



**E Z E M V E L O  
K Z N W I L D L I F E**

Conservation, Partnerships & Ecotourism

**BLUFF NATURE RESERVE**

# *Protected Area*

**MANAGEMENT PLAN**





# **BLUFF NATURE RESERVE**

**KwaZulu-Natal  
South Africa**

## **Protected Area Management Plan**

Prepared by  
Ezemvelo KwaZulu-Natal Wildlife Protected Area Management Planning  
Unit and the Bluff Nature Reserve Planning Committee

Citation

*Bluff Nature Reserve: Management Plan. Version 1.0 (March 2014), Ezemvelo KZN Wildlife, Pietermaritzburg.*



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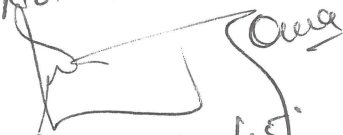
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## TABLE OF CONTENT

AUTHORISATION -----	III
LIST OF TABLES -----	IX
LIST OF FIGURES -----	IX
LIST OF APPENDICES -----	X
PREFACE -----	XI
EXECUTIVE SUMMARY -----	XIII
<i>Introduction</i> -----	<i>xiii</i>
<i>Strategic management framework</i> -----	<i>xiii</i>
<i>Management issues, challenges and opportunities at Bluff Nature Reserve</i> -----	<i>xiii</i>
<i>Managing the issues, challenges and opportunities at Bluff Nature Reserve</i> -----	<i>xiv</i>
<i>Monitoring and reporting</i> -----	<i>xiv</i>
<i>Annual plan of operation</i> -----	<i>xiv</i>
ABBREVIATIONS -----	XV
<b>1) BACKGROUND -----</b>	<b>1</b>
1.1 <i>Purpose of the plan</i> -----	1
1.2 <i>Structure of the plan</i> -----	1
1.3 <i>Introduction</i> -----	3
1.4 <i>The values of Bluff Nature Reserve</i> -----	6
1.5 <i>Planning approach</i> -----	8
1.5.1 <i>Adaptive management</i> -----	8
1.5.2 <i>Collaboration and transparency</i> -----	8
<b>2) DESCRIPTION OF BLUFF NATURE RESERVE AND ITS CONTEXT-----</b>	<b>10</b>
2.1 <i>Institutional and administrative framework for the management of Bluff Nature Reserve</i> -----	10
2.2 <i>The legislative basis for the management of Bluff Nature Reserve</i> -----	10
2.2.1 <i>Proclamation status of Bluff Nature Reserve</i> -----	10
2.2.3 <i>Invasive species control in terms of the Biodiversity Act</i> -----	11
2.3 <i>The policy framework guiding the management of Bluff Nature Reserve</i> -----	11
2.4 <i>The regional and local planning context of Bluff Nature Reserve</i> -----	13
2.4.1 <i>The National Protected Area Expansion Strategy</i> -----	14
2.4.2 <i>The Provincial Protected Area Expansion Plan</i> -----	14
2.4.3 <i>EIA Regulations in terms of NEMA</i> -----	14
2.5 <i>The history of Bluff Nature Reserve</i> -----	15
2.5.1 <i>Origins of the name of Bluff Nature Reserve</i> -----	15
2.5.2 <i>History of conservation in Bluff Nature Reserve</i> -----	15
2.5.3 <i>History of eco-tourism in Bluff Nature Reserve</i> -----	15
2.6 <i>Ecological context of Bluff Nature Reserve</i> -----	16
2.6.1 <i>Climate and weather</i> -----	16
2.6.1.1 <i>Temperature</i> -----	16
2.6.1.2 <i>Humidity</i> -----	17
2.6.1.3 <i>Rainfall</i> -----	17
2.6.1.4 <i>Sunshine</i> -----	18
2.6.1.5 <i>Radiation</i> -----	18
2.6.1.6 <i>Wind</i> -----	18
2.6.2 <i>Topography</i> -----	19
2.6.3 <i>Geology and soils</i> -----	20
2.6.4 <i>Hydrology</i> -----	21
2.6.5 <i>Vegetation</i> -----	21
2.6.5.1 <i>Freshwater Wetlands : Subtropical Freshwater Wetlands : Tall Grassland/ Sedge/ Reed Wetlands</i> -----	22
2.6.5.2 <i>KwaZulu-Natal Coastal Forests : Southern Moist Coastal Lowlands</i> -----	22
2.6.5.3 <i>KwaZulu-Natal Coastal Belt Grassland</i> -----	22
2.6.6 <i>Fire regime</i> -----	24
2.6.7 <i>Invasive species</i> -----	25
2.6.8 <i>Mammalian fauna</i> -----	25
2.6.9 <i>Avifauna</i> -----	25
2.6.10 <i>Herpetofauna (reptiles and amphibians)</i> -----	26
2.6.11 <i>Invertebrates</i> -----	26
2.7 <i>Socio-economic context</i> -----	28
2.8 <i>Operational management within Bluff Nature Reserve</i> -----	29
2.8.1 <i>Infrastructure</i> -----	29
2.8.2 <i>Staffing establishment</i> -----	31



2.8.3	Funding levels at Bluff Nature Reserve	31
2.8.4	Management effectiveness in Bluff Nature Reserve	31
2.9	<i>Summary of management issues, challenges and opportunities</i>	32
<b>3)</b>	<b>STRATEGIC MANAGEMENT FRAMEWORK</b>	<b>33</b>
3.1	<i>Bluff Nature Reserve vision</i>	33
3.2	<i>Objectives and strategic outcomes</i>	33
<b>4)</b>	<b>ZONATION PLAN</b>	<b>36</b>
4.1	<i>Zonation of Bluff Nature Reserve</i>	36
4.2	<i>Concept development guidelines</i>	40
<b>5)</b>	<b>ADMINISTRATIVE STRUCTURE</b>	<b>43</b>
<b>6)</b>	<b>OPERATIONAL MANAGEMENT FRAMEWORK</b>	<b>44</b>
6.1	<i>Determination of priorities for strategic outcomes</i>	44
6.2	<i>Legal compliance and law enforcement</i>	45
6.3	<i>Stakeholder engagement</i>	45
6.3.1	<i>Liaison Forum</i>	45
6.4	<i>Buffer zone protection and regional management</i>	48
6.4.1	<i>Protected area expansion and buffer zone management</i>	48
6.4.2	<i>Local and regional planning</i>	48
6.5	<i>Eco-tourism development</i>	50
6.5.1	<i>Tourism product development</i>	50
6.5.2	<i>Environmental interpretation and education</i>	50
6.6	<i>Conservation management</i>	52
6.6.1	<i>Fire management</i>	52
6.6.2	<i>Invasive plant control</i>	54
6.6.3	<i>Soil erosion control</i>	54
6.6.4	<i>Alien animal control</i>	56
6.6.5	<i>Resource utilisation</i>	56
6.6.5.1	<i>Plants and Animals</i>	57
6.6.5.2	<i>Bioprospecting</i>	57
6.6.6	<i>Wildlife management</i>	61
6.6.7	<i>Conservation targets</i>	61
6.7	<i>Operational management</i>	64
6.7.1	<i>Financial and human resources</i>	64
6.7.1.1	<i>Financial Resources</i>	64
6.7.1.2	<i>Human Resources Capacity</i>	64
6.7.2	<i>Facilities and infrastructure</i>	65
<b>7)</b>	<b>MONITORING AND REPORTING</b>	<b>67</b>
7.1	<i>Annual monitoring</i>	67
7.2	<i>Annual protected area management plan implementation review</i>	70
<b>8)</b>	<b>BLUFF NATURE RESERVE ANNUAL PLAN OF OPERATION</b>	<b>72</b>
8.1	<i>Implementation of the protected area management plan</i>	72
8.2	<i>Responsibilities in implementing the protected area management plan</i>	73
8.3	<i>Bluff Nature Reserve resource requirements</i>	73
8.3.1	<i>Staff and equipment</i>	74
8.3.2	<i>Projects</i>	74
8.4	<i>Annual financial plan</i>	74
8.5	<i>Financial accounting system</i>	74
8.6	<i>Financial reporting</i>	75
	<b>REFERENCES</b>	<b>76</b>
	<b>DEFINITIONS OF TERMS</b>	<b>79</b>
	<b>LIST OF STATUTES TO WHICH THE BLUFF NATURE RESERVE IS SUBJECT</b>	<b>83</b>
	<b>COPY OF BLUFF NATURE RESERVE PROCLAMATION</b>	<b>85</b>
	<b>LIST OF UNPUBLISHED AND SUPPORTING DOCUMENTATION</b>	<b>89</b>
	<b>LISTED ACTIVITIES REQUIRING ENVIRONMENTAL AUTHORISATION IN TERMS OF REGULATION R.546, LISTING NOTICE No.3</b>	<b>93</b>
	<b>SPECIES LISTS</b>	<b>95</b>
	<b>PRO FORMA ANNUAL PLAN OF OPERATION</b>	<b>103</b>
	<b>FINANCIAL PLAN</b>	<b>109</b>

## LIST OF TABLES

Table 2.6.1.1	Monthly mean temperature and temperature ranges at Durban International Airport
Table 2.6.1.2	Monthly mean relative humidity (%) at 14:00 at Durban International Airport
Table 2.6.1.3	Monthly mean rainfall (mm) for Durban and the maximum experienced in 24 hours
Table 2.9.1	Management challenges and issues
Table 3.1	Objectives and strategic outcomes for Bluff Nature Reserve
Table 6.1	Framework for legal compliance and law enforcement, and stakeholder engagement
Table 6.2	Framework for buffer zone protection and regional management
Table 6.3	Framework for eco-tourism
Table 6.4	Framework for conservation management – fire management
Table 6.5	Framework for conservation management – invasive plant control and soil erosion control
Table 6.6	Framework for conservation management – alien animal control and resource utilisation
Table 6.7	Systematic biodiversity planning conservation targets to which Bluff Nature Reserve contributes
Table 6.8	Framework for conservation management – wildlife management and conservation targets
Table 6.9	Framework for operational management – financial and human resources, and facilities and infrastructure
Table 7.1	Annual surveillance and monitoring schedule for Bluff Nature Reserve

## LIST OF FIGURES

Figure 1.1	Structure of the Protected Area Management Plan
Figure 1.2	Regional location of Bluff Nature Reserve
Figure 1.3	The adaptive management cycle
Figure 2.1	Topographical Map of Bluff Nature Reserve
Figure 2.2	Vegetation Map of Bluff Nature Reserve
Figure 2.3	Infrastructure Map of Bluff Nature Reserve
Figure 4.1	Bluff Nature Reserve zonation map
Figure 4.2	Buffer Zone of Bluff Nature Reserve
Figure 5.1	Recommended organisational structure for Bluff Nature Reserve
Figure 8.1	Process for the implementation of Protected Area Management Plans

## LIST OF APPENDICES

Appendix A	Definitions and terms
Appendix B	List of statutes to which Bluff Nature Reserve is subject
Appendix C	Proclamation of Bluff Nature Reserve
Appendix D	List of unpublished and supporting documents
Appendix E	Listed Activities: R.546 Listing No 3
Appendix F	Species lists
Appendix F 1	Fauna species list of Bluff Nature Reserve
Appendix F 2	Flora species list of Bluff Nature Reserve
Appendix F 3	Important Fauna species of Bluff Nature Reserve
Appendix F 4	Important Flora species of Bluff Nature Reserve
Appendix G	Pro forma Annual Plan of Operation
Appendix H	Financial plan for Bluff Nature Reserve

## PREFACE

This Protected Area Management Plan for Bluff Nature Reserve is its primary and overarching management document. 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 November 2013.

