve and its boundaries.
- An annual burning programme and fire fighting response to wildfires.
- An ongoing invasive plant species control programme.
- An ongoing soil erosion control and rehabilitation programme.
- Ecological monitoring and data capture.
- Maintenance of roads, paths and fences within the nature reserve.
- Maintenance of facilities and infrastructure within the nature reserve.
- Capture of visitor information and statistics.
- Admitting visitors to the nature reserve and charging entrance fees.
- Community liaison and cooperation.
- Environmental interpretation and education.

8.3.2 Projects

In addition to the requirements for annual recurrent funding for the issues outlined above, there will be a need to identify funding requirements for the following capital projects:

- Maintenance of communications infrastructure and purchase of equipment and licences to enable effective communication between staff within the nature reserve and with other Ezemvelo KZN Wildlife operations.

8.4 Annual financial plan

The annual plan of operation must contain a financial plan, which must be approved by the Regional Operations Committee. The annual goals, contained in the annual plan of operation, will be prioritised with the approved budget and guided by the strategic direction of the protected area management plan.

8.5 Financial accounting system

It is accepted that all fiscal management will be guided by the Public Finance Management Act (No.1 of 1999) and the Ezemvelo KZN Wildlife Financial Policy and Procedures directive. Funding sources not generated internally

will be accounted for in the prescribed process as determined by the donor source.

8.6 Financial reporting

Annual and quarterly fiscal reports will be submitted as directed by the Regional Operations Committee.

REFERENCES

Acocks, J.P.H. (1975) Veld Types of South Africa. Memoir of the Botanical Survey of South Africa No.40.Department of Agricultural Technical Services, Pretoria.

Acocks, J.P.H., 1988. Veld Types of South Africa. Botanical Research Institute, Pretoria, 146 pp.

Anonymous. 2007. Glyceria maxima, an aggressive alien grass recently discovered in some KZN wetlands.

Anonymous. 2007. Glyceria maxima (Hartman) Holmb, a highly invasive grass posing a considerable threat to the wetlands of the Maloti Drakensberg area.

Bainbridge, W.R., 2004. Initiatives to conserve globally significant biodiversity resources in the Maloti-Drakensberg Transfrontier Conservation and Development Area, Lesotho and South Africa. In: David Harmon and Graeme L. Worboys (eds.) Managing Mountain Protected Areas: Challenges and Responses for the 21st Century. Andromeda Editrice.426 pp.

Bainbridge,W.R., Scott D.R. and Walker R. 1986. Policy Statement for the Drakensberg State Forests.Pietermaritzburg.Department of Environment Affairs.

Bainbridge, W.R., Motsamai, B., and Weaver, L.C., 1991. Report of the Drakensberg-Maluti Conservation Programme. Pietermaritzburg, Natal Parks Board.

Basson, M.S. (1997) Overview of water resources availability and utilization in South Africa. Department of Water Affairs and Forestry Report P RSA/00/0197. Pretoria.

Begg, G.W. (1989) The wetlands of Natal (Part 3) The location, status and function of the priority wetlands Natal. Natal Town and Regional Planning Report 73.

Begg, G., 1989. The Wetlands of Natal (Part 3).The location, status and function of the priority wetlands of Natal.Natal Town and Regional Planning Report.Vol.73. 256 pp.

Bok, A. and Cambray, J. (1996) Report on fish fauna of selected freshwater areas of Transkei in October 1996. in Bok, A. (ed) Survey of freshwater biota, amphibians and reptiles of selected areas in ex-Transkei. Department of Economic Affairs, Environment and Tourism.Province of the Eastern Cape.

Breen, C.M., Ackhurst, E.G.J., and Walmsley, R.D. (eds), 1985. Water quality management in the Mgeni catchment. Proceedings of a workshop held in Durban on 27th February 1985 by NTRPC and FRD (CSIR). Natal Town and Planning Supplementary Report 12: 1-27.

Burger, M. (1996) Report on herpetofaunal survey conducted in the former Transkei region. In Bok, A. (ed.) Survey of freshwater biota, amphibians and reptiles of selected areas in ex-Transkei. Department of Economic Affairs, Environment and Tourism.Province of the Eastern Cape.

Carbutt C. and Edwards, T.J., 2004.The Flora of the Drakensberg Alpine Centre.Edinburgh Journal of Botany. 60(3): 581-607.

Carbutt, C. and Goodman, P.S. (2010) Assessing the Management Effectiveness of Stateowned, Land-based Protected Areas in KwaZulu-Natal. Ezemvelo KZN Wildlife unpublished report, Pietermaritzburg. pp. 1-67.

Camp, K.G., 1997. The Bioresource Groups of KwaZulu-Natal. Department of Agriculture, KwaZulu-Natal.Mimeo.

Camp, K.G.T. (1998) The bioresource units of KwaZulu-Natal. Cedara report N/A95/32. KZN Department of Agriculture.

Coetzee, K. 2005. Caring for Natural Rangelands.University of KwaZulu-Natal Press, Scottville, South Africa.

Cowan, G.I. (2006) Guidance for the development of management plans in terms of the National Environmental Management: Protected Areas Act (Act 57 of 2003). Department of Environmental Affairs and Tourism, Pretoria.

Cowling, R.M. and Hilton-Taylor, C. 1994. Patterns of plant diversity and endemism in Southern Africa: an overview. In: Huntley, B.J. (ed.). Botanical Diversity in Southern Africa, pp. 31-52. Pretoria, National Botanical Institute.

Department of Environmental Affairs and Tourism (2008) The National Protected Area Expansion Strategy 2008-2012. Pretoria.

Ezemvelo KZN Wildlife, 2005.Integrated Management Plan: Ukhahlamba Drakensberg Park World Heritage Site (2006-2011), South Africa. Ezemvelo KZN Wildlife, Pietermaritzburg, 81 pp and 9 maps.

Ezemvelo KZN Wildlife. (2010) KZN Protected Area Expansion Strategy and Action Plan (2009-2028). Ezemvelo KZN Wildlife unpublished report, Pietermaritzburg. pp. 1-63.

Goodman P.S. (2011) Ezemvelo KZN Wildlife Norms and Standards: Surveillance and Monitoring Plans for Biodiversity. Ezemvelo KZN Wildlife unpublished report, Pietermaritzburg.

Hardy, M.B., Barnes, D.L., Moore, A. and Kirkman, K.P. (1999) The management of different types of veld. In Tainton, N.M. (ed) Veld Management in South Africa. University of Natal Press, Pietermaritzburg.

Hilliard, O.M. and Burtt, B.L. (1987) The Botany of the Southern Natal Drakensberg. National Botanic Gardens, Kirstenbosch.

Hockey P.A.R., Dean W.R.J., Ryan P.G. (eds) 2005. Roberts – Birds of Southern Africa, VIIth ed. Trustees of the John Voelker Bird Book Fund, Cape Town.

Johnson, D.N., Barnes, N.B. and Taylor, B. Important Bird Areas of KwaZulu-Natal. In: KN Barnes, 1998. The Important Bird Areas of Southern Africa. Birdlife South Africa, Johannesburg. ISBN 0-620-23423-7.196 pp.

Kotze, D. and O'Connor, T.G. (2000) Vegetation pattern within and among palustrine wetlands along an altitudinal gradient in KwaZulu-Natal, South Africa. Plant Ecology 146: 77-96.

Kotze, D. (2003) A conservation management plan for the Ntsikeni wetland and Nature Reserve. Centre for Environment and Development, University of Natal, Pietermaritzburg.

Mangold, S.T. and de Moore, F.C. (1996) A preliminary survey of the macroinvertebrate fauna of the rivers of the former Transkei region with notes on freshwater snails (Mollusca), freshwater prawns (Decapoda), mayflies (Ephemeroptera), caddisflies (Trichopetra) and blackflies (Diptera: Simulidae). in Bok, A. (ed) Survey of freshwater biota, amphibians and reptiles of selected areas in ex-Transkei. Department of Economic Affairs, Environment and Tourism.Province of the Eastern Cape.

Middleton, B.J., Lorentz, S.A., Pitman W.V. and Midgley, D.C. (1981) Surface water resources of South Africa (Vol. V) Hyrdological Research Unit Report No. 12/81 (Parts 1 and 2). In Bok, A. (ed.) Survey of freshwater biota, amphibians and reptiles of selected areas in ex-Transkei. Department of Economic Affairs, Environment and Tourism, Province of the Eastern Cape.

Mucina, L. and Rutherford, M.C. (eds.) (2006).The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19, South African National Biodiversity Institute, Pretoria.

Myers, N., 1988. Threatened biotas: "Hot-spots" in tropical forests. The Environmentalist 8, 1-20.

Natal Parks, Game and Fish Preservation Board, 1983.Memorandum for Executive Committee.Authority for the Acquisition of Woodhouse No.1 (UMngeni Vlei).Mimeo.3 pp.

Norman, N. and Whitfield, G., 2006. Geological Journeys.Struik.320 pp.

O'Connor, T.G. and Bredenkamp, G.J. (1997) Grassland. In Cowling, R.M., Richardson, D.M. and Pierce, S.M. (eds) Vegetation of Southern Africa. Cambridge University Press, United Kingdom.

O'Connor, T.G. (2005) Influence of land use on plant community composition and diversity in Highland Sourveld grassland in the southern Drakensberg, South Africa. Journal of Applied Ecology, 42, 975-988.

Phillips, J., 1973. The agriculture and related development of the Tugela Basin and its influent surrounds. Natal Town and Regional Planning Report 19: 1-299.

Raper, P.E., 1987.Dictionary of Southern African Place Names.Johnathan Ball Publishers. Johannesburg. 608 pp.

Prins, F. In: Ezemvelo KZN Wildlife, 2005. Integrated Management Plan: Ukhahlamba Drakensberg Park World Heritage Site (2006-2011), South Africa. Ezemvelo KZN Wildlife, Pietermaritzburg, 81 pp and 9 maps.

Prins, F., 2006. Unpublished note on the Cultural Heritage of uMngeni Vlei

Rowe-Rowe, D., 1994.The ungulates of Natal. Natal Parks Board, Pietermaritzburg.

Rushworth, I. 2005. Proceedings of the 16th South African Crane Working Group Workshop 9-12 May 2005, Sterkfontein Dam, pp 74-80.

Rushworth, I. 2005. UMngeni Vlei Nature Reserve: Learning the hard way how to manage for Wattled Cranes. PowerPoint Presentation.

Schulze, R.E., 1982. Agrohydrology and climatology of Natal. Agricultural Catchments Research Unit Report (14): 1-136.

Scotney, D.M., 1970. Soil and land-use planning in the Howick Extension Area.Unpublished Ph.D. Thesis, University of Natal, Pietermaritzburg.

Scott-Shaw, C.R. (1999) Rare and threatened plants of KwaZulu-Natal and neighbouring regions.KwaZulu-Natal Nature Conservation Services, Pietermaritzburg.

Sisonke District Municipality (2010) Draft Integrated Development Plan 2010/2011. KwaZulu-Natal.

Snyman, H.A. (2004) Short-term influence of fire on seedling establishment in a semi-arid grassland of South Africa. South African Journal of Botany, 70(2), 215-226.

Stolton, S., Hockings, M., Dudley, N., MacKinnon, K., Whitten, T. and Leverington, F. (2007) Management Effectiveness Tracking Tool: reporting progress at protected area sites (2nd edition).World Bank and WWF Forest Alliance.

Tarboton, W.R. 1989., Wattled Crane. In: PJ Ginn, WG McIlleron and P.leS Millstein (Compilers). The Complete Book of Southern African Birds. Struik Winchester. 760 pp.

Trollope, W.S.W. (1999) Veld Burning. In Tainton, N.M. (ed) Veld Management in South Africa. University of Natal Press, Pietermaritzburg.

TRPC.1990. Drakensberg Approaches Policy.Town and Regional Planning Commission Report.Vol.74. 70 pp.

TRPC. 2001 A Special Case Area Plan for the Drakensberg. Town and Regional Planning Commission Report.Vol.90. 127 pp.

Tyson,P.D., Preston-Whyte, R.A., Schulze, R.E., 1976. The climate of the Drakensberg. Natal Town and Regional Planning Commission Report 31, Pietermaritzburg.

Umzimkhulu Local Municipality (2010) Reviewed Integrated Development Plan for 2010/2011 Financial Year. KwaZulu-Natal.

Van Wyk, A.E. and Smith, G.F. 2001. Regions of Floristic Endemism in Southern Africa: a Review with emphasis on Succulents. Umdaus Press, Hatfield. 199 pages.