The protected area management planning process has been designed to meet the statutory requirements of the National Environmental Management: Protected Areas Act and 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 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.

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

Dr. Bandile Mkhize  
Chief Executive Officer





## EXECUTIVE SUMMARY

### Introduction

Bluff Nature Reserve (BNR) is a 46.2 ha protected area situated in the suburb of Bluff which is 9.2km south of the centre of Durban. BNR lies 7.1km north of the old Durban International Airport and the nature reserve falls within the jurisdiction of the eThekweni Metropolitan Municipality. The nature reserve is situated within a residential area alongside the Wentworth Hospital and is split in half by Tara Road which passes through the reserve.

The nature reserve is surrounded by a number of protected areas such as Kenneth Stainbank which lies 14km west of Bluff Nature Reserve and the Bluff National Park Golf and the Southern Coastal Park to the North.

BNR offers bird viewing over the wetland, there is a short trail around the reserve and a picnic and braai area that is situated close to the entrance.

### Strategic management framework

The following vision has been adopted for Bluff Nature Reserve:

*A well-managed and protected nature reserve providing sustainable benefits to visitors, neighbours and the metropolitan area through biodiversity conservation and appropriate access to natural resources and ecosystem services.*

An objective has been identified for each of Bluff Nature Reserve's key performance areas, which relate to the important functions and activities necessary to achieve the vision and protect, develop and manage the nature reserve 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.

### Management issues, challenges and opportunities at Bluff Nature Reserve

The following key issues have been identified at Bluff Nature Reserve:

- Absence of a liaison forum between the nature reserve management and surrounding neighbours.
- Inefficient usage of the nature reserve for environmental education.
- Poor understanding of tourism avenues and their feasibility.
- Inflow of waste into the reserve via storm water drains which lead into the reserve.
- Litter on the boundary of the reserve – via people passing and motorists.
- Threats of alien plants entering via storm water drains from surrounding areas.
- Soil erosion in the western block of the reserve due to storm water run-off from the hospital which is located adjacent to the reserve.
- Wetland has undergone severe siltation over the years.
- Inadequate staff numbers and low budget for the nature reserve.

## **Managing the issues, challenges and opportunities at Bluff Nature Reserve**

- There is adequate law enforcement within the nature reserve.
- Constructive community involvement in the nature reserve's management through an effectively functioning Community Liaison Forum.
- Investigate the potential of incorporating additional land from the Engen Rehabilitation site into the nature reserve.
- Promote tourism in the area through collaboration with municipal tourism initiatives and Ezemvelo marketing programme.
- Development and implementation of an environmental interpretation and education programme.
- Development of an invasive species control plan for the nature reserve.
- Identify and rehabilitate areas that have been affected by soil erosion.
- The nature reserve is adequately staffed for its effective management and operation.
- All facilities and infrastructure in the nature reserve are adequately maintained.

### **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. An annual monitoring schedule for Bluff Nature Reserve, which conforms to the norms and standards for surveillance and monitoring (Goodman 2011), has been developed, based on the management targets contained in the operational management framework.

### **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 management plan. The annual plan of operation should be prepared, based on the findings of the previous year's management plan implementation review. The annual plan of operation will be tied to staff performance contracts, and goals set in them will be categorised in the same key performance areas as the management plan.

## ABBREVIATIONS

A.S.L.	Above sea level
AMAFA	Amafa aKwaZulu-Natali (KwaZulu-Natal Provincial Heritage Agency)
APO	Annual Plan of Operation
BNR	Bluff Nature Reserve
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CDP	Concept Development Plan (Component of Ezemvelo KZN Wildlife protected area management planning process)
CEO	Chief Executive Officer
CMS	Co-management Structure
CRMP	Cultural Resource Management Plan
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
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EWT	Endangered Wildlife Trust
Ezemvelo	Ezemvelo KwaZulu-Natal Wildlife
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)
GDP	Gross Domestic Product
GIS	Geographical Information System
IDP	Municipal Integrated Development Plan
IUCN	International Union for the Conservation of Nature
KZN	KwaZulu-Natal Province of the Republic of South Africa
KZNCMA	KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997)
KZNHRA	Kwa-Zulu Heritage Resources Act 1997, (Act No. 10 of 1997)
MEC	Member of the Executive Council
MoA	Memorandum of Agreement
MoU	Memorandum of Understanding
MP	Management Plan
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEMPAA	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NPAES	National Protected Area Expansion Strategy
NR	Nature Reserve
NRPC	Nature Reserve Planning Committee
NSBA	National Spatial Biodiversity Assessment
OiC	Officer in Charge
OPSCOMM	Ezemvelo Operations Committee
PA	Protected Area
PFMA	Public Finance Management Act, 1999 (Act No. 1 of 1999)
SA	Republic of South Africa
SAHRA	South African Heritage Resources Agency

SANDF	South African National Defence Force
SAPPI	South African Pulp and Paper Industry
SAPS	South African Police Service
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
TFCA	Usuthu-Tembe-Futi Transfrontier Conservation Area
TFP	Transfrontier Park
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WWF	World Wildlife Fund

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## 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:

- Facilitates compliance.
- Provide the primary strategic tool for management of Bluff Nature Reserve, 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 Bluff Nature Reserve.
- Provide for capacity building, future thinking and continuity of management.
- Enable Ezemvelo KZN Wildlife to develop and manage Bluff Nature Reserve 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 Bluff Nature Reserve.
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 Bluff 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.



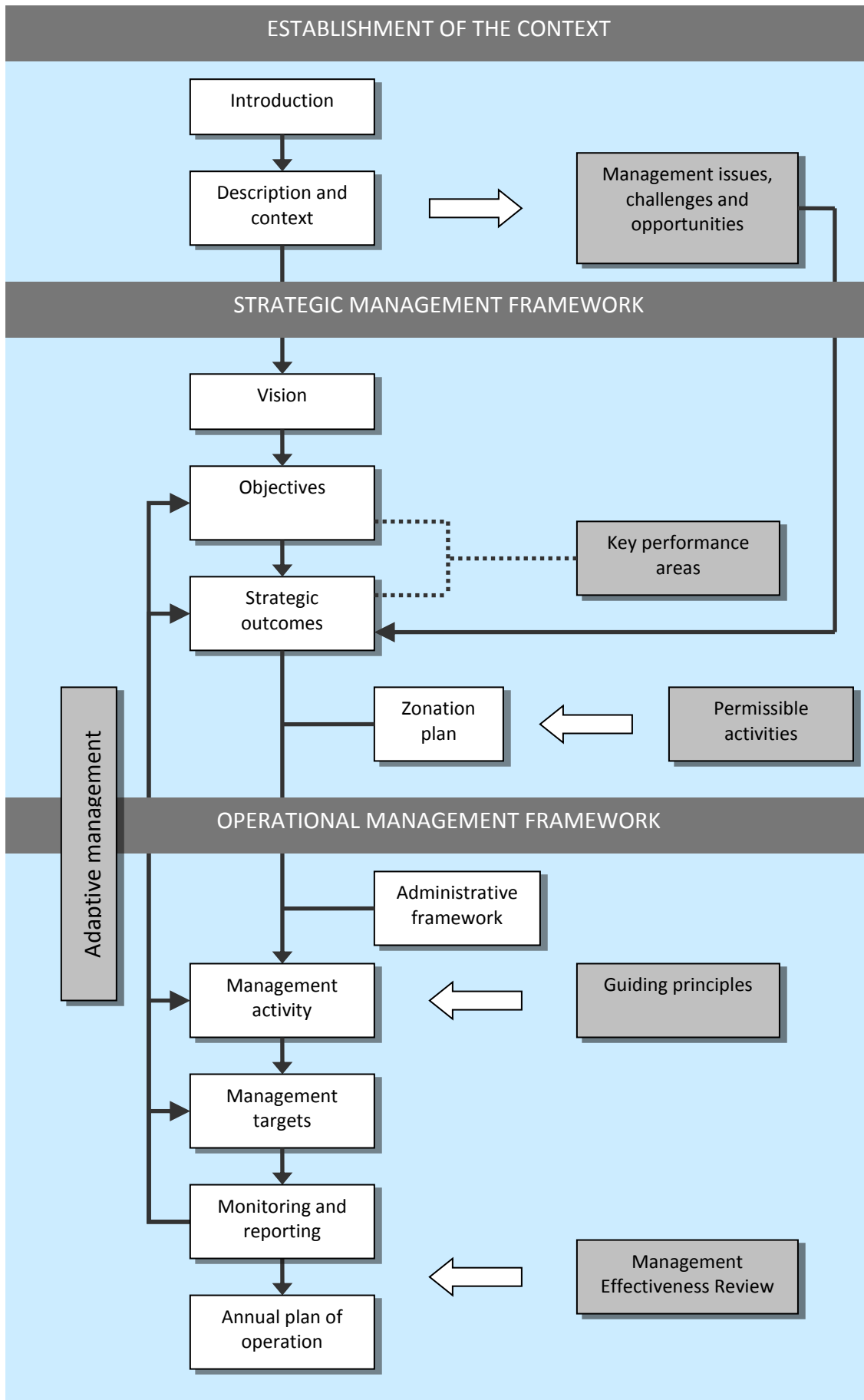


Figure 1.1 Structure of the Protected Area Management Plan

### 1.3 Introduction

Bluff Nature Reserve (BNR) is a 46.2 ha protected area situated in the suburb of Bluff which is 9.2km south of Durban. BNR lies 7.1km north of the old Durban International Airport and the nature reserve falls within the jurisdiction of the eThekweni Metropolitan Municipality. The nature reserve is situated within a residential area alongside the Wentworth Hospital and is divided in half by Tara Road which passes through the reserve. Engen Refineries are located 800meters to the south of BNR.

The nature reserve is surrounded by a number of protected areas such as Kenneth Stainbank which lies 14km west of Bluff Nature Reserve and the Bluff National Park Golf and the Southern Coastal Park to the North.

BNR forms part of the Durban Metropolitan Open Space System (D'MOSS) which was previously known as the eThekweni Environmental Services Management Plan (EEMP). This system of open spaces constitutes of 74 000ha of land and water that incorporates areas of high biodiversity value.