Wright, J., 1971. Bushman Raiders of the Drakensberg 1840-1870. University of Natal Press, Pietermaritzburg.

DEFINITIONS OF TERMS

Alien species	Species or genotypes, which are not indigenous to Ntsikeni Nature Reserve and the surrounding area including hybrids and genetically altered organisms.
Biodiversity	The variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part and also includes diversity within species, between species, and of ecosystems (as per the National Environmental Management: Biodiversity Act, 2004 [Act No. 10 of 2004]).
Bioprospecting	In relation to indigenous biological resources, means any research on, or development or application of, indigenous biological resources for commercial or industrial exploitation, and includes – the systematic search, collection or gathering of such resources or making extractions from such resources for purposes of such research, development or application (as per the National Environmental Management: Biodiversity Act, 2004 [Act No. 10 of 2004])
Board	The KwaZulu-Natal Nature Conservation Board as defined by the KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No.9 of 1997).
Buffer zone	An area surrounding Ntsikeni Nature Reserve that has restrictions placed on its use or where collaborative projects and programmes are undertaken to afford additional protection to the nature reserve.
Co-management	The term 'Co-management' must be understood within the context of Section 42 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).
Cultural heritage	As defined in Article 1 of the World Heritage Convention (UNESCO) 1972 , 'cultural heritage' is considered as "monuments, architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of (…) value from the point of view of history, art or science, groups of buildings, groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of significance from the point of view of history, art or science, sites, works of man or the combined works of nature and man, and areas including archaeological sites which are of (…) value from the historical, aesthetic, ethnological or anthropological point of view." For the purpose of this IMP, living heritage features such as mountains, pools, rivers, boulders, etc. as well as paleontological features are included under this definition.
Eco-cultural Tourism (ecotourism):	The travel to natural areas to learn about the way of life and cultural history of people, the natural history of the environment, while taking care not to change the environment and contributing to the economic welfare of the local people (adapted from a definition of ecotourism by Hecto Ceballos Lascurain).
Ecological integrity	The sum of the biological, physical and chemical components of an ecosystem and its products, functions and attributes (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).
Ecosystem	A dynamic complex of animal, plant and micro-organism communities and their non-living environment interacting as a functional unit (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).

Ecosystem services	As defined in Section 1 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) as "environmental goods and services" meaning: a. Benefits obtained from ecosystems such as food, fuel and fibre and genetic resources. b. Benefits from the regulation of ecosystem processes such as climate regulation, disease and flood control and detoxification. c. Cultural non-material benefits obtained from ecosystems such as benefits of a spiritual, recreational, aesthetic, inspirational, educational, community and symbolic nature;" For the purposes of this IMP, sustainable water production is also specifically included under this definition.
Environmental degradation	The deterioration of the environment through depletion of resources such as air, water and soil; the destruction of ecosystems and the loss of species or undesirable reduction of species population numbers from a specific area from an environmental health perspective
Ezemvelo KZN Wildlife	Nature Conservation Service as established in terms of the KwaZulu-Natal Nature Conservation Management Act No. 9 of 1997.
Indigenous species	In relation to a specific protected area, means a species that occurs, or has historically occurred, naturally in a free state of nature within that specific protected area, but excludes a species introduced in that protected area as a result of human activity (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).
Invasive species	Means any species whose establishment and spread outside of its natural distribution range – a. Threaten ecosystems, habitats or other species or have a demonstrable potential to threaten ecosystems, habitats or other species. b. May result in economic and environmental harm or harm to human health. (As per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).
Joint management	The agreed co-ordination of management and/or management actions by landowners and/or mandated managers on their individual or combined properties in order to achieve common management objectives.
Local community	Any community of people living or having rights or interests in a distinct geographical area (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).

Management authority	In relation to a protected area, means the organ of state or other institution or person in which the authority to manage the protected area is vested (as per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).
Monitoring	The collection and analysis of repeated observations or measurements to evaluate change in status, distribution or integrity in order to track the impacts of directed management implemented to achieve a stated management objective.
Nature conservation	The conservation of naturally occurring ecological systems, the sustainable utilisation of indigenous plants and animals therein, and the promotion and maintenance of biological diversity (as per the KwaZulu-Natal Nature Conservation Management Act, 1997 [Act No.9 of 1997]).
Neighbouring community	The communities and people permanently living in the local municipal area/s bordering onto the Nature Reserve.
Natural heritage	As defined in Article 2 of the World Heritage Convention (UNESCO) 1972 'natural heritage' is as: "natural features consisting of physical and biological formations or groups of such formations, which are of (…) value from the aesthetic or scientific point of view, geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of (…) value from the point of view of science or conservation, natural sites or precisely delineated natural areas of (…) value from the point of view of science, conservation or natural beauty." For the purposes of this IMP, this would include the required ecological integrity of the protected area for the production of ecosystem services.
Partnerships	A co-operative and / or collaborative arrangement between the Game Reserve management / Ezemvelo and a third party that supports the achievement of the Game Reserve management objectives.
Protected areas	• Means any area declared or proclaimed as such in terms of section 3 or listed in the Second Schedule to the KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997); or • Means any of the protected areas referred to in section 9 of the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).
Protected area management committee	Is the management body that deals with the day-to-day management of the protected area and is chaired by the OIC.
Ramsar Convention	Means: "The Convention on Wetlands of International Importance, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty, which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources." (There are presently 158 Contracting Parties to the Convention, the Convention has broadened its scope to cover all aspects of wetland conservation and wise use, recognising wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities.)

Stakeholders/ interested parties	These are interested individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups and the general public. According to the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), "stakeholder" means a person, an organ of state or a community contemplated in section 82 (1) (a), or an indigenous community contemplated in section 82(1) (b).
Surveillance	The collection and analysis of single or repeated measurements to establish status or distribution or integrity at a point in time in the absence of a specific management context or objective.
Sustainable	In relation to the use of a biological resource, means the use of such resource in a way and at a rate that would not lead to its long-term decline; would not disrupt the ecological integrity of the ecosystem in which it occurs; and would ensure its continued use to meet the needs and aspirations of present and future generations of people (as per National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
Wilderness area	Means an area designated in terms of section 22 or 26 for the purpose of retaining an intrinsically wild appearance and character, or capable of being restored to such and which is undeveloped and road less, without permanent improvements or human habitation (as defined by the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).
World heritage site	Means a World Heritage Site as defined in the World Heritage Convention Act, No. 49 of 1999 under Chapter 1, section 1 subsection (xxiv).

LIST OF STATUTES TO WHICH THE UMNGENI VLEI NATURE RESERVE IS SUBJECT

Biodiversity and Cultural Resource Management and Development:

- Animals Protection Act [No. 71 of 1962]
- Atmospheric Pollution Prevention Act [No. 45 of 1965]
- Conservation of Agricultural Resources Act [No. 43 of 1983]
- Constitution of the Republic of South Africa [No. 108 of 1996]
- Criminal Procedures Act [1977]
- Environment Conservation Act [No. 73 of 1989]
- Forest Act [No. 122 of 1984]
- Hazardous Substances Act [No. 15 of 1973]
- KwaZulu Nature Conservation Act [No. 8 of 1975]
- KwaZulu-Natal Heritage Management Act [No. 10 of 1997]
- KwaZulu-Natal Nature Conservation Management Act [No. 9 of 1997]
- National Environmental Management Act [No. 107 of 1998]
- National Environmental Management: Biodiversity Act [No. 10 of 2004]
- National Environmental Management: Protected Areas Act [No. 57 of 2003]
- National Forests Act [No. 84 of 1998]
- National Heritage Resources Act [No. 25 of 1999]
- National Water Act [No. 36 of 1998]
- National Water Amendment Act [No. 45 of 1999]
- National Veld and Forest Fire Act [No 101 of 1998]
- Nature Conservation Ordinance [No. 15 of 1974]

General Management:

- Development Facilitation Act [No. 67 of 1995]
- Disaster Management Act [No. 57 of 2002]

- Fire Brigade Services Act [No. 99 of 1987]
- Local Government: Municipal Systems Act [No. 32 of 2000]
- National Road Traffic Act [No. 93 of 1996]
- National Building Standards Act [No. 103 of 1977]
- Natal Town Planning Ordinance [No. 27 of 1949]
- Occupational Health and Safety Act [No. 85 of 1993]
- KwaZulu-Natal Planning and Development Act [No. 5 of 1998]
- Water Services Act [No. 108 of 1997]

Financial Management:

- Public Finance Management Act [No. 1 of 1999]

Human Resource Management:

- Basic Conditions of Employment Act [No. 75 of 1997]
- Broad-Based Black Economic Empowerment Act [No. 53 of 2003]
- Compensation for Occupational Injuries and Diseases Act [No. 130 of 1993]
- Employment Equity Act [No. 55 of 1998]
- Labour Relations Act [No. 66 of 1995]
- Occupational Health and Safety Act [No. 85 of 1993]
- Pension Funds Act [No. 24 of 1956]
- Skills Development Act [No. 97 of 1998]
- Skills Development Levies Act [No. 9 of 1999]
- Unemployment Insurance Act [No. 63 of 2001]

COPY OF UMNGENI VLEI NATURE RESERVE PROCLAMATION AND SURVEYOR GENERAL DIAGRAMS

KWAZULU-NATAL PROVINCE
KWAZULU-NATAL PROVINSIE
ISIFUNDAZWE SAKWAZULU-NATALI

Provincial Gazette • Provinsiale Koerant • Igazethi Yesifundazwe

GAZETTE EXTRAORDINARY—BUITENGEWONE KOERANT—IGAZETHI EYISIPESHELI

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PROVINCIAL NOTICE

No. 83 **30 August 2012**

DEPARTMENT of AGRICULTURE ENVIRONMENTAL AFFAIRS AND RURAL DEVELOPMENT

NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS, 2003 (ACT NO. 57 OF 2003)

OFFICE OF THE MEC FOR AGRICULTURE ENVIRONMENTAL AFFAIRS AND RURAL DEVELOPMENT

DECLARATION OF NATURE RESERVES AND ASSIGN EZEMVELO KZN WILDLIFE AS THE MANAGEMENT AUTHORITY IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT, 2003 (ACT NO. 57 OF 2003);

I, Dr Meshack Radebe, MEC for Agriculture, Environmental Affairs and Rural Development in KwaZulu-Natal, by virtue of the powers vested in me by section 23(1) and section 38(2) of the National Environmental Management: Protected Areas Act No. 57 of 2003 hereby declare that, with effect from the date of publication hereof, Amatikulu Nature Reserve, Blinkwater Nature Reserve, Chelmsford Nature Reserve, Dlinza Forest Nature Reserve, Enseleni Nature Reserve, Hluhluwe-Imfolozi Park, Isandlwana Nature Reserve, Ithala Game Reserve, Karkloof Nature Reserve, Mbumbazi Nature Reserve, Mpenjati Nature Reserve, Ncandu Nature Reserve, Ngoye Forest Reserve, Oribi Gorge Nature Reserve, Poccolan Bush Reserve, Robinsons Bush Reserve, Tembe Elephant Park, uMgeni Vlei Nature Reserve, Umlalazi Nature Reserve, Umtamvuna Nature Reserve as Nature Reserves and assign Ezemvelo KZN Wildlife as the Management Authority. The properties listed in the Schedule constitute the named Nature Reserves.