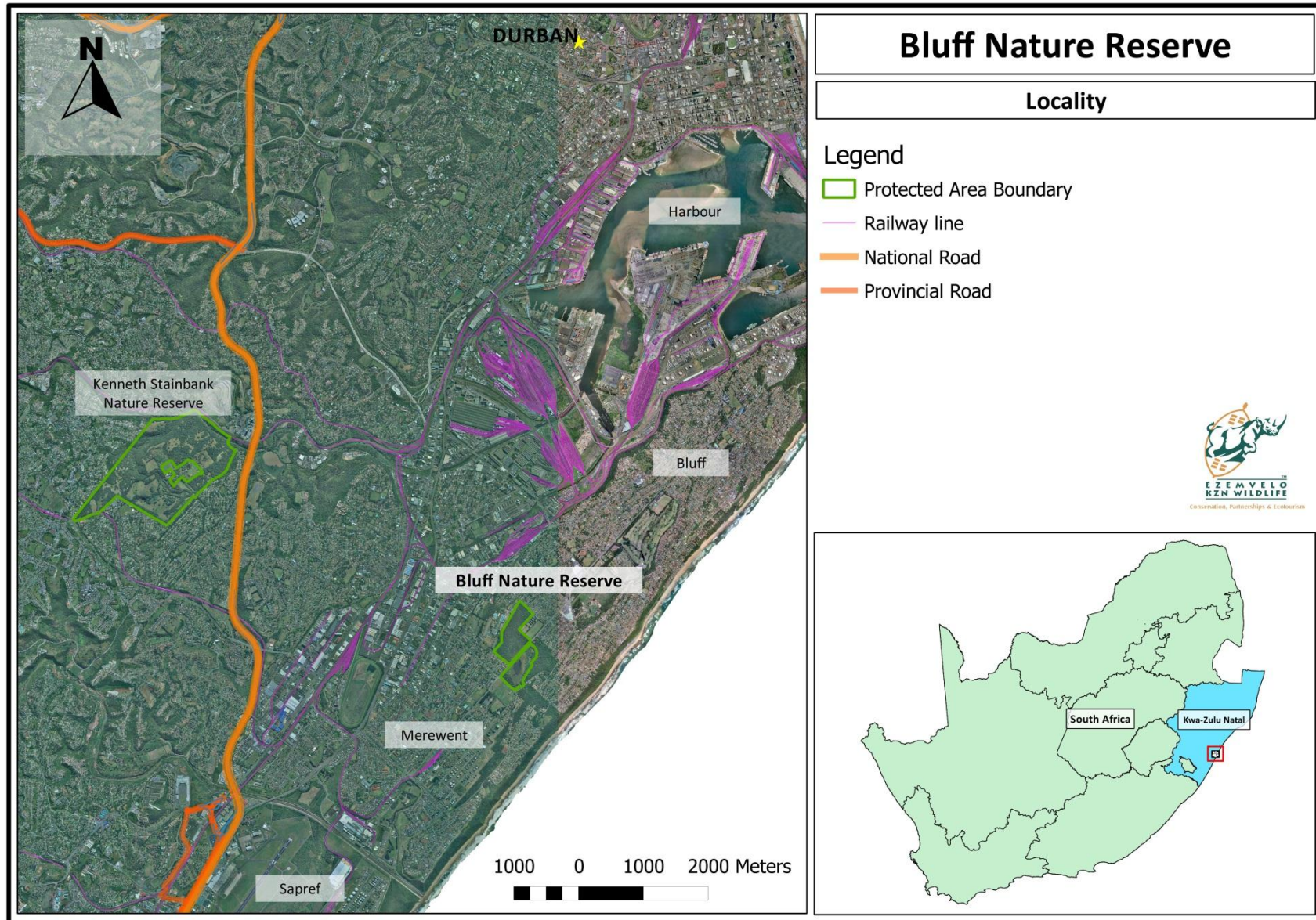
BNR also falls within the Maputaland – Pondoland - Albany hotspot which is described as a biodiversity hotspot and a centre of plant endemism. This region is home to a wide variety of endemic and near endemic fauna and flora. This resulted from the geographical location of this region and exceptional influence from the temperate zone. Bluff Nature Reserve contributes towards the land that is formally protected towards the Maputaland – Pondoland – Albany hotspot.

The nature reserve protects a portion of the Southern Moist Coastal Lowlands Forest, Coastal Belt Grasslands and Subtropical Freshwater Wetlands. Plant species of importance include Graceful/Slender Redhot Poker (*Kniphofia gracilis*), Wood's Disa (*Disa woodii*) and the Green Wood Orchid (*Bonatea speciosa*) while important fauna species include Blue Duiker (*Philantomba monticola bicolor*) which is vulnerable, the Greater Red Musk Shrew (*Crocidura flavescens*) and the Hottentot Golden Mole (*Amblysomus hottentotus*).

Various important bird species are present in the nature reserve such as the Spotted Ground-Thrush (*Zoothera guttata*) which is endangered, the Red-winged Pratincole (*Glareola pratincola*), Lanner Falcon (*Falco biarmicus*), Great White Pelican (*Pelecanus onocrotalus*) and the Painted Snipe (*Rostratula benghalensis*) which are all near threatened.

BNR is also home to a host of reptiles and amphibians such as the Natal Leaf-folding Frog (*Afrixalus spinifrons spinifrons*) which is vulnerable and, is up to 75% endemic to KwaZulu-Natal. The Mashona Hinged Terrapin (*Pelusios rhodesianus*) and the Black-headed Dwarf Chameleon (*Bradypodion melanocephalum*) is restricted to KwaZulu-Natal and is found in the nature reserve.

Bluff Nature Reserve also provides the perfect habitat for a host of insects such as the Bluff Forest Wingless grasshopper (*Silvanidium peninsulare*), Ringed Millipede (*Centrobolus anulatus*), Cristulate Black millipede (*Doratogonus cristulatus*) and the Bronze pinwheel (*Trachycystis aenea*) with all of them being restricted and endemic to KwaZulu-Natal, to the exception that the Bronze Pinwheel which is near-endemic to KwaZulu-Natal.



**Figure 1.2 Regional location of Bluff Nature Reserve**

## 1.4 The values of Bluff Nature Reserve

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 Bluff Nature Reserve include:

<p><b>Natural values</b></p>	<ul style="list-style-type: none"> <li>▪ It's an area of unique natural beauty;</li> <li>▪ Bluff Nature Reserve has rich biodiversity and a number of key species including threatened, protected and endemic species;</li> <li>▪ Important habitats present in the reserve include KwaZulu-Natal Coastal Belt Grassland, KwaZulu-Natal Coastal Forest: Southern Mesic Coastal Lowlands Forest and Freshwater Wetlands: Subtropical Freshwater Wetlands.</li> <li>▪ The wetland present in the nature reserve provides an area of refuge for many water birds such as ducks, cranes and important birdlife.</li> <li>▪ The nature reserve supports a population of Blue Duiker (<i>Philantomba monticola bicolor</i>), the Greater Red Musk Shrew (<i>Crocidura flavescens</i>), the Hottentot Golden Mole (<i>Amblysomus hottentotus</i>) and a number of other rare and threatened species.</li> <li>▪ There have been sightings and presence of various bird species such as the Spotted Ground-Thrush (<i>Zoothera guttata</i>), Lanner Falcon (<i>Falco biarmicus</i>), Great White Pelican (<i>Pelecanus onocrotalus</i>) and the Painted Snipe (<i>Rostratula benghalensis</i>).</li> <li>▪ The nature reserve contains coastal forest that are untransformed and also links ecosystems from the surrounding areas – in this way; it represents a number of dispersed species.</li> </ul>
<p><b>Ecosystem service values</b></p>	<ul style="list-style-type: none"> <li>▪ Facilitates air pollution absorption.</li> <li>▪ Supports carbon sequestration.</li> <li>▪ Plays a part in soil formation and fertility.</li> <li>▪ Hinders soil erosion and degradation.</li> <li>▪ Wetlands aids in water filtration which leads to disease reduction.</li> <li>▪ Refugium function - living area for wild flora and fauna.</li> <li>▪ Ecotourism and educational value.</li> </ul>
<p><b>Eco-tourism values</b></p>	<ul style="list-style-type: none"> <li>▪ Recreation and tourism activities include a picnic site, walking trails and a bird viewing platform.</li> <li>▪ The reserve is well known for its extensive bird life and is highly regarded by local bird enthusiasts.</li> <li>▪ Provides an outdoor educational centre for schools where students can learn first-hand from experienced field rangers.</li> </ul>
<p><b>Historic values</b></p>	<ul style="list-style-type: none"> <li>▪ The wetland is a representation of what used to be an area with various wetlands prior to urbanisation.</li> </ul>



<b>Social values</b>	<ul style="list-style-type: none"> <li>▪ Provides opportunities for environmental education and awareness.</li> <li>▪ Provides both permanent and temporary job creation opportunities.</li> <li>▪ Provides opportunities for environmental education and awareness.</li> <li>▪ It is an area of tranquillity where locals can come to relax and view the natural biodiversity available.</li> </ul>
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Consistent with Section 17 of the Protected Areas Act, the purpose of Bluff Nature Reserve is to:

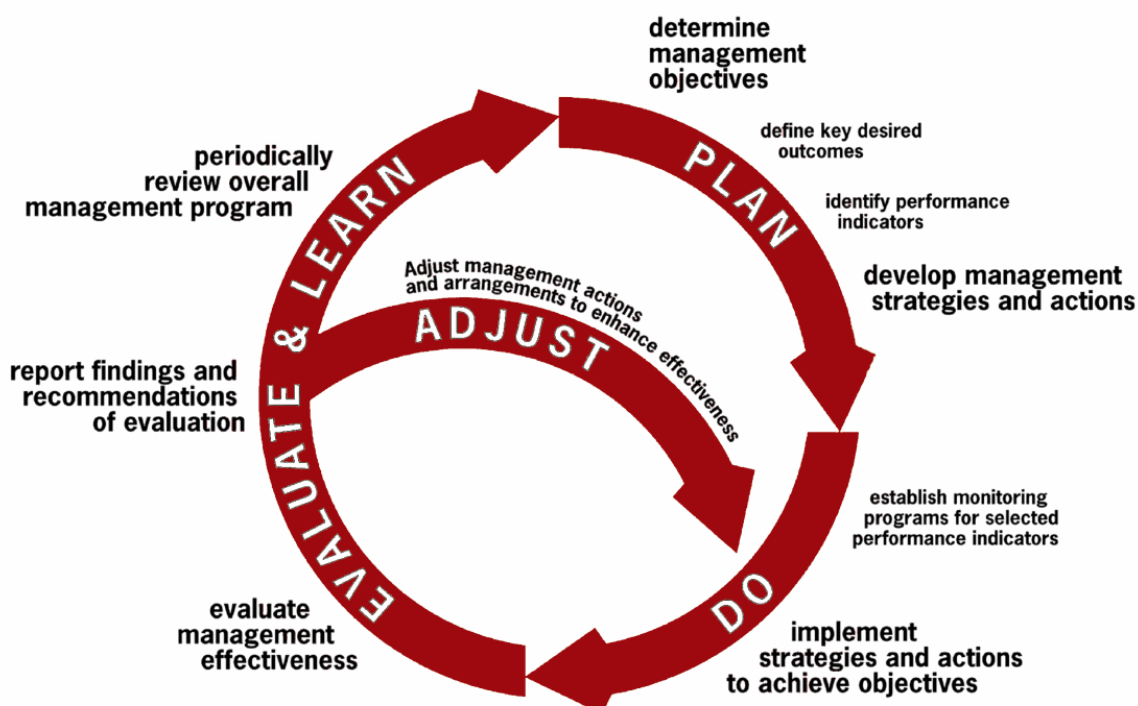
- Preserve the ecological integrity of the area;
- Conserve the important biodiversity in BNR;
- Protect areas representative of ecosystems, habitats and species naturally occurring in BNR;
- Protect BNR's endangered and vulnerable species;
- Assist in ensuring the sustained supply of environmental goods and services specifically relating to water provision;
- Create a destination for nature based tourism;
- Manage the interrelationship between natural environmental biodiversity, human settlement and economic development;
- Contribute to human, social, cultural, spiritual and economic development.

## 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.

Public consultation has been undertaken through a series of meetings and discussions with key stakeholders culminating in a key stakeholder workshop, held on the 27<sup>th</sup> of November 2013 at the Wilderness School Board Room (Located within Kenneth Stainbank Nature Reserve). The agenda of the workshop was based on the purpose of management plans, the vision of the nature reserve, the values of the nature reserve and the ideas, issues, threats and opportunities. Furthermore, the draft management plan has been made available for public review and comment prior to its finalisation. This process has ensured a great deal of valuable input into the development of the management plan, the outcomes of which have been incorporated into it. A detailed public participation report is available upon request from the nature reserve management.

## **2) DESCRIPTION OF BLUFF NATURE RESERVE AND ITS CONTEXT**

### **2.1 Institutional and administrative framework for the management of Bluff 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 Bluff Nature Reserve will 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 Bluff 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 Bluff Nature Reserve**

There is a large body of legislation that is relevant to the management of Bluff Nature Reserve, but the primary legislation guiding the management of protected areas is 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 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 Bluff Nature Reserve**

Bluff Nature Reserve was initially proclaimed on the 25<sup>th</sup> of October 1974 which was published in Government Notice No.181 of 1974. The reserve was later reproclaimed on the 9<sup>th</sup> of May 1975 and published in Government Notice No.55 of 1975, with the last proclamation taking place on the 18th of February 1982 and published in Government Notice No.30 of 1982.

The nature reserve's boundary description is contained in the proclamation that forms part of Appendix C.

### 2.2.2 Public Trust Doctrine

Section 3 of the National Environmental Management: Protected Areas Act Nu. 57 of 2003 mandate the State, and hence Ezemvelo KZN Wildlife to act as the trustee of protected areas. This trusteeship is derived from the Public Trust Doctrine, which in this context obligates the Ezemvelo KZN Wildlife to support the management of all protected areas and the resources therein for the benefit for current and future generations (the beneficiaries of the Public Trust). Thus it is incumbent on Ezemvelo KZN Wildlife to use all practical means to fulfil its responsibilities as trustee of the protected area for current and succeeding generations.

[See White Paper on Environmental Management — Policy for South Africa GG 749 OF 1998]

### 2.2.3 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 2.6 and 6 below.

## **2.3 The policy framework guiding the management of Bluff Nature Reserve**

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.

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:



<b>Vision</b>	
"To be a world renowned leader in the field of biodiversity conservation"	
<b>Mission statement</b>	
"To ensure effective conservation and sustainable use of KwaZulu-Natal's biodiversity in collaboration with stakeholders for the benefit of present and future generations."	
<b>Strategic goals</b>	
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.
<b>Core values</b>	
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 B). 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 Bluff Nature Reserve.

This management plan has utilised this body of policies to develop a strategic and operational management framework for Bluff 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 Bluff Nature Reserve**

In terms of the natural environment, eThekweni is situated at the centre of the Maputaland-Pondoland-Albany Region, which is described by Conservation International as a “Biodiversity Hotspot”. The eThekweni Municipal area is characterised by diverse topography, from steep escarpments in the west, to a relatively flat coastal plain in the east. It incorporates 98 km of coastline, 18 major catchments and 16 estuaries, 4,000 km of river, and nearly 75,000 hectares of land identified as part of the Durban Metropolitan Open Space System (D'MOSS) (adopted December 2010). D'MOSS supports a wide variety of terrestrial and aquatic ecosystems, thereby attempting to meet biodiversity conservation objectives, while aiming to secure the supply of the ecosystem services that are provided freely by these ecosystems to the people of Durban. Ecosystem services, and their associated biodiversity, provide probably the most significant buffering effect against the negative impacts of climate change for local communities and infrastructure.

Notwithstanding their value, natural environments in eThekweni have been severely impacted by landscape change, invasive alien species, over exploitation and pollution. Climate change is a significant and increasing threat. Many people have benefited over the last century from the conversion of natural ecosystems to human-dominated ecosystems and from the exploitation of biodiversity. However, these gains have been achieved at growing cost in the form of losses in biodiversity, degradation of many ecosystem services, and the exacerbation of poverty for other groups of people (Millennium Ecosystem Assessment, 2005). The situation in Durban is no different to the global assessment and suggests that current policy, law, governance and environmental management efforts have been inadequate to prevent this degradation.

Virtually every terrestrial habitat in eThekweni has undergone significant levels of transformation and, as a result, every vegetation type requires some level of protection. KZN Sandstone Sourveld, North and South Coast Bushveld, and North and South Coast Grassland in particular, are vegetation types that are significantly transformed and classified as endangered and require particular attention.

Habitat destruction (land transformation), invasive alien species and pollution are regarded as the greatest threats to biodiversity and associated delivery of ecosystem services. At present, a mere 14 % of the D'MOSS area is protected through appropriate conservation zoning, conservation services and land acquisition, whilst only 9.3 % is managed for conservation. Therefore, increasing the total area of D'MOSS that is protected and

managed for conservation is critical if the biodiversity of eThekweni and its associated ecosystem goods and services is to be protected. This is an enormous challenge, considering the rapid urbanisation and transformation that is taking place, as well as growing threats, such as alien species invasion and climate change, but some gains have been made.

#### 2.4.1 The National Protected Area Expansion Strategy

A National Protected Area Expansion Strategy (NPAES) was developed and approved (at a national ministerial level) to address a lack of effective protection and representation of all vegetation types within the protected areas system (DEAT 2008). The NPAES uses two factors, importance and urgency, to select areas for terrestrial protected area expansion. The main purpose of the NPAES is to provide a national framework for the expansion and consolidation of the protected area system, focussing on priority areas for representation and persistence of biodiversity.

In terms of the NPAES – areas far off to the south west of Bluff Nature Reserve are identified as priorities for protected area expansion which falls within Region 11 (Eastern valley Bushveld) of the National Protected Area Expansion Strategy focus areas.

#### 2.4.2 The Provincial Protected Area Expansion Plan

The KwaZulu-Natal Protected Area Expansion Plan (Ezemvelo KZN Wildlife 2010) also identified the areas around BNR as priorities for protected area expansion as the nature reserve forms a key hub of the D'MOSS where it assists in the connection of the regions protected area's and natural lands. Any surrounding land identified as a priority for protected area expansion may be incorporated and managed by BNR through land acquisition, or the introduction of stewardship programs and agreements established in conjunction with individual landowners or the local communities.

The majority of land surrounding BNR is however characterised by high levels of irreplaceability, largely due to extensive loss of natural habitat and high land use within the grassland biome and the individual vegetation types in which they occur. This is exacerbated by the fact that the forest biome and many of its vegetation types are poorly protected and will make any form of expansion very difficult to establish.

#### 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 authorisation 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 (Figure 2.2). 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 authorisation.

## **2.5 The history of Bluff Nature Reserve**

### 2.5.1 Origins of the name of Bluff Nature Reserve

The nature reserve has been given the name “Bluff Nature Reserve” which has been adopted from the name of the area, surrounding the nature reserve.

### 2.5.2 History of conservation in Bluff Nature Reserve

The history of conservation for Bluff Nature Reserve has not been well documented but the following has been extracted from management files:

The first game guard to be employed by the Wildlife Society was Ambrose Ncanana in the 1950's. During this period, the Airport, the Umlaas Canal and the Oil Refinery were also built. This resulted in the formation of the wetland due to a reversal of natural flow of underground water that flowed towards the Isipingo and uMlazi Rivers. In 1952, Tara Road was developed in order to accommodate the oil pipelines as well as provide access to the refineries. This led to the division of the nature reserve. In the 1960's, the Durban Corporation, laid a pipeline from the wetland to Ansteys beach to maintain the current level of water within the pan. This would ensure a consistent level of water within the wetland. In 1974, the nature reserve was established under proclamation 181 of 1974. In 1984, Kariba Weed (*Salvinia molesta*) became a problem and future interventions to control the Kariba Weed, was to spray it with Clarisan and the introduction of weavels (Specie not documented).

There haven't been any more records regarding the history of conservation for Bluff Nature Reserve.

### 2.5.3 History of eco-tourism in Bluff Nature Reserve

Since Bluff Nature Reserve has been opened to the public in 1974, it has always been recognised for its recreational aspects. Although the nature reserve has not been used intensively for eco-tourism, the level of tourism initiatives in the nature reserve has been kept low key.

The nature reserve offers a trail around the boundary line of the eastern block (the wetland). The initial bird hide was built to the east of the wetland and had been demolished due to social issues such as vandalism and inefficient management. A new bird viewing hide was built to the south of the wetland, which allows patrons to view the wetland at a greater depth. An area close to the entrance of the reserve has been demarcated as a picnic spot with benches, tables and ablution facilities.

## 2.6 Ecological context of Bluff Nature Reserve

### 2.6.1 Climate and weather

The bulk of the following information was obtained from the following website: <http://www.ceroi.net/reports/durban/index.htm>.

Durban has a humid subtropical climate, with relatively high rainfall, primarily falling in the summer months. The prevailing winds are north-east and south-west.

Daytime temperatures are typically between 18 and 26°C, with summer maximum temperatures reaching the lower thirties. Night-time temperatures seldom fall below 10°C, even in winter. Relative humidity levels are typically between 50 % and 70 %.

Durban lies within the southern subtropical high pressure belt, coming strongly under the influence of eastward migrating high pressure systems. Parallel winds dominate the coastline, with south-westerly and north-easterly winds roughly balanced in frequency. There is generally high wind variability.

#### 2.6.1.1 Temperature

Temperatures in Durban are mild in winter and warm-to-hot in summer. The mean annual temperature is 20.4°C and the annual range is 8.0°C. Highest mean temperatures are experienced in February and lowest mean temperatures in July. The highest maximum temperatures occur in October, in association with Berg wind conditions. Temperature is however highly variable in any particular area of Durban as a result of topography, type of surface cover, and artificial heat production due to combustion activities in industries and motor vehicles. The presence of green areas, such as Bluff Nature Reserve, assists in mitigating the extremes.

Month	Mean (°C)	Average of daily max (°C)	Average of daily min (°C)	Highest Max (°C)
January	24.4	27.8	21.1	36.2
February	24.6	28.0	21.1	33.9
March	23.9	27.7	20.2	34.8
April	21.7	26.1	17.4	36.0
May	19.1	24.5	13.8	33.8
June	16.8	23.0	10.6	35.7
July	16.6	22.6	10.5	33.8
August	19.9	22.8	12.5	35.9

September	19.3	23.3	15.3	36.9
October	20.4	24.0	16.8	40.0
November	21.8	25.2	18.3	33.5
December	23.4	26.9	20.0	35.9
<b>MEAN</b>	<b>20.8</b>	<b>25.2</b>	<b>16.5</b>	<b>40.0</b>

**Table 2.6.1.1: Monthly mean temperatures and temperature ranges at Durban International Airport**

*2.6.1.2 Humidity*

The relative humidity in Durban is usually fairly high, owing to the supply of moisture from the adjacent ocean. This is higher during summer months as warmer air can hold more moisture.