Dr Meshack Radebe
MEC for Agriculture, Environmental Affairs and Rural Development
KwaZulu-Natal

SCHEDULE

~~**AMATIKULU NATURE RESERVE**~~
~~**Region:** Situated in the province of KwaZulu-Natal, the Uthungulu District Municipality and in the KZ282 Umhlathuze Local Municipalities.~~

~~Properties Comprising the Amatikulu Nature Reserve~~	~~Surveyor General diagram No.~~	~~Extent (ha)~~
~~Sub 1 of Matikulu Leper Location No. 16632~~	~~604 / 1996~~	~~797.2867~~
~~Sub 1 of Annexe Reserve No. 8 No. 14264~~	~~599 / 1996~~	~~12.0485~~
~~Portion of Annexe Reserve No. 8 No. 14264~~	~~598 / 1996~~	~~602.2736~~
~~Amatikulu River~~		~~88.0026~~

Properties Comprising the Ngoye Forest Reserve	Surveyor General diagram No.	Extent (ha)
Ngoye Forest Reserve No. 15784	S.G. 2696 / 1985	3903.4891

ORIBI GORGE NATURE RESERVE

Region: Situated in the province of KwaZulu-Natal, the Ugu District Municipality and in the KZN215 Ezingolweni Local Municipality

Properties Comprising the Oribi Gorge Nature Reserve	Surveyor General diagram No.	Extent (ha)
Remainder of Sub 10 of the Farm Baboonspruit No. 6727	S.G. 209/1939.	28.1164
Sub 15 of the farm Baboonspruit No. 6727	S.G. 864/1971.	8.5610
Sub 16 of the farm Baboonspruit No. 6727	S.G. 865/1971.	7.7882
Sub 4 of the farm the Prairie No. 7107	S.V. 835 F. 56.	2.4620
Sub 6 of the farm the Prairie No. 7107	S.G. 3411 / 1952.	0.8094
Sub 7 of the farm the Prairie No. 7107	S.G. 5197 / 1960.	0.8094
Remainder of Sub 1 of Lot GEL No. 12833	S.G. 3049 / 1956	269.3273
State land		1427.8896

POCCOLAN BUSH RESERVE

Region: Situated in the province of KwaZulu-Natal, and in the Okhahlamba Local Municipality

Properties Comprising the Poccolan Bush Reserve	Surveyor General diagram No.	Extent (ha)
The farm Poccolan No. 10056	S.V. 515 F. 64.	857.7046
Four pieces of Un-surveyed state land falling within, or along the boundary of, the farm Poccolan No. 10056 with the exclusion of the piece of land known as Robinsons Bush, as appears in the Annexed diagram		206.5682

ROBINSON'S BUSH RESERVE

Region: Situated in the province of KwaZulu-Natal and in the Okhahlamba Local Municipality

Properties Comprising the Robinson's Bush Reserve	Surveyor General diagram No.	Extent (ha)
The Farm Robinsons Bush No. 18450	Awaiting SG Approval	166.8827

TEMBE ELEPHANT PARK

Region: Situated in the province of KwaZulu-Natal, the Umkhanyakude District Municipality and in the KZN271 Umhlabuyalingana Local Municipality

Properties Comprising the Tembe Elephant Park	Surveyor General diagram No.	Extent (ha)
Portion 49 of the farm Tembe North No. 1749	S.G. 1054 / 2002	30 013.3236

UMGENI VLEI NATURE RESERVE

Region: Situated in the province of KwaZulu-Natal, the Umgungundlovu District Municipality and in the KZ224 Impendle Local Municipality

Properties Comprising the uMgeni Vlei Nature Reserve	Surveyor General diagram No.	Extent (ha)
Sub 1 of the farm Woodhouse No. 2 No. 6871	S.G. 2777 / 1987	514.2870
Sub 1 of the farm Woodhouse No. 1 No. 6870	S.G. 2776 / 1987	443.9756

C E-D BRISCOE Professional Land Surveyors SHEET 1 OF 2 SHEETS PROCLAMATION DIAGRAM

SIDES Metres		ANGLES OF DIRECTION		CO-ORDINATES Y System WG29° X		
		Constants		+	0.00	+3200 000.00
AB	2625.16	311 39 09	A	- 78 727.93		+ 61 512.38
BC	3267.80	311 39 37	B	- 80 689.42		+ 63 257.09
CD	1570.70	53 15 17	C	- 83 130.79		+ 65 429.24
DE	378.02	42 31 20	D	- 81 872.18		+ 66 368.92
EF	932.52	124 21 00	E	- 81 616.69		+ 66 647.53
FG	1896.80	155 10 10	F	- 80 846.79		+ 66 121.37
GH	453.59	155 10 10	G	- 80 050.26		+ 64 399.92
HJ	620.11	67 40 30	H	- 79 859.78		+ 63 988.26
JK	985.66	94 48 50	J	- 79 286.15		+ 64 223.81
KL	671.27	136 33 00	K	- 78 303.97		+ 64 141.10
LM	147.51	195 03 20	L	- 77 842.32		+ 63 653.78
MN	78.84	202 16 20	M	- 77 880.64		+ 63 511.33
NP	19.28	233 21 00	N	- 77 910.52		+ 63 438.37
PQ	62.29	295 19 10	P	- 77 925.99		+ 63 426.86
QR	73.88	221 03 00	Q	- 77 982.30		+ 63 453.50
RS	57.02	189 55 00	R	- 78 030.82		+ 63 397.78
ST	32.18	232 58 10	S	- 78 040.64		+ 63 341.61
TU	86.83	279 28 00	T	- 78 066.33		+ 63 322.23
UV	43.76	224 22 10	U	- 78 151.98		+ 63 336.51
VW	63.54	198 12 10	V	- 78 182.58		+ 63 305.23
WX	101.43	210 01 00	W	- 78 202.43		+ 63 244.87
XY	93.75	202 03 10	X	- 78 253.17		+ 63 157.04
YZ	214.95	187 42 30	Y	- 78 288.37		+ 63 070.15
ZA1	123.71	166 15 10	Z	- 78 317.20		+ 62 857.14
A1B1	142.88	183 17 10	A1	- 78 287.80		+ 62 736.97
B1C1	57.28	170 12 00	B1	- 78 295.99		+ 62 594.32
C1A	1116.58	203 18 06	C1	- 78 286.24		+ 62 537.88

S.G. No.

Approved

for Surveyor-General

ACT 57/2003

The figure A B C D E F G H J K L M N P Q R S T U V W X Y Z A1 B1 C1

represents 958.2448 hectares of land , being

UMGENI VLEI NATURE RESERVE

and comprises :

1. PORTION 1 OF THE FARM WOODHOUSE No. 1 No. 6870 vide diagram S.G.No. 2776/1987 and Deed of Transfer No. T8653/1988.
2. PORTION 1 OF THE FARM WOODHOUSE No. 2 No. 6871 vide diagram S.G.No. 2777/1987 and Deed of Transfer No. T8653/1988.

Situate in the Impendle Municipality , Registration Division : FT
Province of KwaZulu-Natal
Framed for the purposes of declaring a Nature Reserve
in terms of Section 23(1) of the National Environmental
Management Protected Areas Act , 57 of 2003
in June 2012
by me

C E-D BRISOCE PLS 1136
Professional Land Surveyor

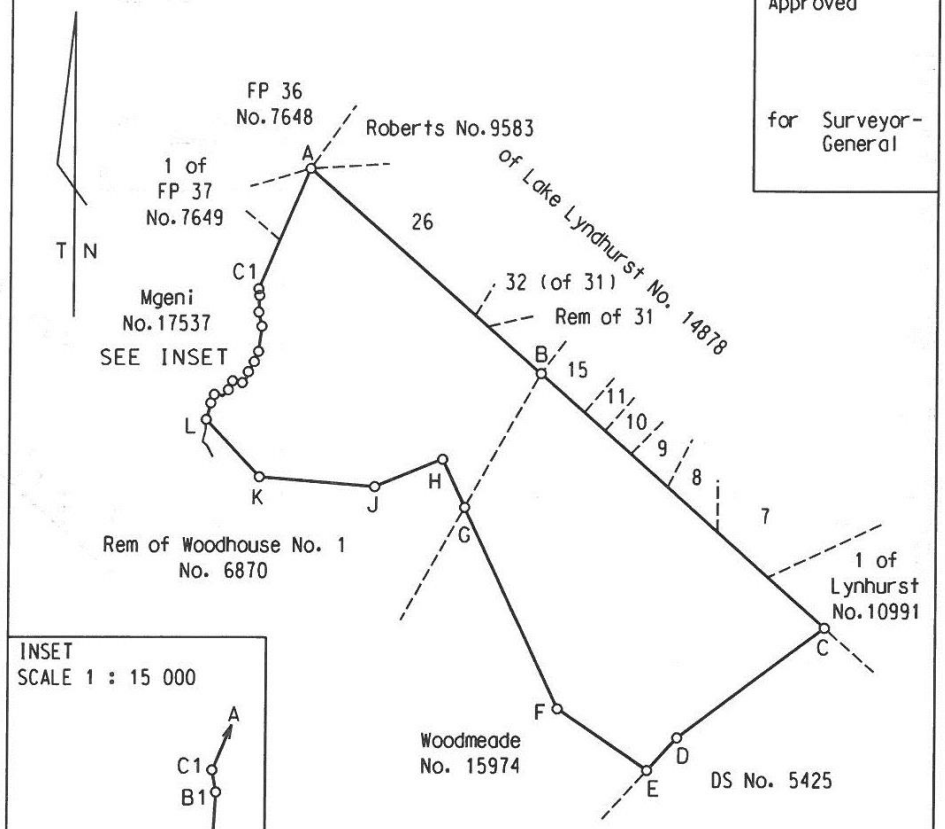
This diagram relates to No.		File No.
Registrar of Deeds		S.R. No.
		Comp. FSNZ,FSSE

C E-D BRISCOE Professional Land Surveyors SHEET 2 OF 2 SHEETS PROCLAMATION DIAGRAM

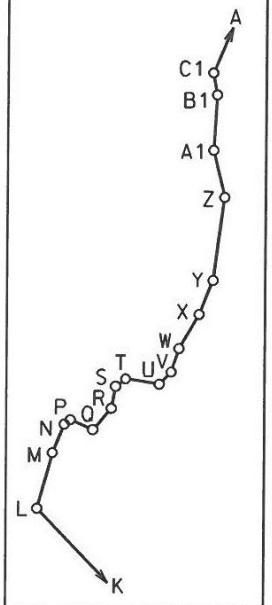
S.G. No.

Approved

for Surveyor-General



INSET
SCALE 1 : 15 000



SCALE 1 : 50 000

BEACON DESCRIPTIONS
A-C1 -- No beacon.

UMGENI VLEI NATURE RESERVE

Framed for the purposes of declaring a Nature Reserve in terms of Section 23(1) of the National Environmental Management Protected Areas Act , 57 of 2003
in June 2012
by

LIST OF UNPUBLISHED AND SUPPORTING DOCUMENTATION

Copies available from: a) Reserve Management and / or,

b) Regional Ecologist

Item:

1. Ezemvelo Corporate Strategic Plan and Performance Plan for 2009 - 2014.
2. Ezemvelo Corporate Policies and Procedures (Norms & Standards) listed in the table below.
3. Ezemvelo Biodiversity Database Checklists for uMngeni Vlei Nature Reserve.
4. Proclamations of uMngeni Vlei Nature Reserve
5. uMngeni Vlei Nature Reserve Public Participation Report, October 2012.
6. List of local agreements, leases and other servitude arrangements pertaining to the uMngeni Vlei Nature Reserve.
7. Ezemvelo KZN Wildlife. 2008. Trails Manual uKhahlamba Drakensberg Park World heritage Site, South Africa. Ezemvelo KZN Wildlife, Pietermaritzburg, 180 pages.
8. National Policy and Strategy for Problem Animal Control in South Africa (January 1998).
9. Guidelines for the Registration and Administration of Research Projects undertaken by or through Ezemvelo KZN Wildlife (August 2002).

The table below lists the Ezemvelo KZN Wildlife corporate policies (norms and standards) referenced from the intranet that are most relevant to Ezemvelo KZN Wildlife protected area management. It is the responsibility of all management and other personnel associated with management of protected areas to ensure that they familiarise themselves and comply with the most recent versions of all Ezemvelo KZN Wildlife Board Approved Policies.

EZEMVELO CORPORATE POLICIES (NORMS & STANDARDS)	
Policy File No.	**CORPORATE AFFAIRS**
B 2	➢ Access to Ezemvelo KZN Wildlife Areas and Employment.
B 5	➢ Outsourcing of Functions and Services
B 7	➢ Monuments, Memorials and Names of Protected Areas under the control of Ezemvelo.
B 8	➢ Restricted use of Board Theatres, Halls and Conference Facilities etc.
B 9	➢ Code of Ethics / Conduct.
B 10	➢ Photography in Board Protected Areas.
B 13	➢ Mission Statement
B 14	➢ Access to Information.
Policy File No.	**INTERNAL AUDIT**
C 5	➢ Management Control
	BIODIVERSITY CONSERVATION OPERATIONS
	1. NATURAL RESOURCE SUSTAINABILITY
Policy File No.	**Threatened Species and Ecosystems**
D 1.1	➢ Disposal of Black Rhino.
D 1.2	➢ Disposal of Surplus White Rhino.
D 1.3	➢ Strategy for the Management of Southern White Rhino in KwaZulu-Natal.
D 1.4	➢ Strategy for the Biological Management of Black Rhino in KwaZulu-Natal.
D 1.5	➢ Rhinoceros Products.
D 1.6	➢ Crocodilians
D 1.7	➢ Cycads.