	January	February	March	April	May	June	July	August	September	October	November	December
RH (%)	70	70	68	65	61	54	56	60	66	69	71	69

**Table 2.6.1.2: Monthly mean relative humidity (%) at 14:00 at Durban International Airport (1986)**

*2.6.1.3 Rainfall*

The total annual rainfall in Durban is usually greater than 1,000 mm, of which the majority is received in summer. Approximately 60 % of the annual precipitation occurs between November and March and the driest month is July. The heavy summer rains can often result in flooding and landslides, causing damage to property and sometimes life. Fog is absent and hail rare.

Month	Mean	No. of rain	Max. in 24 hrs
January	134	15	110
February	113	13	197
March	120	13	160
April	73	9	106
May	59	7	111
June	28	5	109
July	39	5	69

August	62	7	91
September	73	11	132
October	98	15	105
November	108	16	94
December	102	15	163
<b>TOTAL</b>	<b>1,009</b>	<b>130</b>	<b>197</b>

**Table 2.6.1.3: Monthly mean rainfall (mm) for Durban and the maximum experienced in 24 hours (1986)**

#### 2.6.1.4 Sunshine

The amount of sunshine Bluff Nature Reserve (Durban) receives is related to the amount of cloud cover. In winter, with the persistence of high pressure systems and cloud-free skies, Durban receives 60-70 % of possible sunshine. In spring and summer, this figure drops to 50 % of possible sunshine as cloud cover builds up.

#### 2.6.1.5 Radiation

The receipt of solar radiation by Durban varies between seasons, ranging from  $1.13 \times 10^7 \text{ Jm}^{-2} \text{ day}^{-1}$  in June to  $2.14 \times 10^7 \text{ Jm}^{-2} \text{ day}^{-1}$  in January. Many people in Durban are involved in outdoor recreational activities, which increases their exposure to harmful UV-A and UV-B radiation, potentially causing cancer and eye cataracts.

#### 2.6.1.6 Wind

The prevailing wind directions of the KwaZulu-Natal coastal belt are predominately from the north-east and south-west. Winds from these broad sectors occur with frequencies in excess of 255 days a year. South-westerly winds are generally stronger and may be accompanied by rain. Mean monthly wind speeds are lowest in May and June. Highest mean wind speeds occur in September and October, a transitional period at the end of winter. Maximum wind speeds occur in the early afternoon (14:00) and minimum wind speeds between 06:00 and 08:00.

The so called 'coastal low' is probably the best studied weather system affecting the coastline. Its formation is due to the interaction between large-scale atmospheric flow and the marked South African escarpment. These systems propagate around South Africa, moving northwards in an anticlockwise direction and are often associated with strong south-westerly gusts, termed 'busters'. Rare north-westers in spring bring short periods of hot, dry conditions.

Due to the latitudinal position of the region, it is influenced by both tropical and temperate weather systems. Intense frontal systems, combined with the poleward flowing Agulhas Current, can cause high energy swells along the coastline. Tropical cyclones are relatively rare, but events such as Demoina



and Imboa, with the accompanying floods and gale force winds, have caused severe catchment and coastal damage.

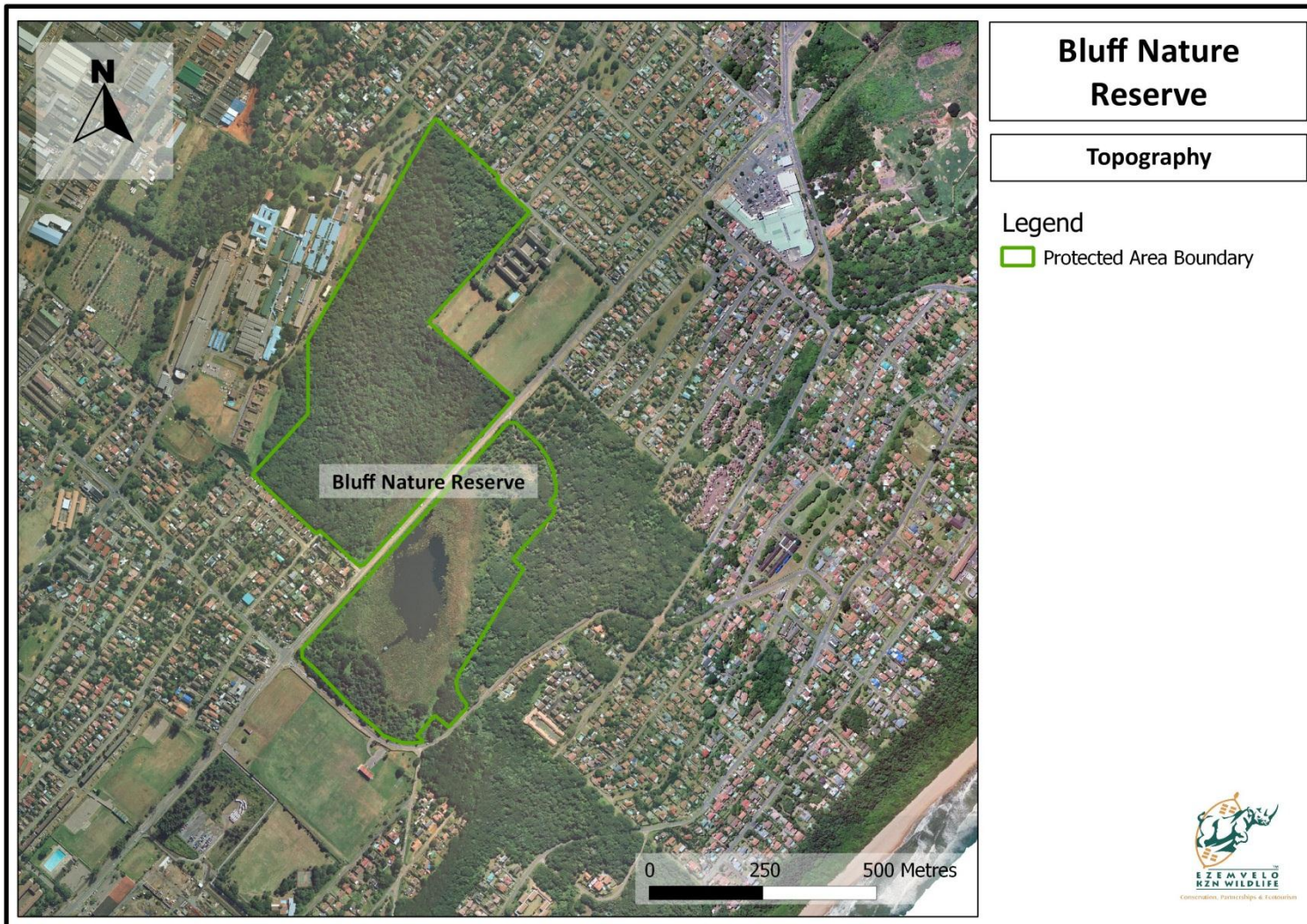
Local land/sea breezes and topographically-induced circulations are also significant wind systems, in view of their effect on human climatic comfort and the dispersion or accumulation of air pollutants. Sea breezes, which are onshore north-easterly winds, blow for most of the day along the KwaZulu-Natal coast, particularly during the summer months. They strengthen the prevailing north-easterly gradient winds, which are associated with typical anticyclonic circulation. They ventilate the coastal belt, and because they are associated with unstable atmospheric conditions, they favour the dispersion of pollutants. Sea breezes are known to extend inland as far as Cato Ridge and could thus move pollutants, generated at the coast, inland.

Land breezes develop at night and blow offshore as a north-westerly wind. They are light winds ( $1-2 \text{ ms}^{-1}$ ) and develop in a stable atmosphere. They combine with topographically induced winds to produce mountain-plain winds. At night, cooling leads to the development of mountain winds, which blow down the longitudinal axes of the valleys. Under suitable conditions, these winds deepen during the night and overflow their interfluves, so that a sheet of cold, stable air now moves across KwaZulu-Natal towards the coast. This regional wind is known as the mountain-plain wind. It combines with the land breeze near the coast and so the offshore nocturnal wind at Durban may be a very deep stable layer.

The implications for air pollution dispersion are very important. Pollutants released in the interior of KwaZulu-Natal may travel vast distances towards the coast and, because the air is stable, they are transported as thin fanning plumes, for considerable distances, without dispersion. By day, the circulation reverses and plain-mountain winds develop, which blow from the coast to the interior. They are frequently not as well developed as their nocturnal counterparts.

### 2.6.2 Topography

The topography of Bluff Nature Reserve is mainly flat with steeper sides. The wetland lies in the lowest region of the reserve which is 15m above sea level. The eastern block of the reserve extends up the hill to a maximum of 20 m above sea level whereas areas on the eastern block could extend up to 80m above sea level.



**Figure 2.1 Topography of Bluff Nature Reserve**

### 2.6.3 Geology and soils

Bluff Nature Reserve is underlined by cenozoic sediment.

The Cretaceous marine transgression was a period when the sea level rose to as much as 400m above present levels. The sediment deposited by the sea during that period eventually turned to rock and, although much of it has been eroded on the surface, layers of it still underlie parts of Durban, including the city centre, Bluff and the beachfront.

The high sea levels of the Cretaceous gave way to the Tertiary Marine Regression when the sea level slowly began to fall due mainly to cooling of the oceanic crust. Since the last million years or so sea levels have been up and down at least 5 times due to the Pleistocene ice ages.

During the height of an Ice age thick ice caps develop at the poles lowering sea levels. During the most recent Ice Age about 18 000 years ago, sea levels reached about 120m below current levels.

During this time, the features we know today as the Bluff and Berea, were formed from sand dunes which became dune, or aeolianite rock, through a process of lithification. This occurred when rainwater percolated through the sand, dissolving calcium carbonate shell fragments which then dried into a type of cement and fused the sand particles together. The red sand, found all over Durban, also known as Berea-type sand, is the result of the weathering and oxidation of dune rock.

### 2.6.4 Hydrology

Bluff Nature Reserve is characterised by its pristine wetland. It is believed that the wetland originated in 1950's due to developments that occurred in close proximity to the nature reserve – this created an imbalance in the underground water flow. The wetland was further split by the development of Tara Road which cut part of the wetland off. The wetland is replenished during heavy rains via storm water drains that lead from the Bluff community to the wetland. The water level within the wetland is regulated via an overflow pipe.