EZEMVELO CORPORATE POLICIES (NORMS & STANDARDS)	
D 1.8	➢ Disposal of Threatened Species.
	BIODIVERSITY CONSERVATION OPERATIONS
	1. NATURAL RESOURCE SUSTAINABILITY
Policy File No.	**Exotic and Invasive Species**
D 1.9	➢ Release of Alien Species.
D 1.10	➢ Control Measures for Red-billed Quelea.
D 1.12	➢ Grass Carp.
D 1.13	➢ Establishment of Alien Plantations.
	➢
Policy File No.	**Migratory Species**
D 1.14	➢ Black Wildebeest and Blue Wildebeest Hybridization and Conservation.
D 1.15	➢ Permit authorising the collection of Biological Material within Board Areas.
	2. CONSERVATION EFFECTIVENESS
Policy File No.	**Strategic Applications**
D 2.1	➢ Involvement of the KwaZulu-Natal Nature Conservation Board in Project 8 of the MAB (Man and Biosphere) Programme.
Policy File No.	**Conservation Management: Protected Area Management**
D 2.2	➢ Management of Wilderness Areas.
D 2.3	➢ Protected Area Development.
D 2.4	➢ Prohibition of Works and Servitudes in Board Areas.
D 2.5	➢ Zonation and Regulations for the control of off-road vehicles on beaches controlled by the Board.

EZEMVELO CORPORATE POLICIES (NORMS & STANDARDS)	
D 2.6	➢ Quarries in KZN Protected Areas.
D 2.7	➢ Re-establishment and Management of Vegetation on Development Sites in the Ezemvelo KZN Wildlife Protected Areas.
D 2.8	➢ Ecotourism and Protected Areas.
D 2.9	➢ Solid Waste Management within Protected Areas.
D 2.10	➢ State Security Service Activities within Board Areas.
D 2.11	➢ Shark Nets in or bordering KwaZulu-Natal Nature Conservation Board Controlled Areas.
Policy File No.	**Integrated Environmental Management**
D 2.12	➢ Integrated Environmental Management - incorporating the procedure for the assessment of the impact of proposed development projects on nature conservation concerns.
D 2.13	➢ Precautionary Principle.
D 2.14	➢ Shark Net Installations.
D 2.15	➢ Bioprospecting in KwaZulu-Natal.
D 2.17	➢ Use of Pesticides by the Ezemvelo KZN Wildlife: Safety to Humans and the Environment.
D 2.18	➢ Interference with the Mouth of a Lagoon or River (Breaching).
Policy File No.	***Ex Situ* Wild Animal Management**
D 2.21	➢ Re-establishment of Terrestrial Mammals in Board Areas.
D 2.22	➢ Translocation of Animals.
D 2.25	➢ Elephant Introductions and Elephant in Enclosures.
D 2.27	➢ Introduction and Keeping of Large Predators in Enclosures in KZN.
D 2.28	➢ Use of Narcotic Drugs.
D 2.29	➢ Falconry.

EZEMVELO CORPORATE POLICIES (NORMS & STANDARDS)	
	BIODIVERSITY CONSERVATION OPERATIONS
	2. CONSERVATION EFFECTIVENESS
Policy File No.	**Human Animal Conflict - Inside and Outside Protected Areas**
D 2.30	➢ Disposal of Leopard from Ezemvelo KZN Wildlife Protected Areas.
D 2.31	➢ Problem Animal Control.
D 2.32	➢ Compensation claims in respect of damage caused by Lion, Cheetah, Wild Dog and Elephant to Stock and Crops.
D 2.33	➢ Instances of Death as a result of an Unprovoked Attack by a Wild Animal Normally contained and originating from within a Fenced Protected Area under the Control of the KwaZulu-Natal Nature Conservation Board.
Policy File No.	**Environmental Awareness**
D 2.34	➢ Environmental Education Policy.
	3. BIODIVERSITY PROTECTION
Policy File No.	**Co-management**
D 3.1	➢ Supply of Game to Conservancies, Community Conservation Areas and Biosphere Reserves in KwaZulu-Natal
D 3.2	➢ Establishment and Management of Community Conservation Reserves (CCR)
D 3.4	➢ Community Conservation Programmes
D 3.5	➢ Neighbours' Access to Board Protected Areas
D 3.6	➢ Relationship with Local Boards
D 3.7	➢ Conservation Partnerships Between KwaZulu-Natal Nature Conservation Board and Adjacent Landowners
D 3.8	➢ Community Trust

EZEMVELO CORPORATE POLICIES (NORMS & STANDARDS)	
D 3.9	➢ Community Levy Policy and Guidelines
D 3.10	➢ Land Claims on Proclaimed and Unproclaimed Provincial and Assigned National Protected areas in KwaZulu-Natal
D 3.11	➢ Amafa Policy Guidelines for the access of rock art sites in KwaZulu Natal
Policy File No.	**Resource-use benefits**
D 3.12	➢ Disposal of Venison from Ezemvelo KZN Wildlife Management Operations.
D 3.13	➢ Sustainable use of wildlife resources.
D 3.14	➢ Freshwater Angling.
D 3.15	➢ Freshwater species utilisation.
D 3.16	➢ Use of plant resources from protected areas.
D 3.17	➢ Use of doomed biological material.
D 3.19	➢ Provision of hunting by Ezemvelo KZN Wildlife.
Policy File No.	**4. RELATIONSHIPS**
D 4.1	➢ Neighbour Relations.
D 4.2	➢ Participation - Non Government Organisations.
D 4.3	➢ Data Access.
D 4.4	➢ Consultation and Communication with Stakeholders: Policy and Guidelines.

Policy File No.	**COMMERCIAL OPERATIONS**

E 1	➢ Concessions for Welfare Groups.
E 2	➢ Hiking and Mountaineering.
E 3	➢ Educational Concessions.
E 4	➢ Club Facilities within Board Areas.
E 5	➢ Hutted Camps.
E 6	➢ Joint Venture Scheme.
E 7	➢ Allocation of Sites in terms of the Joint Venture Scheme.
E 8	➢ Access to Protected Areas through Unofficial Entry Points.
E 9	➢ Visitor Facilities Management by Ezemvelo KZN Wildlife.
E 10	➢ Lease of Lakeshore at State Dam Protected Areas.
E 11	➢ Execution, Control and Management of Leases and Concession Contracts (excluding Biodiversity Conservation Partnerships and Leases of Wildlife).
E 12	➢ Private Sector Reservations Policy.
E 13	➢ Partnerships for Eco-Tourism Development within or Adjacent to Protected Areas.
E 14	➢ Discounting of Tariffs for Walk-in Guests.
E 15	➢ Ecotourism Discounting Strategy.
E 16	➢ Travel Trade Commissions: Tour Operator/ Travel Agency.
E 17	➢ Policy and Procedure for the establishment and monitoring of Commercial Operations Public Private Partnership (PPP) Agreements.
E 18	➢ Administrative and operational policy on Professional hunting in South Africa.
E 19	➢ Commercialisation.

LISTED ACTIVITIES REQUIRING ENVIRONMENTAL AUTHORISATION IN TERMS OF REGULATION R.546, LISTING NOTICE NO.3

If any of the following activities are proposed in a protected area, proclaimed in terms of the Protected Areas Act, or within five kilometres of one, they will be subject to either a basic assessment or full scoping and environmental impact assessment process:

- The construction of billboards exceeding 18 square metres in size.
- The construction of reservoirs for bulk water supply with a capacity of more than 250m^3.
- The construction of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast:
    - Is to be placed on a site not previously used for this purpose.
    - Will exceed 15 metres in height but excluding attachments to existing buildings and masts on rooftops.
- The construction of a road wider than four metres with a reserve less than 13.5 metres.
- The construction of resorts, lodges or other tourism accommodation facilities.
- The conversion of existing structures to resorts, lodges or tourism accommodation facilities that sleep 15 people or more.
- The construction of aircraft landing strips and runways.
- The construction of above ground cableways and funiculars.
- The construction of facilities or infrastructure for the storage, or storage and handling of a dangerous good.
- The construction of tracks or routes for the testing, recreational use or outdoor racing of motor powered vehicles excluding conversion of existing tracks or routes for the testing, recreational use or outdoor racing of motor powered vehicles.
- The clearance of an area of 1ha or more of vegetation where 75% of the vegetative cover constitutes indigenous vegetation, except where such removal is required for:
    - The undertaking of a process or activity included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59

of 2008), in which case the activity is regarded to be excluded from this list.

- The undertaking of a linear activity falling below the thresholds mentioned in Listing Notice 1 in terms of GN No.544 of 2010

- The construction of facilities and infrastructure or structures of any size for any form of aquaculture *(this applies only inside a protected area, not within five kilometres of it)*.

- The construction of:

  - Jetties exceeding 10m^2 in size.
  - Slipways exceeding 10m^2 in size.
  - Buildings with a footprint exceeding 10m^2 in size.
  - Infrastructure covering 10m^2 or more.

  Where such construction occurs within a watercourse or within 32 metres of watercourse, measured from the edge of the watercourse, excluding where such construction will occur behind the development setback line.

- The expansion of reservoirs for bulk water supply where the capacity will be increased by more than 250m^3.

- The expansion of a resort, lodge, hotel and tourism or hospitality facilities where the development footprint will be expanded.

- The widening of a road by more than four metres or the lengthening of a road by more than one kilometre.

- The expansion of runways or aircraft landing strips where the expanded runways or aircraft landing strips will be longer than 1.4 kilometres in length.

- The expansion of above ground cableways and funiculars where the development footprint will be increased.

- The expansions of tracks or routes for the testing, recreational use or outdoor racing of motor powered vehicles excluding conversion of existing tracks or routes for the testing, recreational use or outdoor racing of motor powered vehicles, where the development footprint will be expanded.

- The expansions of facilities or infrastructure for the storage, or storage and handling of a dangerous good.

- The expansion of:

  - Jetties where the jetty will be expanded by 10m^2 in size or more.
  - Slipways where the slipway will be expanded by 10m^2 or more.

- Buildings where the buildings will be expanded by 10m^2 or more in size.
- Infrastructure where the infrastructure will be expanded by 10m^2 or more.

Where such construction occurs within a watercourse or within 32 metres of watercourse, measured from the edge of the watercourse, excluding where such construction will occur behind the development setback line.

- The expansion of facilities, infrastructure or structures of any size for any form of aquaculture *(this applies only inside a protected area, not within five kilometres of it)*.
- Phased activities for all activities listed in the Schedule and as it applies to a specific geographical area, which commenced on or after the effective date of the Schedule, where any phase off the activity may be below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold.

SPECIES LISTS

Amphibians	
Taxon Name	**English Name**
Hyperolius semidiscus	Yellow-striped reed frog

Mammals	
Taxon Name	**English Name**
Leptailurus serval serval	Serval
Mystromys albicaudatus	White-tailed mouse
Ourebia ourebi	Oribi
Ourebia ourebi ourebi	Oribi

Invertebrates – Grasshopers	
Taxon Name	**English Name**
Eremidium erectus	
Transvaaliana draconis	

Invertebrates – Molusc	
Taxon Name	**English Name**
Euonyma lymneaeformis	

Invertebrates – Butterflies	
Taxon Name	**English Name**
Lepidochrysops pephredo	
Capys penningtoni	
Chrysoritis oreas	
Capys penningtoni	

Invertebrates – Millipedes	
Taxon Name	**English Name**
Centrobolus tricolor	
Doratogonus montanus	
Spinotarsus triangulosus	

Birds	
Taxon Name	**English Name**
Accipiter tachiro	African Goshawk
Anas erythrorhyncha	Red-billed Teal
Anas undulata	Yellow-billed duck
Anthropoides paradiseus	Blue Crane
Anthus chloris	Yellow-breasted Pipit
Anthus cinnamomeus	African Pipit, Grassveld Pipit
Anthus leucophrys	Plain-backed Pipit

Anthus similis	Long-billed Pipit
Apalis thoracica	Bar-throated Apalis
Apus apus	Common Swift, European Swift
Apus barbatus	African Black Swift, Black Swift
Apus horus	Horus Swift
Aquila verreauxii	Verreauxs' Eagle, Black Eagle
Ardea cinerea	Grey Heron
Ardea melanocephala	Black-headed Heron
Balearica regulorum	Grey Crowned Crane, Crowned Crane
Bostrychia hagedash	Hadeda Ibis
Bradypterus baboecala	Little Rush-Warbler, African Sedge Warbler
Bugeranus carunculatus	Wattled Crane
Buteo rufofuscus	Jackal Buzzard
Buteo vulpinus	Steppe Buzzard
Cercomela familiaris	Familiar Chat
Certhilauda curvirostris	Cape Long-billed Lark, Long-billed Lark
Chaetops aurantius	Drakensberg Rock-jumper, Orange-breasted Rockjumper
Chloropeta natalensis	Dark-capped Yellow Warbler, Yellow Warbler
Ciconia ciconia	White Stork
Circus ranivorus	African Marsh-Harrier
Cisticola ayresii	Wing-snapping Cisticola, Ayres' Cisticola
Cisticola cinnamomeus	Pale-crowned Cisticola