### 2.6.5 Vegetation

Bluff Nature Reserve has been classified into the following vegetation types according to the KZN Vegetation Map 2011:

- Freshwater Wetlands : Subtropical Freshwater Wetlands : Tall Grassland/ Sedge/ Reed Wetlands
- KwaZulu-Natal Coastal Forests : Southern Moist Coastal Lowlands
- KwaZulu-Natal Coastal Belt Grassland

The following vegetation descriptions have been extracted from the KwaZulu Natal Vegetation Type Description Document for Vegetation Map 2011:

2.6.5.1 *Freshwater Wetlands : Subtropical Freshwater Wetlands : Tall Grassland/ Sedge/ Reed Wetlands*

- **Distribution:**

KwaZulu-Natal, Mpumalanga, Gauteng, North-West, Limpopo and Eastern Cape Provinces as well as in Swaziland: Wetlands embedded within the Albany Thicket Biome, the Coastal Belt from Transkei as far as Maputaland as well as those of Lowveld and the Central Bushveld regions. Altitude ranging from 0–1 400 m.

- **Vegetation and Landscape features:**

Flat topography supporting low beds dominated by reeds, sedges and rushes, water logged meadows dominated by grasses. Found typically along edges of often seasonal pools in Aeolian depressions as well as fringing alluvial backwater pans or artificial dams.

2.6.5.2 *KwaZulu-Natal Coastal Forests : Southern Moist Coastal Lowlands*

- **Distribution:**

KwaZulu-Natal and (to a very small extent) Eastern Cape Province: Especially along the seaboards of Indian Ocean of KwaZulu-Natal Province and particularly well-developed in Maputaland. Few patches of the dune forest also occur on the Wild Coast of Transkei (Eastern Cape Province). Beyond South Africa these forests occur throughout the Mozambican seaboard as far as southern Tanzania. At low altitudes, from about 10 to 150 m.

- **Vegetation and Landscape features:**

Species-rich, tall/medium-height subtropical coastal forests occur on coastal (rolling) plains and stabilised coastal dunes. Forests of the coastal plains are dominated by *Drypetes natalensis*, *Englerophytum natalense*, *Albizia adianthifolia*, *Diospyros inhacaensis* etc. The low-tree and shrubby understoreys are species-rich and comprise many taxa of (sub) tropical provenience. On dunes, these forests have well tree, shrub and herb layers. *Mimusops caffra*, *Sideroxylon inerme*, *Dovyalis longispina*, *Acacia kosiensis* and *Psydrax obovata* subsp. *Obovata* are the most common constituents of the tree layer. *Brachylaena discolor* var. *discolor*, *Chrysanthemoides monilifera* subsp. *rotundata*, *Carissa bispinosa* subsp. *bispinosa* subsp. *bispinosa*, *Euclea natalensis*, *E. racemosa*, *Eugenia capensis*, *Gymnosporia nemorosa*, *Kraussia floribunda*, *Peddiea Africana*, *Strelitzia nicolai* and *Dracaena alectrifomis* are frequent in the understorey. The herb layer usually contains by *Asystasia gangetica*, *Isoglossa woodii*, *Microsporum scolopendria*, *Zamiculas zamiifolia* and *Oplismenus hirtellus*. Herbaceous vines and woody climbers (*Acacia kraussia*, *Artabotrys monteiroae*, *Delbergia armata*, *Landolphia kirkii*, *Monothotaxis caffra*, *Rhoicissus tomentosa*, *Rhus nebulosa*, *Scutia myrtina*, *Uvaria caffra*, *Gloria superba* etc.) are important structural determinants in these forests.

2.6.5.3 *KwaZulu-Natal Coastal Belt Grassland*

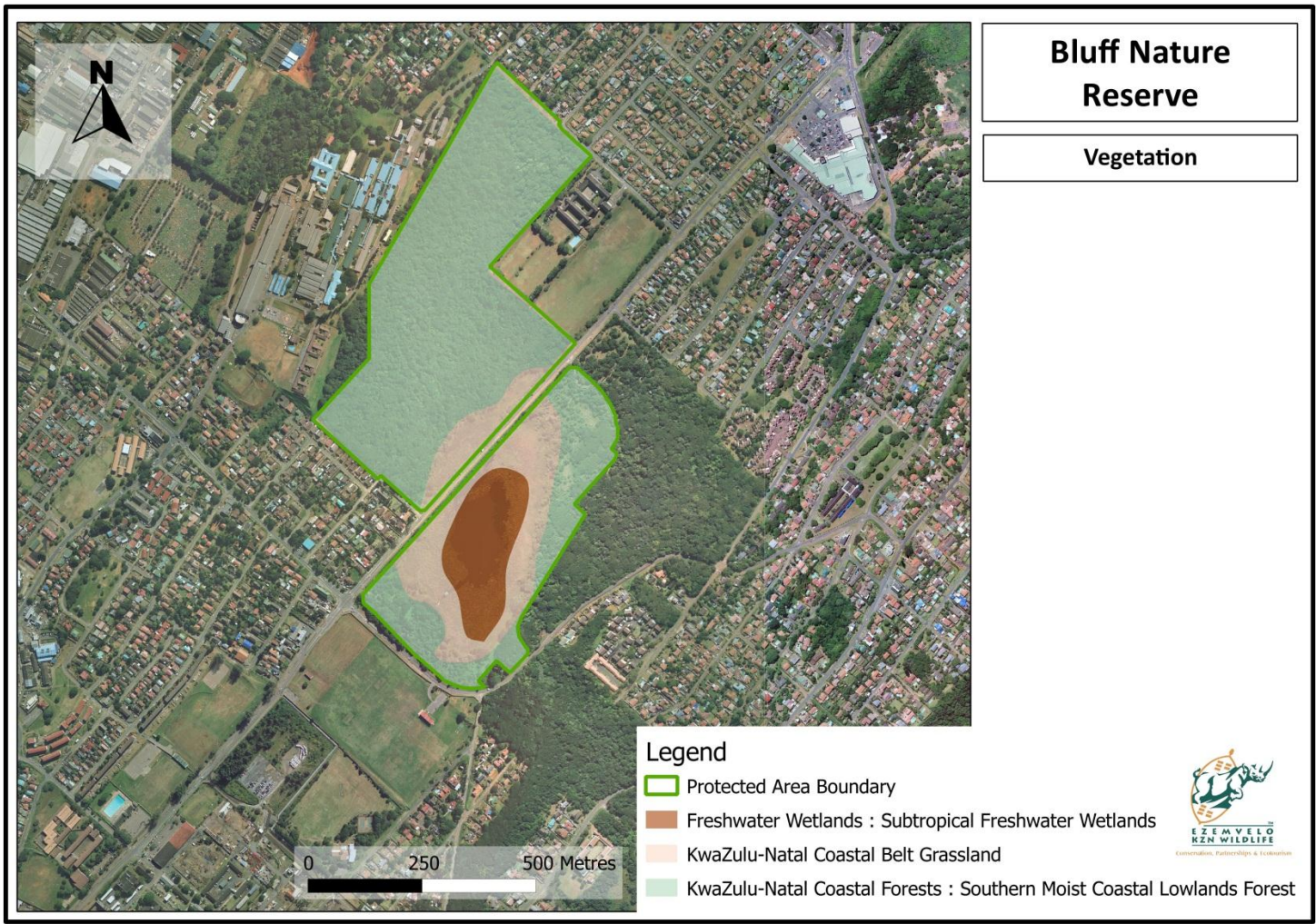


- **Distribution:**

KwaZulu-Natal Province: Long and in places broad coastal strip along the KwaZulu-Natal coast, from near Mtunzini in the north, via Durban to Margate and just short of Port Edward in the south. Altitude ranges from about 20–450 m.

- **Vegetation and Landscape features:**

Highly dissected undulating coastal plains which presumably used to be covered to a great extent with various types of subtropical coastal forest (the remnants of one of which are described in Chapter 12 as Northern Coastal Forest). Some primary grassland dominated by *Themeda triandra* still occurs in hilly, high-rainfall areas where pressure from natural fire and grazing regimes prevailed. At present the KwaZulu – Natal Coastal Belt is affected by an intricate mosaic of very extensive sugarcane fields, timber plantations and coastal holiday resorts, with interspersed secondary *Aristida* grasslands, thickets and patches of coastal thornveld.



**Figure 2.3**    **Vegetation of Bluff Nature Reserve**

#### 2.6.6 Fire regime

No burning takes place at Bluff Nature Reserve but fire breaks are kept clear around fence lines and infrastructure through mowing.

#### 2.6.7 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.

Currently the clearing of alien invasive species is done through the nature reserves management on ad hoc basis. There are no formal records of the type of alien invasive species present, density and location. In the future this data will be collated based on best practice to collate such information and manage the threat of invasive alien species more efficiently.

#### 2.6.8 Mammalian fauna

According to the Ezemvelo Biodiversity Database, mammal species found at Bluff Nature Reserve are restricted to the smaller species, with only two antelope species recorded, namely the Blue Duiker (*Philantomba monticola bicolor*) which is listed as vulnerable (ToPS) and the Bushbuck (*Tragelaphus scriptus*). Mammalian fauna that is specifically associated with water/wetlands is the Banded Mongoose (*Mungos mungo taenianotus*). A small carnivore that is present in the nature reserve is the South African Large-spotted Genet (*Genetta tigrina*).

The only rodent recorded as per the Ezemvelo Biodiversity Database is the Natal Multimammate Mouse (*Mastomys natalensis natalensis*).

For a complete list of mammalian fauna, refer to Appendix F.

#### 2.6.9 Avifauna

The Ezemvelo Biodiversity Database list approximately 226 bird species for the nature reserve but it is probable that more are present or utilize the wetland at times such as the African Marsh-Harrier (*Circus ranivorus*) which is listed as vulnerable.

Various other avifauna's are present in the reserve that has a near threatened status according to the South African Red-List Database such as the Lanner Falcon (*Falco biarmicus*), Red-winged Pratincole (*Glareola pratincola*), Great White Pelican (*Pelecanus onocrotalus*) and the Painted Snipe (*Rostratula benghalensis*).

The Southern Tchagra (*Tchagra tchagra*) is endemic to South Africa, Lesotho and Swaziland.

The Indian Myna (*Acridotheres tristis*), House Crow (*Corvus splendens*) and the House Sparrow (*Passer domesticus*) are all alien invasive to KwaZulu-Natal.

For a complete list of Avifauna, refer to Appendix F.

#### 2.6.10 Herpetofauna (reptiles and amphibians)

Reptiles and amphibians form an important part of the ecosystem and certain species serve as bio-indicators due to their sensitivity to environmental factors. Much remains to be discovered about the reptile and amphibian species complement of Bluff Nature Reserve, their life histories, inter-relationships and contributions to the functioning of its ecosystems. The variety and importance of these fauna are poorly studied and little understood, although the nature reserve is considered important for the conservation of this group, as it is for other faunal groups.

A particular reptile of importance and interest is the KwaZulu (Black-Headed) Dwarf Chameleon (*Bradypodion melanocephalum*).

This chameleon is endemic to KwaZulu-Natal, where it lives mainly along river valleys, although its distribution is patchy. Numbers of this chameleon have declined significantly over the past 30 years and it has become a threatened species. The threats to its survival include the loss of its bushy grassland habitat, due to urban and agricultural expansion, increased mortality caused by introduced predators (e.g. cats, dogs, Mynah birds), motor vehicles, grass cutting, pollution and human superstition.

The KwaZulu Dwarf Chameleon requires tall grasses, reeds, bushes, shrubs and trees for foraging and roosting, unpolluted drinking water, in the form of dew, mist or rain droplets, in areas with adequate sources of insect prey. Its preferred habitats are reeds, grasses and bushes along rivers and wetlands, and the interface (ecotone) between forests and grassland.

While on a perch, the female gives birth to the young and the potential exists for three or four parturitions (birth events) per female per year. Thus, three to four generations may be found living concurrently in any suitable area. An individual may remain in the same area for years, often returning to the same roost night after night. These chameleons are often found in pairs or in small groups and males and females may be found close together as pairs.

Bluff Nature Reserve is home to various amphibians such as the vulnerable Natal Leaf-folding Frog (*Afrixalus spinifrons spinifrons*) which is near-endemic to KwaZulu-Natal; the Painted Reed Frog (*Hyperolius marmoratus*) and the Water lily frog (*Hyperolius pusillus*).

For a complete list of herpetofauna, refer to Appendix F.

#### 2.6.11 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. Pollination of a large proportion of flowering plants, including endemics, is dependent on a range of insect groups, such as bees, wasps, flies, and butterflies. In some cases the survival of locally endemic plant species is linked to pollination by a single insect species.

Several invertebrate species occur in the nature reserve such as the Bluff Forest Wingless Grasshopper (*Silvanidium peninsulare*), ringed Millipede (*Centrobolus anulatus*) and the Cristulate Black Millipede (*Doratogonus cristulatus*) which are all restricted and endemic to KwaZulu-Natal.

Two species of earthworms, namely the *Dichogaster sp.* and the *Pontoscolex corethrurus* is alien to KwaZulu-Natal.

For a complete list of invertebrates, see Appendix F.

## 2.7 Socio-economic context

The Bluff Nature Reserve falls within the eThekweni 'Durban' Metropolitan Municipality which includes an area of roughly 2,297 km<sup>2</sup>, along the KwaZulu-Natal coastline, and is home to approximately 3.5 million people.

eThekweni is an ethnically diverse municipality, with a rich cultural blend of mixed beliefs and traditions. The main populations currently inhabiting the municipality include Black African (predominantly Zulu) (71 %), Indian (19 %), White (8 %) and Coloured (2 %) with the greatest population concentrations occurring in the northern and central regions (From Durban City into Zululand). Many members of this society face social, economic and environmental challenges on a daily basis, with a 2010 study suggesting that 30.5% of eThekweni's Black African population battle the effects of poverty, as opposed to 19.5 % of the Coloured population, 9.2 % of the Asian population and only 0.3 % of the White population. This uphill battle is widely accepted to still relate to the apartheid era, which led to a major economic separation between the different racial groups residing in South Africa.

From an economic perspective, eThekweni is far less diverse (in terms of activity spread throughout the sector) than KwaZulu-Natal and South Africa as a whole and this can be attributed to the Municipality high dependence on the tertiary sector. Nevertheless, on the whole, economic growth in eThekweni outperformed that of the province and country.

The vision of eThekweni is to create the 'reputation of being Africa's most caring and liveable City, where all citizens live in harmony' and the city aims to achieve this feat through the implementation of an eight-point plan which deals with environmental sustainability, social sustainability, economic sustainability and good governance.

BNR falls into this plan and has a responsibility to contribute fully to eThekweni's environmental and social sustainability through the protection and conservation of ecosystem functions and services. BNR is one of the true urban nature reserves in the eThekweni Municipality and is surrounded by residential properties and industrial development. Its location within the 'urban jungle' gives it great aesthetic value and its high biodiversity needs to be maintained to continue to draw individuals searching for the quiet - only nature can provide. This close proximity to a large pool of urban residents presents the reserve with numerous opportunities which have to be capitalised on in order to benefit both the reserve and its visitors.

From a size perspective, BNR is substantially smaller than both North Park Nature Reserve (53 Ha) and Kenneth Stainbank Nature Reserve (210 ha) which are in close proximity. This in return means that the reserve to conserve a much smaller range of biodiversity. The reserve effectively forms an important habitat island in a landscape surrounded by expanses of culturally modified habitats (Pickett & Thompson 1978). Due to its core function, BNR could be an important source of species diversity for

emigration to surrounding smaller sink islands' of natural land (Pulliam 1988). BNR also forms an important extension of eThekweni's D'MOSS system which was created by the municipality for both social and ecological enhancement through an integrated approach to urban open space establishment and management (Whitmore, Crouch & Slotow 2002). This D'MOSS system connects natural areas in an ecological network which allows species to migrate, immigrate and emigrate between natural landscapes. The creation of this system also promotes health and recreation amongst both locals and tourists with activities such as hiking and mountain biking available in many areas within the system.

## **2.8 Operational management within Bluff Nature Reserve**

### **2.8.1 Infrastructure**

Effective operational management within the nature reserve is dependent on its staff, the equipment and infrastructure. Infrastructure located in the Bluff Nature Reserve is outlined below and indicated on Map 2.9 – Infrastructure of Bluff Nature Reserve.

#### **Management Infrastructure:**

- Main entrance gate(Eastern block) – Along Tara Road for Pedestrians and vehicles
- Main Entrance building
- Management gate (Western Block) – Via Umbria road
- Fencing – Around Eastern and Western Block: 4.4 km

#### **Staff accommodation:**

- Staff accommodation house
- Carport
- Storeroom

#### **Tourism Infrastructure:**

- 1 x Picnic site – with tables and benches
- 1 x ablution facility
- 1 x Bird Hide
- 2 x Walking trail: 2.5km
  - Forest trail – 866m
  - Pan trail – 1.7km

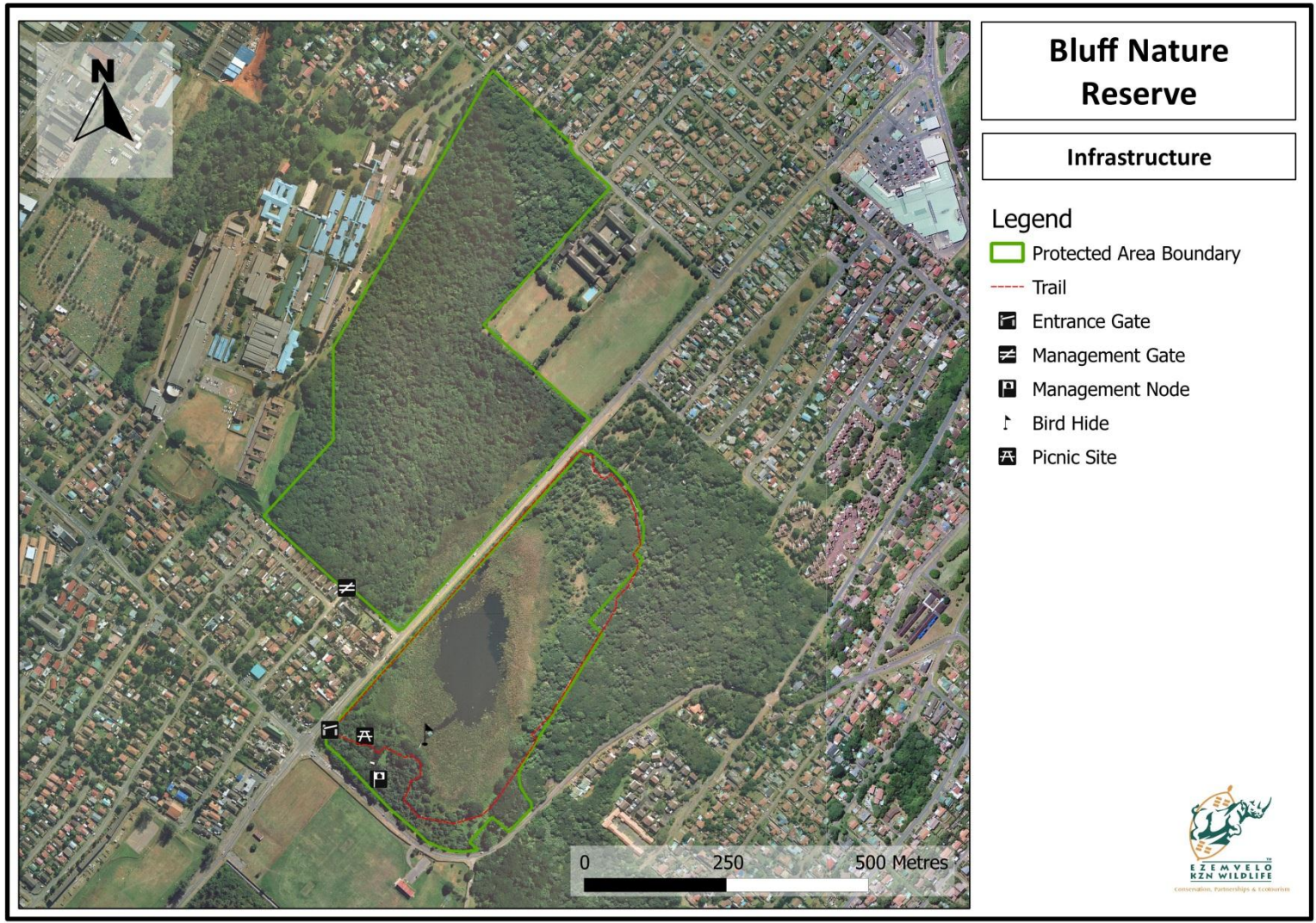


Figure 2.3    Infrastructure of Bluff Nature Reserve



### 2.8.2 Staffing establishment

Currently there are 4 permanent employees based at the Bluff Nature Reserve. The Officer in Charge is currently based at Kenneth Stainbank Nature Reserve and is in charge of North Park Nature Reserve, Kenneth Stainbank Nature Reserve and Bluff Nature Reserve.

The permanent staff compliment consists of:

- 1 x Officer in Charge
- 2 x Field Rangers
- 2 x General Assistants

The nature reserve is not adequately staffed and has 0.0889 staff per hectare, should all vacant positions be filled (Carbutt & Goodman, 2010).

### 2.8.3 Funding levels at Bluff Nature Reserve

The management effectiveness assessment conducted by Carbutt and Goodman in 2010 indicated the funding levels at Bluff Nature Reserve has as operational budget of R 1270.93 per hectare and an annual operational budget of R57.192.

### 2.8.4 Management effectiveness in Bluff Nature Reserve

The IUCN's World Commission on Protected Areas (WCPA3) defined management effectiveness as an assessment of how well a PA is being managed towards protecting its values and achieving its goals and objectives (Hockin et al. 2000). Ezemvelo conducted management effectiveness assessments on all of the PA's they manage, for the first time, in 2010. This assessment was then aimed to be repeated on an annual basis, to maintain an adaptive management approach.

Management effectiveness assessments generally consider four areas: PA design, delivery of PA objectives, the appropriateness of management systems and processes and ecological integrity (Carbutt & Goodman 2010). The outcomes of these assessments are intended to enable conservation organisations to enhance their conservation strategies, re-allocate budget expenditures where necessary, and develop strategic, system-wide responses to the most pervasive threats and management weaknesses (Carbutt and Goodman 2010). They are not individual performance assessments but instead are conducted to reflect an organisation's proficiency for PA management as a whole.