Cisticola fulvicapilla	Neddicky
Cisticola juncidis	Zitting Cisticola, Fan-tailed Cisticola
Cisticola lais	Wailing Cisticola
Cisticola tinniens	Levaillant's Cisticola
Columba guinea	Speckled Pigeon, Rock Pigeon
Corvus capensis	Cape Crow, Black Crow
Coturnix coturnix	Common Quail
Dicrurus adsimilis	Fork-tailed Drongo
Egretta intermedia	Yellow-billed Egret
Elanus caeruleus	Black-shouldered Kite
Estrilda astrild	Common Waxbill
Euplectes afer	Yellow-crowned Bishop, Golden Bishop
Euplectes ardens	Red-collared Widowbird, Red-Collared Widow
Euplectes axillaris	Fan-tailed Widowbird, Red-shouldered Widow
Euplectes capensis	Yellow Bishop, Yellow-rumped Widow
Euplectes orix	Southern Red Bishop, Red Bishop
Euplectes progne	Long-tailed Widowbird, Long-tailed Widow
Falco amurensis	Amur Falcon, Eastern Red-footed Kestrel
Falco biarmicus	Lanner falcon
Falco rupicolus	Rock Kestrel
Fulica cristata	Red-knobbed Coot
Gallinago nigripennis	African Snipe, Ethiopian Snipe
Geocolaptes olivaceus	Ground Woodpecker

Gypaetus barbatus	Bearded vulture
Gyps coprotheres	Cape vulture
Hirundo albigularis	White-throated Swallow
Hirundo cucullata	Greater Striped Swallow
Hirundo fuligula	Rock Martin
Hirundo rustica	Barn Swallow, European Swallow
Laniarius ferrugineus	Southern Boubou
Lanius collaris	Fiscal Shrike
Macronyx capensis	Cape Longclaw, Orange-throated Longclaw
Milvus migrans	Black Kite,Yellow-billed Kite
Mirafra africana	Rufous-naped Lark
Monticola explorator	Sentinel Rock-Thrush
Monticola rupestris	Cape Rock-Thrush
Motacilla capensis	Cape Wagtail
Myrmecocichla formicivora	Ant-eating Chat
Nectarinia famosa	Malachite Sunbird
Numida meleagris	Helmeted guineafowl
Oenanthe bifasciata	Buff-streaked Chat
Oenanthe monticola	Mountain Wheatear, Mountain Chat
Onychognathus morio	Red-winged Starling
Oriolus larvatus	Black-headed Oriole
Ortygospiza atricollis	African Quailfinch, Quail Finch
Passer melanurus	Cape Sparrow

Platalea alba	African Spoonbill
Plectropterus gambensis	Spur-winged goose
Polemaetus bellicosus	Martial eagle
Pycnonotus tricolor	Dark-capped Bulbul, Black-eyed Bulbul
Rallus caerulescens	African Rail
Riparia cincta	Banded Martin
Riparia paludicola	Brown-throated Martin
Sagittarius serpentarius	Secretarybird
Sarothrura rufa	Red-chested Flufftail
Saxicola torquatus	African Stonechat, Stonechat
Scleroptila africanus	Grey-winged Francolin
Scleroptila levaillantii	Red-winged Francolin
Scopus umbretta	Hamerkop
Serinus canicollis	Cape Canary
Spreo bicolor	Pied Starling
Streptopelia capicola	Cape Turtle-Dove
Streptopelia semitorquata	Red-eyed Dove
Streptopelia senegalensis	Laughing Dove
Tachymarptis melba	Alpine Swift
Telophorus zeylonus	Bokmakierie
Thalassornis leuconotus	White-backed Duck
Threskiornis aethiopicus	African Sacred Ibis, Sacred Ibis
Vanellus armatus	Blacksmith Lapwing, Blacksmith Plover

Vanellus senegallus	African Wattled Lapwing, Wattled Plover
Vidua funerea	Dusky Indigobird, Black Widowfinch
Vidua macroura	Pin-tailed Whydah
Zosterops virens	Cape White-eye

PRO FORMA ANNUAL PLAN OF OPERATION

Notes of a management meeting for uMngeni Vlei Nature Reserve held at … office on …

Present:

Apologies:

CC:

Management target	2012/13 Progress	2013/14 goals	Completion date	Responsibility	Action
LEGAL COMPLIANCE AND ENFORCEMENT					
Secured and agreed upon access to the Nature Reserve.			Year 1	Officer in Charge and Biodiversity Stewardship Unit	
Development of an integrated security strategy.			Year 2	Officer in Charge, District Conservation officer and Adjacent Stewardship site Landowners	
Regular patrols covering the full extent of the nature reserve.			Ongoing	Officer in Charge and Adjacent Stewardship site Landowners	
Prosecution of any offender caught committing an offence.					
Field ranger outposts on surrounding properties.					
STAKEHOLDER ENGAGEMENT					
A continuous and active relationship between the local community, stakeholders and the Nature Reserve management team.			Ongoing	Officer in Charge	
A dedicated forum between adjacent Stewardship site Landowners and the Nature Reserves management team.					
The Nature Reserve Local Board is up to date with current information about the Nature Reserve and surrounding Stewardship sites.					

Management target	2012/13 Progress	2013/14 goals	Completion date	Responsibility	Action
Stakeholders adhere to the Memorandum of agreement of grazing.					
Detailed information of stakeholders and their contact details.					
Relevant external organisations are kept in contact frequently in-order to empower the nature reserve management team.			Ongoing	Officer in Charge	
Working relationships with external partners are established & maintained.					
Process applications for research projects.			Year 3	Ecological Advice Unit	
Priority list of research requirements for the Nature Reserve and surrounding stewardship sites.					
BUFFER ZONE PROTECTION AND LOCAL AND REGIONAL MANAGEMENT					
Identification of threatening processes that may jeopardise the ecological integrity of the nature reserve.			Year 2	Ecological Advice with Biodiversity Stewardship Unit.	
Formal protection of the plateau area through the Biodiversity Stewardship Unit.					
Incorporation of fire and grazing management needs to that of the surrounding Stewardship sites.					

Management target	2012/13 Progress	2013/14 goals	Completion date	Responsibility	Action
Private land adjacent to the nature reserve is incorporated into Biodiversity Stewardship Programmes.				Officer in Charge with Biodiversity Stewardship Unit and Ecological Advice.	
Alignment of activities of the Nature Reserve with that of surrounding Stewardship sites.					
Adoption of environmentally appropriate land uses in IDPs and SDFs in the areas immediately surrounding the Nature Reserve and priority expansion areas.			Annually	Planning Unit with assistance of Planning Committee	
Retention of existing low impact land uses in the areas immediately surrounding the Nature Reserve and its priority expansion area.					
VISITOR MANAGEMENT					
An assessment of what visitor activities and supporting infrastructure could be developed at the reserve and expansion area.			Year 3	Ecotourism and Marketing Unit	Refer management activity to ROC and OPSCOMM
Provision of supporting infrastructure for visitor activities.			Year 5		
A power point presentation to assist with planning and budgeting for the Nature Reserve.				Community Conservation Office	
CONSERVATION MANAGEMENT - FIRE AND GRAZING MANAGEMENT					
Enable the Nature Reserve to have			Year 1	Conservation	

Management target	2012/13 Progress	2013/14 goals	Completion date	Responsibility	Action
efficient firebreaks in place.				Manager and Ecological Advice Unit	
Compliance with the National Veld and Fire Protection Act.					
A member of the Local Fire protection Association.					
Staffs are capable of handling situations regarding fires appropriately.			Ongoing	Conservation Manager	
Develop an integrated fire management plan for the nature reserve and surrounding stewardship sites.					
The fire management plan should take in the requirements of threatened species and grazing management.					
An up to date fire management plan for the Nature Reserve.					
Stocking rates are capped at a maximum amount according to the grazing memorandum of understanding.			Ongoing	Ecological Advice Unit	
A full growing season's rest applied to each part of the site at least every four years.					
Grazing in accordance with the Veld Condition Assessment report.					

Management target	2012/13 Progress	2013/14 goals	Completion date	Responsibility	Action
An effective and up to date Domestic Stock Grazing Management Programme				Conservation Manager, Ecological Advice Unit, Stewardship Site Landowners	
Recommendations of the Veld Condition Assessment Report are incorporated by management interventions.					
Continuous monitoring of management interventions and their influence on the veld condition.					
CONSERVATION MANAGEMENT - INVASIVE PLANT CONTROL					
Invasive Species Control Plan conforms to the Biodiversity Act.			Year 1	Conservation Manager, Field Rangers, Ecological Advice Unit and Alien Plant Control Unit	
Monitoring reports and records of control.					
Minimal level of invasive plant species which may effect the growth of threatened species.					
Levels of Invasive species to be at maintenance level.					
Reduced levels of Leucosidea sericea and Glyceria maxima around the Nature Reserve and plateau.					
Reduction in infestations of all listed invasive plants in five years on the Nature Reserve & adjacent properties.				Stewardship sites land owners, Biodiversity Stewardship Unit,	

Management target	2012/13 Progress	2013/14 goals	Completion date	Responsibility	Action
Implementation of the Invasive Species Control Plan for the surrounding Stewardship sites.				Field Rangers, Ecological Advice Unit	
Reports and records of monitoring programme.					
Adequate funding for the removal and maintenance of Invasive species.					
Control plan conforms to the biodiversity act for stewardship sites.					
Map indicating location of invasive and alien plants in surrounding stewardship sites.				Relevant landowners & WWF Water Balance Programme	
Further prevention of inflow of invasive and alien species from neighbouring areas.					
Headwaters of the uMngeni River are clear of invasive alien species.					
Priority areas are clear of alien and invasive species.					
CONSERVATION MANAGEMENT - SOIL EROSION CONTROL AND HABITAT RESTORATION					
Control and reduction of soil erosion caused by previous overgrazing.			Ongoing	Conservation Manager	
Soil erosion problems are identified on the Nature Reserve & surrounding stewardship sites.					

Management target	2012/13 Progress	2013/14 goals	Completion date	Responsibility	Action
Implementation of accelerated soil erosion procedures in areas identified.					
Knowledge of the condition of wetlands and associated recommendations.				Stewardship site Landowners, Biodiversity Stewardship unit, Associated external organisations	
Monitoring records of wetlands.					
Knowledge of the condition of water in the Vlei.					
Land uses surrounding wetlands in stewardship sites and how they affect the wetlands themselves.					
Priority wetlands in stewardship sites are rehabilitated.					
Records of the progress of rehabilitation interventions.					
WETHEALTH score objectives will be maintained.					
Increased nesting opportunities for Wattled Cranes in surrounding stewardship sites.					
Future funding to carry out rehabilitation interventions on wetlands.					
CONSERVATION MANAGEMENT - ALIEN ANIMAL CONTROL					

Management target	2012/13 Progress	2013/14 goals	Completion date	Responsibility	Action
Creation of cooperative structures between Ezemvelo KZN Wildlife, local communities and law enforcement officials.			***Ongoing***	Conservation Manager and EWT	
Control of any alien animals found within the nature reserve.					
Secure Entry points and areas that may be soft targets of entry.					
Records of incidents and actions taken to address incident.					
Assistance from EWT regarding dog hunting prevention.					
CONSERVATION MANAGEMENT - RESOURCE UTILISATION					
Concise knowledge of the value of goods and services that uMngeni Vlei Nature Reserve has to offer.			Year 4	Resource Use Ecologist	
No illegal collection of biological material or samples.			If required	Conservation Manager and Resource Use Ecologist	
An agreed upon approach to any extractive resource use.					
Approved resource use records					
CONSERVATION MANAGEMENT - WILDLIFE MANAGEMENT					
An implemented strategy to manage wildlife present in the nature reserve.			Year 1	Conservation Manager and Ecological Advice	

Management target	2012/13 Progress	2013/14 goals	Completion date	Responsibility	Action
Control population numbers of species that are exceeding identified carrying capacities.			Ongoing		
An implemented strategy for problem animal control			Year 1	Conservation Manager and Biodiversity Stewardship Unit	
Records of incidents taken place and actions taken.					
Effective procedures and relationships with neighbours in dealing with problem animal control.					
Research and understanding of problem animals in and around the Nature Reserve.					
Botanical inventory survey report on which to base management decisions.			Ongoing	Conservation Manager and Resource Use Ecologist	
Faunal inventory survey report on which to base management decisions.					
Continued effort to retain and improve the number of rare and endangered species.				Conservation Manager with Ecological Advice Unit	
A record of wattled cranes and Oribi present in the Nature Reserve and neighbouring stewardship sites.					
Implementation of successful management plans.					

Management target	2012/13 Progress	2013/14 goals	Completion date	Responsibility	Action
Alignment of Wattled Crane and Oribi monitoring programmes with fire and grazing management.					
CONSERVATION MANAGEMENT - CONSERVATION TARGETS					
Biodiversity stewardship agreements are developed for the buffer zone for the Nature Reserve.			Year 1	Conservation Manager, Biodiversity Stewardship Unit, WWF facilitator	
Conservation targets are met.			Ongoing	Conservation Manager	
OPERATIONAL MANAGEMENT – FINANCIAL RESOURCES					
Adequate funding for the completion of the action s set out in the annual plan of operation.			Annually	Conservation Manager	
Funds to implement the ideal staff structure.					
Future funding to carry out rehabilitation interventions on wetlands.					
Adequate funding for the removal and maintenance of Invasive species.					
OPERATIONAL MANAGEMENT – HUMAN RESOURCES					
Nature Reserve is adequately staffed.			Year 5	Regional Management Unit	
Appointment of staff in all					

Management target	2012/13 Progress	2013/14 goals	Completion date	Responsibility	Action
positions in the Nature Reserve.					
Allocate staff in positions that are best suited towards them in-order for them to carry out their duties efficiently (i.e. staff with previous horse patrol experience).					
OPERATIONAL MANAGEMENT – INFRASTRUCTURE					
Effective communication throughout nature reserve.			Ongoing	Conservation Manager	
Scheduled maintenance of the boundary fence.					
A report on the condition fence and its level of maintenance.					
The Nature Reserve's boundaries and entrance points are clearly demarcated.					

UMngeni Vlei Nature reserve Expansion Plan

APPENDIX I

KZN BIODIVERSITY STEWARDSHIP PROGRAMME

UMGENI VLEI NATURE RESERVE EXPANSION AREA INFORMATION

As outlined in Section 2.4.1 and Section 2.4.2 of the uMgeni Vlei Nature Reserve (UVNR)and Expansion Areas Management Plan, the areas around the borders of uMgeni Vlei Nature Reserve have been identified as priorities for protected area expansion in terms of the both the National Protected Area Expansion Strategy (NPAES, DEAT 2008) and the Provincial Protected Area Expansion Plan (Ezemvelo KZN Wildlife, 2010).

The NPAES states that this focus area "provides opportunities for consolidating protection of moist high-altitude grasslands, protecting ecosystem services, and incorporating ecological gradients for resilience to climate change. It is the source area for several free-flowing rivers and includes critically endangered river types."

The KwaZulu-Natal Protected Area Expansion Plan also identifies UVNR as a critical nodal point for the expansion of protected area efforts in an important but currently under-represented regional ecotype.The nature reserve could form a key hub in creating a connected system of privately-owned and state-owned protected areas, incorporating the uKhahlamba Drakensberg Park.Many areas around UVNR are characterized by high levels of irreplaceability and low levels of protection, largely due to losses of natural habitat within the grassland biome and the individual vegetation types in which they occur. Landuse activities surrounding the reserve can directly affect the ecological integrity of the Nature Reserve both positively and negatively, and considering that many priority species such as cranes and oribi move freely between properties and use the broader landscape for foraging and breeding, the need for conservation initiatives on private and communal land is clear.
The broad area around UVNR in which stewardship efforts will be focussed is depicted in Fig 1 below.

Figure 1.Possible expansion area around uMgeni Vlei Nature Reserve for biodiversity stewardship engagement.

From the MINSET map shown in Fig 2 below, a large proportion of the expansion area falls into Biodiversity Priority Area 1, based on a number of priority species and ecosystems located in the area.

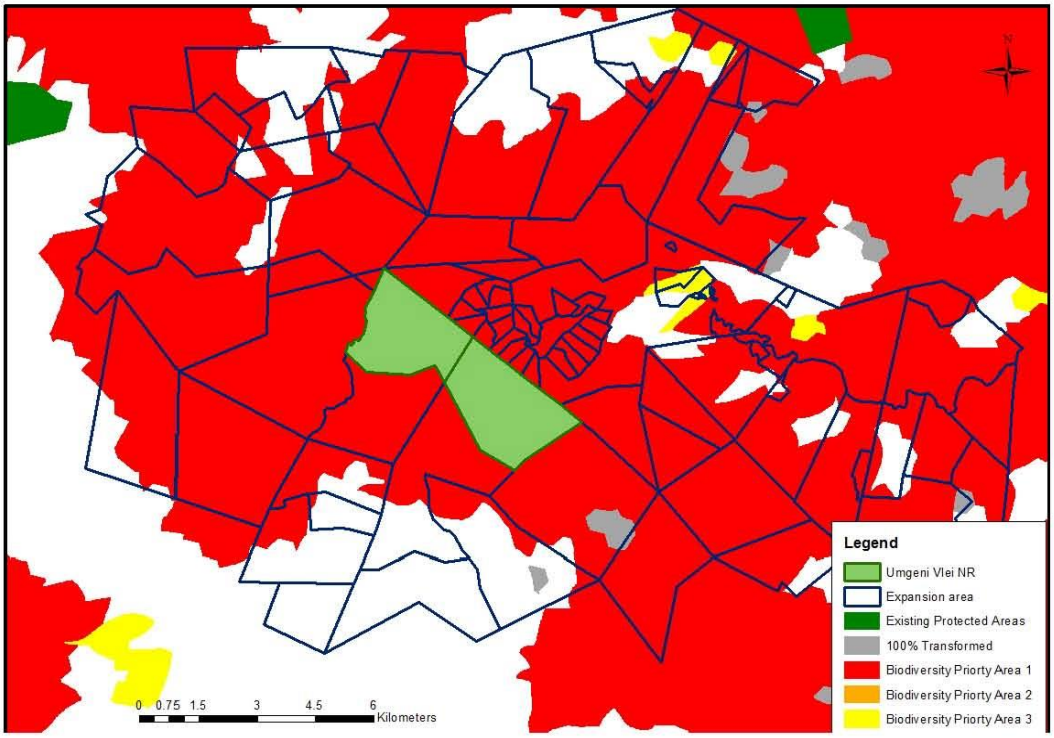


Figure 2.MINSET map for expansion area depicting Biodiversity Priority Areas.

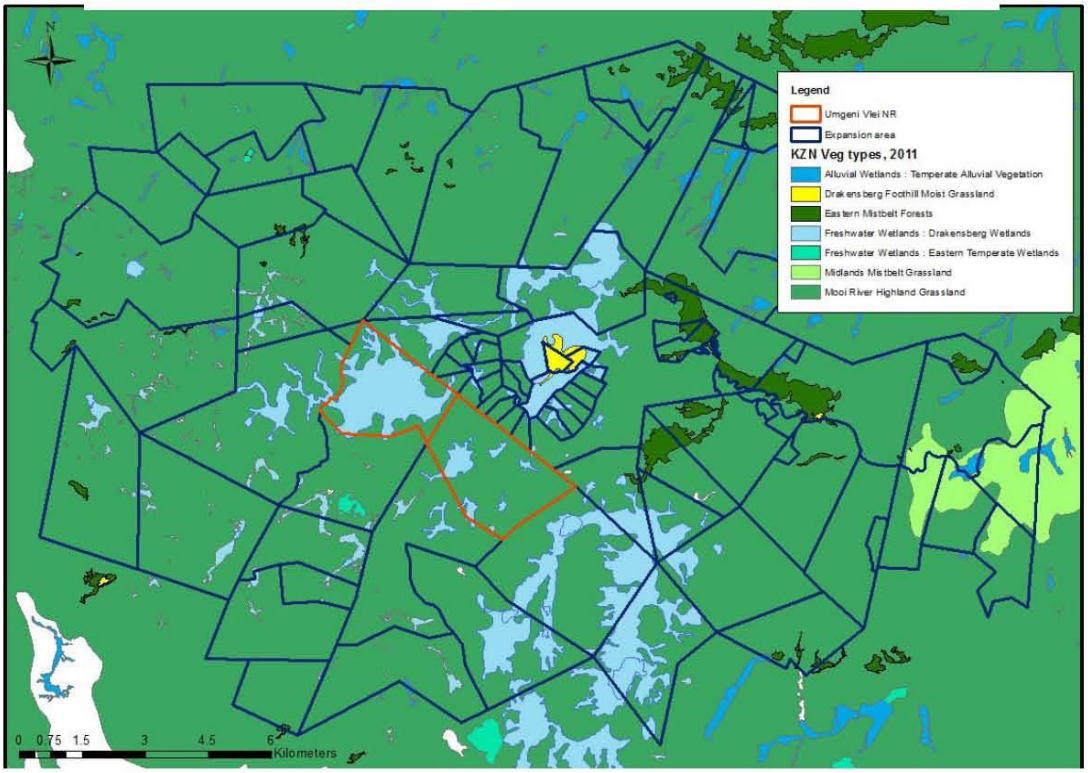


Figure 3.Vegetation map for expansion area based on the latest 2011 KZN Veg type data.

Establishment of stewardship sites within the expansion area will contribute to provincial Protected Areas targets through the conservation of the following 7 vegetation types which occur in the expansion area (Fig 3):

- Eastern Mistbelt Forest **(Conservation status: Endangered)**
- Midlands MistbeltGrassland **(Conservation status: Endangered)**
- Mooi River Highland Grassland **(Conservation status: Vulnerable)**
- Alluvial Wetlands: Temperate Alluvial Vegetation **(Conservation status: Vulnerable)**
- Drakensberg Foothill Moist Grassland **(Conservation status: Least Threatened)**
- Freshwater Wetlands: Drakensberg wetlands **(Conservation status: Least Threatened)**
- Freshwater Wetlands: Eastern Temperate wetlands **(Conservation status: Least Threatened)**

From a wetland perspective, there are a large number of nationally important wetlands in the expansion area, as identified by the National Freshwater Ecosystem Priority Area (NFEPA) plan, shown in Fig 4 below. This highlights the importance of the area from a water resource protection perspective.

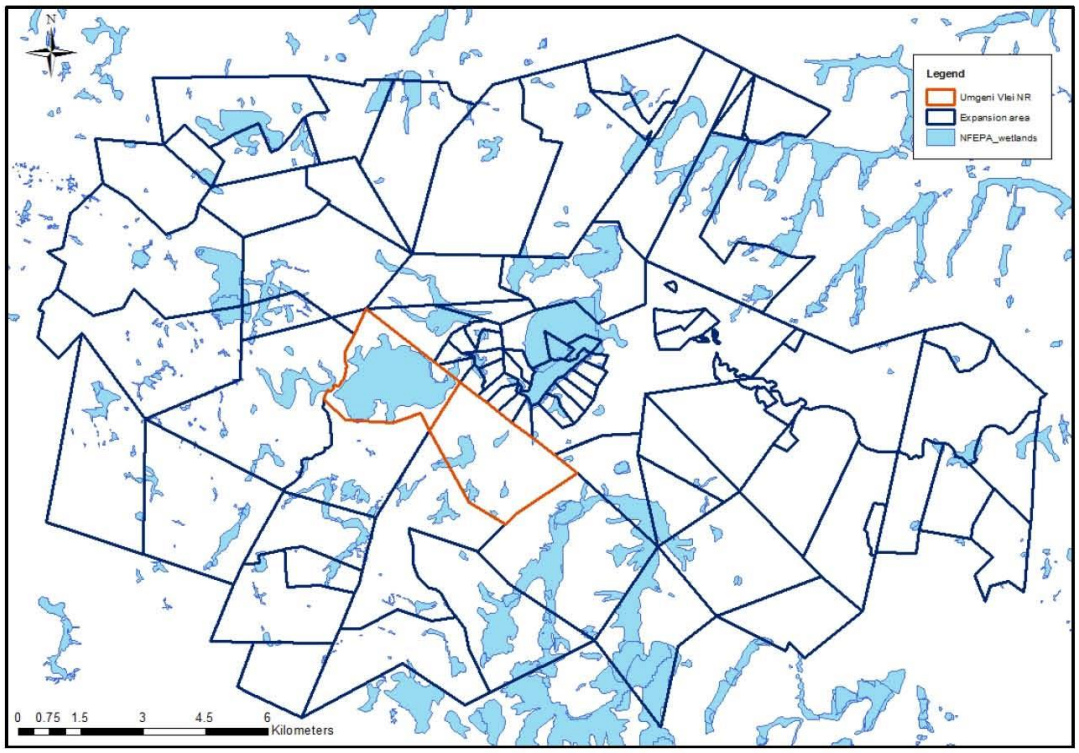


Figure 4.NFEPA map for expansion area.

The information provided above and depicted in the maps provides the motivation for the involvement of the KZN Biodiversity Stewardship Programme and the efforts to expand the protected area footprint around UVNR. The establishment of the UVNR expansion area is a joint effort between the KZN Biodiversity Stewardship Programme (BSP) and the World Wide Fund for Nature (WWF), due to the provision of dedicated stewardship capacity for the Upper Umgeni area by WWF-SA. Through this partnership, the WWF-employed Stewardship Facilitator is able to negotiate biodiversity stewardship agreements with private landowners on behalf of the Biodiversity Stewardship Programme (although WWF is not signatory to these agreements).

The vision for the area is to secure the headwaters area of the uMgeni River and ideally establish biodiversity stewardship agreements with all the neighbouring properties to the reserve and other conservation-worthy properties within the buffer zone of UVNR. WWF-SA also has a vision of seeing the

headwaters and initial reaches of the Umgeni River becoming and staying free of alien invasive plant species considering the high economic and ecological importance of the Umgeni River. WWF-SA are acting on this vision through its Water Balance Programme which provides a level of assistance with alien clearing efforts to those landowners that enter a biodiversity stewardship agreement with EKZNW.

To ensure that UVNR and the surrounding stewardship sites are managed in an integrated way, a framework/over-arching Management Plan has been developed for UVNR and the expansion area to ensure consistency and integration of management activities. As individual Management Appendices are developed for each landowner, they will be appended to this document and submitted to the MEC for approval.

There are 3 biodiversity stewardship options available to landowners as depicted in the figure below.

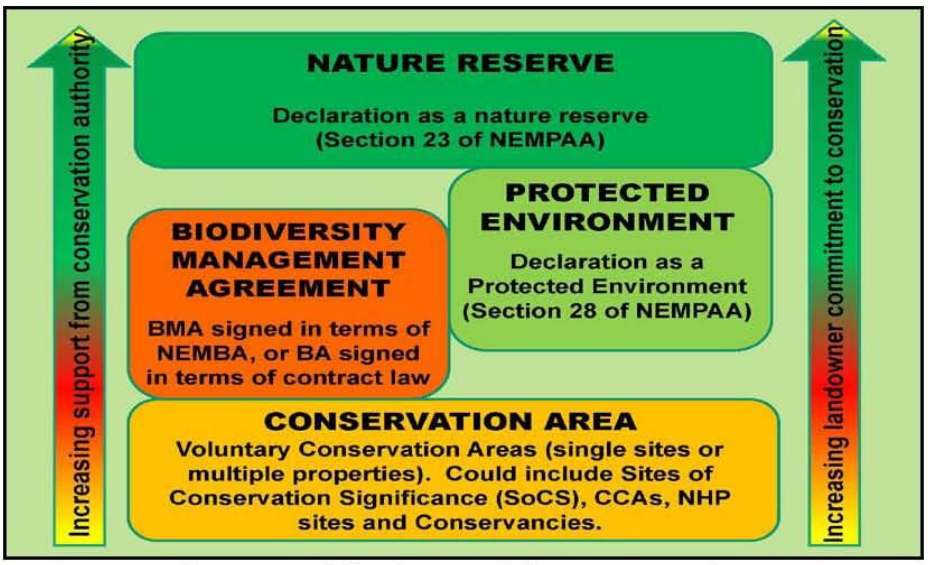


Figure 5. KZN Biodiversity Stewardship Programme options

The expansion efforts are being implemented in a phased approach.

PHASE 1– this includes the properties belonging to the Lake Lyndhurst Lot Owners Association, BravoZulu Pty Ltd and 3 properties belonging to Ivanhoe Farming Company Pty Ltd, namely Woodhouse No.1,Woodmeade and a portion of Palmer, commonly referred to as the "Wildflower Reserve" by the owner (Figure 6). These properties are all directly adjacent to UVNR and the respective landowners have opted to proclaim their land as Nature Reserves, in terms of Section 23 of the Protected Areas Act. Furthermore, these properties are also being included in the Ramsar application such that the Ramsar Site will, once approved, include Umgeni Vlei Nature Reserve and the Phase 1 properties listed above representing a mixture of state-owned and private land, but with the same Protected Area status.

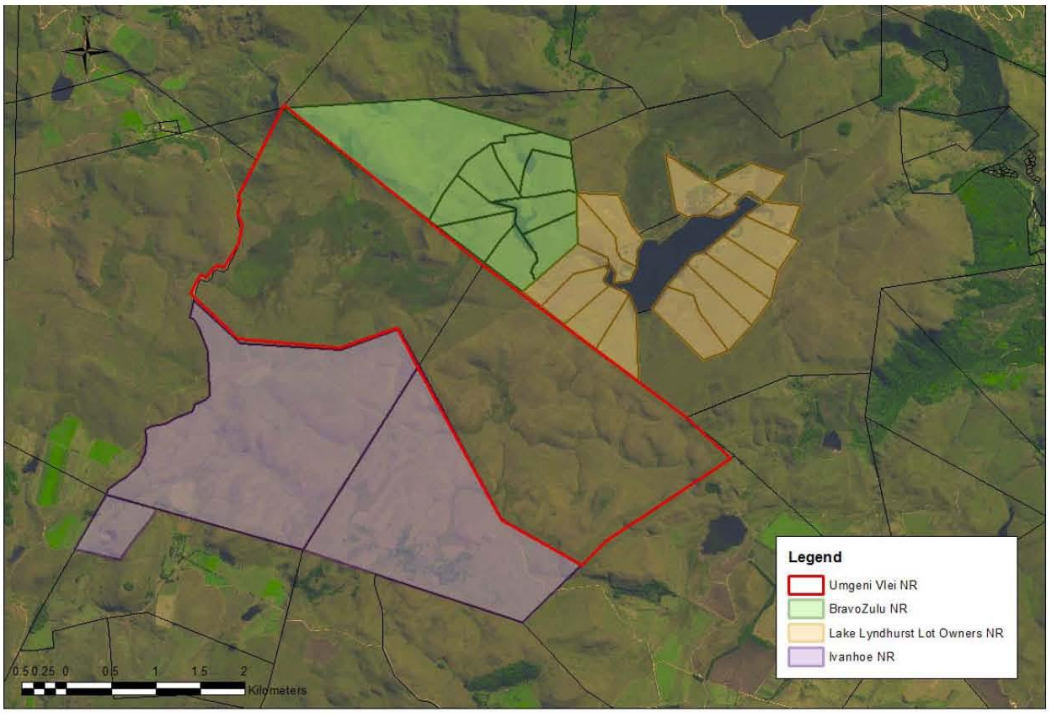


Figure 6. Phase 1 Biodiversity Stewardship properties

Phase 1 progress to date:

- **Nov 2010- Site Assessment** conducted for a broader Upper Umgeni stewardship area comprising 7 landowners (see Figure 7).
- **Jan 2011 – Notification letter** sent to respective landowners that the entire area qualifies for Nature Reserve status, when viewed as a collective application (when assessed on their own, individual properties might not qualify for Nature Reserve status). The following reasons were cited by the Stewardship Review Panel as the motivation for the approval of Nature Reserve status:

  - *1. Large contiguous area of grassland / wetland mosaic in very good condition, contributing to provincial vegetation type targets.*
  - *2. A significant expansion of the Umgeni Vlei Nature Reserve area.*
  - *3. Provides long-term security for the Umgeni Vlei wetland, identified as a KZN priority wetland system.*
  - *4. A vitally important water supply area as it covers the headwater of the Umgeni River.*
  - *5. The area supports a number of Critically Endangered species (Oribi &Wattled Crane), threatened & endemic species.*
  - *6. The region is located within an area recognised as an Important Bird Area (IBA).*

- **March 2012 – Veld Condition Assessment field work** conducted on the following properties (Woodhouse No. 1, Woodmeade, Lake Lyndhurst Lot Owners, Bravo Zulu Properties and New Forest).
- WWF-SA funding delayed by a year due to funders requirements (was expected in June 11).
- WWF-SA Stewardship Facilitator officially started on 1 Aug 2012 in order to take the declaration process for Phase 1 forward.

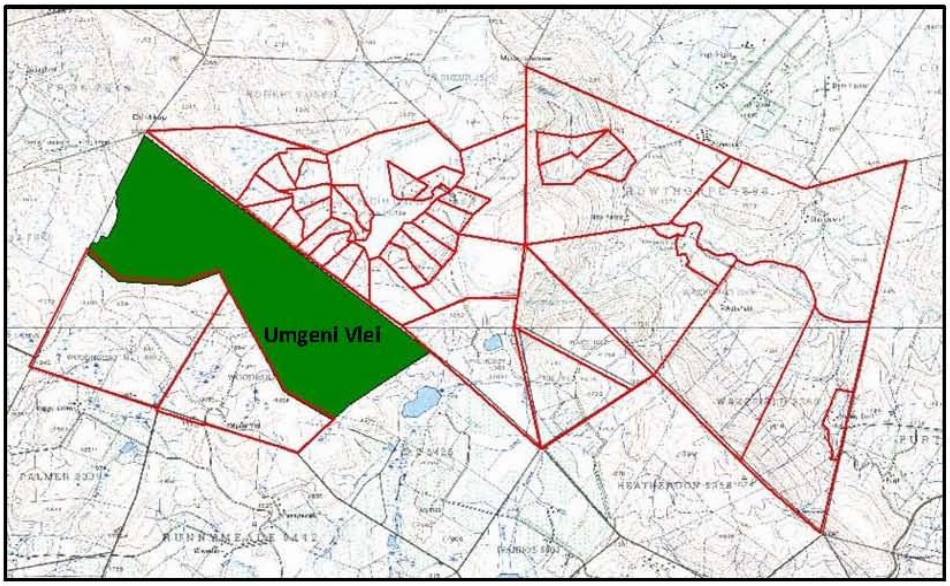


Figure 7. Properties initially assessed collectively and included in the Biodiversity Stewardship Site Assessment and Site Review process.

Phase 1 Status Quo:

- Currently, Management Agreements are being negotiated with the Phase 1 properties and detailed Management Appendices per landowner are being developed which will be submitted to the MEC for approval.
- Veld Condition Assessment field work has been carried out in Nov 2012 on another 2 properties interested in joining the Stewardship Programme as part of Phase 2 (namely Wakefield and Sheardown farms). Interactions around which Stewardship option will be adopted for these properties are underway.
- Invasive alien plant density mapping has been conducted at the end of Oct 2012 on the Phase 1 and Phase 2 properties as part of the WWF Water Balance Programme.
- WEThealth Assessments have been conducted on wetlands located on Woodhouse No. 1 and BravoZulu Properties (Oct & Nov 2012) in conjunction with the Mondi Wetlands Programme and the African Crane Conservation Programme of the Endangered Wildlife Trust (EWT).

Conclusion

As more landowners become interested and wish to join the Biodiversity Stewardship Programme, subsequent expansion phases will be added. A detailed Management Appendix will be developed for each landowner and submitted to the MEC for approval. However the Framework Management Plan for UVNR and the Expansion Area will remain the overarching Management Plan whose structure fulfils the requirements of the Protected Areas Act.

Memorandum of Agreement for Grazing

Letters from RAMSAR

CONVENTION ON WETLANDS
CONVENTION SUR LES ZONES HUMIDES
CONVENCIÓN SOBRE LOS HUMEDALES
(Ramsar, Iran, 1971)

To: The Management Authority of the uMgeni Vlei Nature Reserve Ramsar Site

From: Senior Regional Advisor for Africa - Paul Ouédraogo, ouedraogo@ramsar.org
Assistant Advisor for Africa – Ako Charlotte Eyong, africa@ramsar.org

Gland, 10 April 2013

Designation of uMgeni Vlei Nature Reserve as Wetland of International Importance

Dear Mr. Blackmore,

The Ramsar Convention Secretariat is very pleased to inform you that uMgeni Vlei Nature Reserve, designated on 19 March 2013 has been added to the List of Wetlands of International Importance. It has been announced on the Convention's Web site and listed as site number 2132. This Ramsar Site is part of an international network in which the conservation and wise use of resources contribute to human development and the conservation of our natural heritage. Please see the enclosed copy of a letter sent to the Administrative Authority (the government department responsible for implementing the Convention in your country) for more detailed information on this designation.

The Ramsar Convention, adopted in the Iranian city of Ramsar in February 1971, is the oldest global environmental agreement. It promotes the wise use and conservation of water and wetland resources through national action and international cooperation.

We have sent a Ramsar Site Certificate for this new site to the Ramsar Administrative Authority in your country. We attach herewith our general information pack and some examples of World Wetlands Day material (posters and brochures) from previous years' celebrations – see information about World Wetlands Day below.

As a Wetland of International Importance, your site should be clearly identified with the Ramsar logo, in accordance with the Ramsar Convention's Communication Strategy and guidelines. Please contact the Communications Officer (ramsar@ramsar.org) for details on how to use the Ramsar logo or request the necessary files.

If your wetland has a Web site, please feel free to use the Ramsar logo and send your link to ramsar@ramsar.org for inclusion on our list of links to individual Ramsar Sites.

SECRETARIAT SECRÉTARIAT SECRETARÍA: RUE MAUVERNEY 28 • CH-1196 GLAND, SWITZERLAND/SUISSE/SUIZA
TEL. +41 22 999 01 70 • FAX +41 22 999 01 69 • E-MAIL: ramsar@ramsar.org • WEB SITE: http://www.ramsar.org/

If you would like more information about Ramsar and related wetland activities and publications, please visit the Convention's Web site www.ramsar.org, where *inter alia* you will find the following information:

- **What's new?**
  News of Ramsar and wetland issues, updated daily: **www.ramsar.org/news/**

- **Ramsar Sites Information Service**
  A partner organisation to the Convention, Wetlands International, maintains the global database of technical data on Ramsar Sites. You can see the description of your site with its Ramsar Information Sheet online and build specific enquiries: **http://ramsar.wetlands.org**

- **2 February each year is World Wetlands Day**
  Commemorating the signature of the Convention in 1971, the day is aimed at action at all levels (government, NGO as well as at local community level) to raise public awareness of wetland values and benefits in general, and the Ramsar Convention in particular. There is a different wetland theme each year. We hope that a celebration can be organised in your locality on or around the 2nd February. More information here: **www.ramsar.org/WWD/**

- **CEPA Programme (Communication, Education, Participation and Awareness)**
  The Convention's CEPA Programme aims to develop communication, education, participation and awareness as a critical tool of the Convention. An electronic mailing list in English, French or Spanish for CEPA covers news, CEPA tools, useful Web links etc. More information here: **www.ramsar.org/CEPA-Programme/**

- **The Ramsar Convention Handbooks for the Conservation and Wise Use of Wetlands** with issues focusing amongst others on the *Wise use of wetlands, River basin and coastal management, Participatory skills, Communication, Education, Participation and Awareness, Managing wetlands, Ramsar Site designations, Wetlands inventory, Impact assessment, Water allocation and management* are available for download at **http://www.ramsar.org/handbooks4/**

- **Funding opportunities** (for DAC list countries):

  - *Wetlands for the Future Fund* – a funding initiative for wetland-related projects in the Neotropical Region supported by the United States of America – find out more at **www.ramsar.org/WFF/**
  - *Swiss Grant for Africa* – an annual contribution from the Swiss Federal Government to support wetland conservation and wise use and the implementation of the Convention in Africa – find out more at **www.ramsar.org/SGA/**

You are welcome also to join the Ramsar Forum - an electronic mailing list devoted to the wide range of news, announcements, opinion, information requests and replies concerning the conservation and sustainable use of wetland resources. To join this mailing list, please send an email message to ramsar@ramsar.org

The uMgeni Vlei Nature Reserve was designated applying one criterion especially dedicated to the conservation of the biological diversity (2). This is clearly contributing to the implementation of all five biodiversity-related Conventions, which are cooperating through the Biodiversity Liaison Group. Therefore we would encourage you to see your work also in relation to the implementation of appropriate Conventions in this group (CMS, CITES, CBD, WHC), and to find mutual benefits from the different activities undertaken and the exchange with the other focal points to improve the management and value of new Ramsar Sites.

Wishing you all success in the management of this Wetland of International Importance, we remain at your disposal should you have any questions.

Yours sincerely,

Ako Charlotte Eyong
Assistant Advisor for Africa

Encl.
- A copy of the article published on the Convention's web-page about the new designation
- Copy of the letter addressed to the Ramsar Administrative Authority in the Republic of South Africa
- General information pack and some World Wetlands Day material

Ramsar

CONVENTION ON WETLANDS
CONVENTION SUR LES ZONES HUMIDES
CONVENCIÓN SOBRE LOS HUMEDALES
(Ramsar, Iran, 1971)

From the Secretary General

Ms Nosipho Ngcaba
Director General
Department of Environmental Affairs
P/Bag X447
Pretoria 0001
South Africa

Gland, 10 April 2013
Ref: South Africa, 2132

Dear Ms. Ngcaba,

It is with great pleasure that I acknowledge receipt of the letter of 20 February 2013, sent to us through the Diplomatic Note of 19 March 2013, designating the uMgeni Vlei Nature Reserve for inclusion in the List of Wetlands of International Importance (the Ramsar List), pursuant to article 2.1 of the Convention. Thank you for having included the relevant completed Ramsar Information Sheet and map - this information will be incorporated into the Ramsar Sites Information Service (http://ramsar.wetlands.org). We would very much appreciate receiving more photographs of the site, if convenient, including those showing the types of wetlands and of wise use activities occurring there, for use in communication and outreach.

The inclusion of this new site in the Ramsar List is a clear indication of your Government's commitment to implementing the Convention, in order to achieve the conservation and sustainable use of the most important wetlands in your country. This brings the total of Ramsar Sites in your country to 21, and the surface area covered by these sites is now 554,136 hectares. Worldwide, the new designation represents site No 2132 on the Ramsar List.

As described in the *Strategic Framework and Vision for the List of Wetlands of International Importance*, adopted at COP7 and amended at COP9, the aim of the Ramsar List is "to develop and maintain an international network of wetlands which are important for the conservation of global biological diversity and for sustaining human life through the maintenance of their ecosystem components, processes and benefits/services". To reach such an objective, as the Contracting Parties agreed in Resolution VIII.10 (2002), the Contracting Parties need to adopt a strategic approach to the designation of Wetlands of International Importance. I look forward to hearing of your country's progress with the implementation of this Strategic Framework and systematic approach.

SECRETARIAT/SECRÉTARIAT/SECRETARÍA: RUE MAUVERNEY 28 • CH-1196 GLAND, SWITZERLAND/SUISSE/SUIZA
TEL +41 22 999 01 70 • FAX +41 22 999 01 69 • E-MAIL: ramsar@ramsar.org • WEB SITE: http://www.ramsar.org

Update of the Ramsar Information Sheet
Recognizing that the status of designated Ramsar Sites can and does change, in terms of their ecological character, the threats to this character, and the conservation management process and actions underway, the Contracting Parties in Resolution VI.13 (1996) committed themselves to revising the data provided in the RIS at least every six years, and I strongly encourage you to submit any changes in the Ramsar Information Sheet as soon as they arise.

Guidance on the wise use of wetlands
The text of the Convention provides that the ecological character of designated Ramsar Sites should be maintained within the context of the overall wise use of wetlands. Ramsar COP9 (November 2005) adopted Resolution IX.1 Annex A, entitled *A Conceptual Framework for the wise use of wetlands and the maintenance of their ecological character*. This provides updated definitions of "wise use" and "ecological character" and an overall framework for how and when to apply the suite of guidelines for the wise use of wetlands adopted by Contracting Parties over the years, all of which are provided in the 'toolkit' of Ramsar Wise Use Handbooks. All Contracting Parties have received CD-ROM copies of the 4th edition of the 'toolkit' and it is available on the Ramsar Web site.

Management planning
Article 3.1 of the Convention requires that "Contracting Parties shall formulate and implement their planning so as to promote the conservation of the wetlands included in the List, and as far as possible the wise use of wetlands in their territory".

From the Ramsar Information Sheet that you have included with the designation, I see with satisfaction that a management plan for the new site is in place, which should ensure fulfilment with the above-mentioned article of the Convention. We would be grateful if you could send us a copy of this file.

Change in the ecological character of Ramsar Sites
Should problems arise with the maintenance of the ecological character of the Ramsar Site, you should be aware of the terms of Article 3.2 of the Convention. This states that "Each Contracting Party shall arrange to be informed at the earliest possible time if the ecological character of any wetland in its territory and included in the List has changed, is changing or is likely to change as the result of technological developments, pollution or other human interference". Information on such changes, according to Article 3.2, should be passed without delay to the Ramsar Secretariat. Should any such change or likely change occur, the Ramsar Secretariat is at your disposal to advise and assist in addressing the problem. Approaches for addressing this issue are set out in COP8 Resolution VIII.8 on *Assessing and reporting the status and trends of wetlands, and the implementation of Article 3.2 of the Convention* and in COP10 Resolution X.16 (2008), which gives a framework for processes of detecting, reporting and responding to change in wetland ecological character.

Site Certificates and other information
Should you require additional copies of the Ramsar Site certificate, we will be happy to provide them. Enclosed you will also find a copy of the article published on the Convention's Web site about the new designation. An abbreviated description of the site also appears on our Web site and in printed form in the section dedicated to your country of the Annotated Ramsar List.

We are including the name of the site manager in our mailing list and we will send him a copy of this letter and some additional Ramsar information material.

Please do not hesitate to contact the Secretariat's Senior Advisor for your region, should you have any questions on issues regarding Ramsar Sites or other aspects of the implementation of the Convention.

Yours sincerely,

Anada Tiega

Encl.

- A copy of the article published on the Convention's Web site about the new designation.
- Ramsar Site certificates

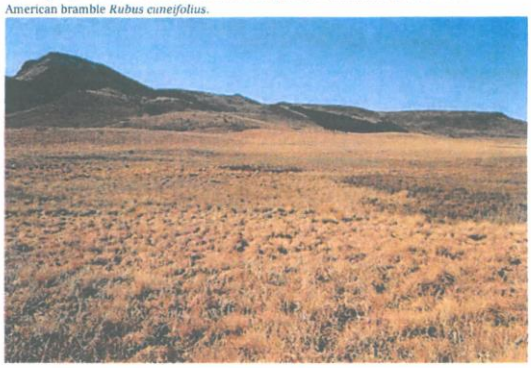
The Ramsar Convention on Wetlands

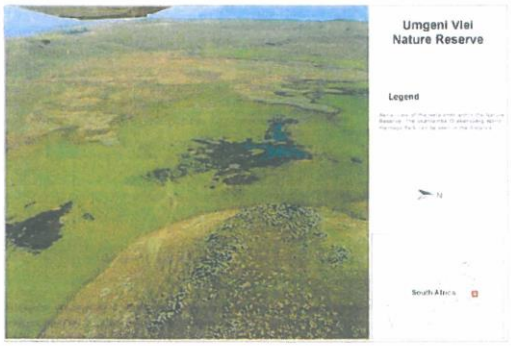
Ramsar > News > News Archives > 2013

South Africa names uMgeni Vlei Nature Reserve

08/04/2013

The Secretariat is pleased to announce that the government of South Africa has designated the uMgeni Vlei Nature Reserve (958 hectares, 29° 29'34"S 029°49'43"E), a BirdLife Important Bird Area in KwaZulu-Natal province, as its 21st Wetland of International Importance. The new Ramsar Site is described as permanent freshwater marshes and pools consisting mainly of grasslands and a few small areas of scrubby woodland. Located at about 1,840m asl in the Drakensberg Alpine Centre biodiversity hotspot, the site contains endemic and nationally threatened plant species including *Merwilla natalensis* and the KwaZulu-Natal endemic *Kniphofia brachystachya* and *Kniphofia breviflora*. It is a key representative remnant of the natural wetlands in the Highland Sourveld bioregion and noted to be an important breeding ground for several waterbirds including the IUCN Red-Listed Blue Crane *Anthropoides paradiseus*, Crowned Crane *Balearica regulorum*, and Wattled Crane *Bugeranus carunculatus* (2-3 breeding pairs present, representing over 2-3 % of the South African breeding Population). The site and its surrounding area are threatened by the invasive American bramble *Kubus cuneifolius*.





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