The Ezemvelo KZN Wildlife minimum standard for protected areas is 67 %, which is the national minimum standard set by National Department of Environmental Affairs. Bluff Nature Reserve achieved a management effectiveness score of 66 % in the 2010 assessment and scored 72 % in the 2013 assessment.

The following issues were highlighted in the assessment:

- Maintenance of infrastructure.
- Community and advisory forums.
- Implementation of the education and awareness plan.
- Access management and control management.
- Management plan.

## 2.9 Summary of management issues, challenges and opportunities

**Table 2.9.1 Management challenges and issues**

Key performance area	Issue that must be addressed
Legal compliance and law enforcement	<ul style="list-style-type: none"> <li>▪ Minor security problems (alcohol intoxication) within the nature reserve.</li> <li>▪ Ad hoc development of squatter camps along the boundary.</li> </ul>
Stakeholder engagement	<ul style="list-style-type: none"> <li>▪ Absence of a liaison forum between BNR and the surrounding neighbours and stakeholders.</li> <li>▪ Lack of a stakeholder database.</li> </ul>
Buffer zone protection and regional management	<ul style="list-style-type: none"> <li>▪ Possibility of land extension to the northern boundary of the nature reserve.</li> <li>▪ Alignment of municipal planning documents including IDPs and SDFs with that of the nature reserve.</li> </ul>
Eco-tourism development	<ul style="list-style-type: none"> <li>▪ Poor understanding of tourism avenues and there feasibility.</li> <li>▪ Alignment of tourism facilities with municipal development plans.</li> <li>▪ Potential of using the nature reserve as an outdoor classroom.</li> <li>▪ The reserve needs to be better marketed and sign posted as directions to the reserve are limited (See Operational Management).</li> <li>▪ Environmental awareness programmes need to be implemented at the reserve explaining its importance as a D'MOSS zone.</li> </ul>
Conservation management	<ul style="list-style-type: none"> <li>▪ Inflow of waste into the reserve via storm water drains which lead into the reserve.</li> <li>▪ Litter on the boundary of the reserve – via people passing and motorist.</li> <li>▪ Threats of alien plants entering via storm water drains from surrounding areas.</li> <li>▪ Soil erosion in the western block of the reserve due to storm water run-off from the hospital which is located adjacent to the reserve.</li> <li>▪ Wetland has undergone severe siltation over the years.</li> </ul>
Operational management	<ul style="list-style-type: none"> <li>▪ Inadequate staff numbers.</li> <li>▪ Inadequate funds to maintain the nature reserve and carry out operational management duties.</li> <li>▪ Staff accommodation and office buildings require minor maintenance.</li> <li>▪ Lack of signage in the nature reserve (See Eco-tourism development).</li> <li>▪ Lack of signage directing tourist to the nature reserve (See Eco- tourism development).</li> </ul>

### 3) STRATEGIC MANAGEMENT FRAMEWORK

In an effort to ensure that Bluff Nature Reserve is 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 Bluff 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 Bluff Nature Reserve vision

*A well-managed and protected nature reserve providing sustainable benefits to visitors, neighbours and the metropolitan area through biodiversity conservation and appropriate access to natural resources and ecosystem services.*

#### 3.2 Objectives and strategic outcomes

An objective has been identified for each of Bluff 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 Bluff Nature Reserve**

Key performance area	Objective	Strategic outcome
Legal compliance and law enforcement	Maintain a high level of security and fulfil all legal requirements within Bluff Nature Reserve in order to protect its integrity and natural environment in collaboration with the justice system.	<ul style="list-style-type: none"> <li>There is adequate law enforcement within the nature reserve.</li> </ul>
Stakeholder engagement	Establish and maintain effective and cordial relations with neighbouring communities and stakeholders in order to ensure effective management of the nature reserve to the benefit of the environment and surrounding neighbours.	<ul style="list-style-type: none"> <li>Constructive community involvement in the nature reserve's management through an effectively functioning Community Liaison Forum.</li> </ul>
Buffer zone protection and regional management	Integration of the nature reserve requirements into regional and municipal plans and protect the biodiversity of BNR from activities, processes and land uses outside its boundaries that may threaten it.	<ul style="list-style-type: none"> <li>Incorporation of the Bluff Nature Reserve's requirements into municipal and regional planning documents such as IDP's and SDF's.</li> <li>Investigate the potential of incorporating additional land from the Engen Rehabilitation site into the nature reserve.</li> </ul>
Eco-tourism development	Promote opportunities for eco-tourism and environmental awareness.	<ul style="list-style-type: none"> <li>Determination of a tourism market profile, through tourism market research for the nature reserve.</li> <li>Promote tourism in the area through collaboration with municipal tourism initiatives and Ezemvelo marketing programme.</li> <li>Development and implementation of an environmental interpretation and education programme.</li> </ul>
Conservation management	Protect the ecosystem functioning, ecological integrity and species of the reserve through interventions based on principles of adaptive management	<ul style="list-style-type: none"> <li>Adequate fire safety within the nature reserve is ensured.</li> <li>Development of an invasive species control plan for the nature reserve.</li> <li>Identify and rehabilitate areas that have been affected by soil erosion.</li> <li>Implementation of procedures to manage alien animals found within the nature reserve.</li> </ul>



		<ul style="list-style-type: none"> <li>▪ Determine the value of the Eco-system goods and services that Bluff Nature Reserve provides.</li> <li>▪ If extractive resource use is undertaken, it is done legally and conforms to NEMBA Chapter 6, and the nature reserve's zonation plan.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ Implementation of the strategy for human animal conflict.</li> <li>▪ Processes are established to determine the success of management interventions in protecting the ecosystems, communities and species of the nature reserve.</li> <li>▪ Ensure the conservation targets of endangered and threatened species are met.</li> <li>▪ Rare and endangered species management is undertaken based on the best available scientific knowledge.</li> </ul>
Operational management	Provide adequate human resources, equipment and funding to enable the effective protection, development and management of BNR.	<ul style="list-style-type: none"> <li>▪ Implementation of the financial plan that identifies the resource needs to achieve the objectives for the nature reserve.</li> <li>▪ All facilities and infrastructure in the nature reserve are adequately maintained.</li> <li>▪ The nature reserve is adequately staffed for its effective management and operation.</li> </ul>

#### 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.

##### 4.1 Zonation of Bluff 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-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:

<b>Key feature protection overlay</b>	<p>An area that is vulnerable or scientifically important where specific additional controls are imposed in order to prevent undesirable impacts.</p> <p>This zone overlay other zones instituting site specific rules and regulations in addition to the restrictions of the underlying zone.</p>
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<b>Low use zone</b>	<p>An area where the ecotourism principles of low human impact will prevail.</p> <p>This area is characterised by facilities of a rustic nature such as overnight hiking huts.</p> <p>Motorised access is low key and there are limited management roads and tracks.</p>
<b>Moderate use zone</b>	<p>This is also an area in which the ecotourism principles of low human impact will prevail, but higher levels of usage are permitted.</p> <p>This area includes the main tourism road network, including access and game viewing roads.</p> <p>Infrastructure is accessible by motorised access in this area.</p>
<b>Tourism development node</b>	<p>This is a node within the moderate use zone, which includes commercial tourism developments such as lodges, picnic and camping sites.</p>
<b>Park management node</b>	<p>This is a node within the moderate use zone, which includes facilities for staff accommodation, administrative offices and operational infrastructure.</p>
<b>Preliminary buffer zone</b>	<p>This is outside of a protected area, where actions and agreements are taken to protect its integrity.</p> <p>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.</p>

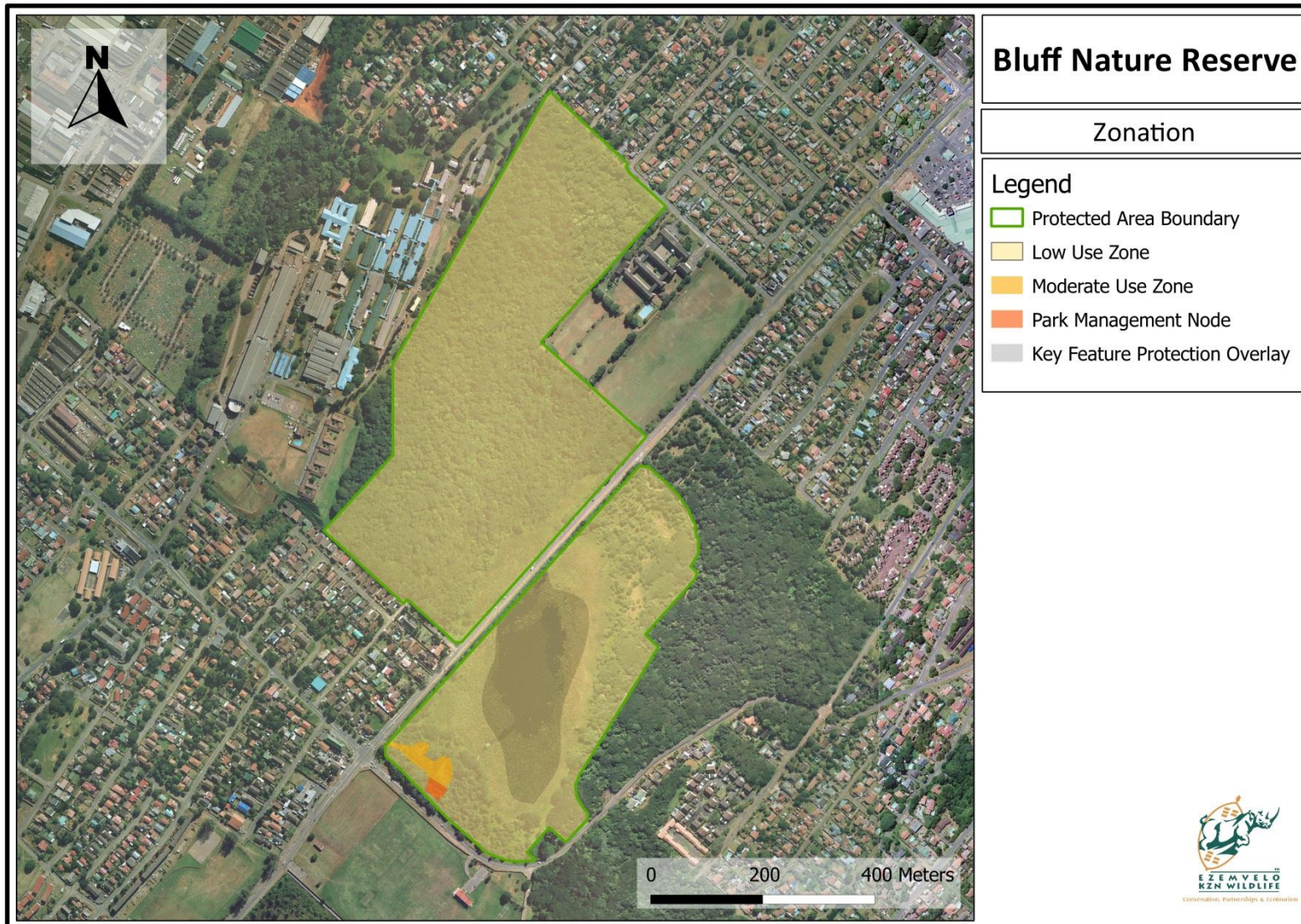
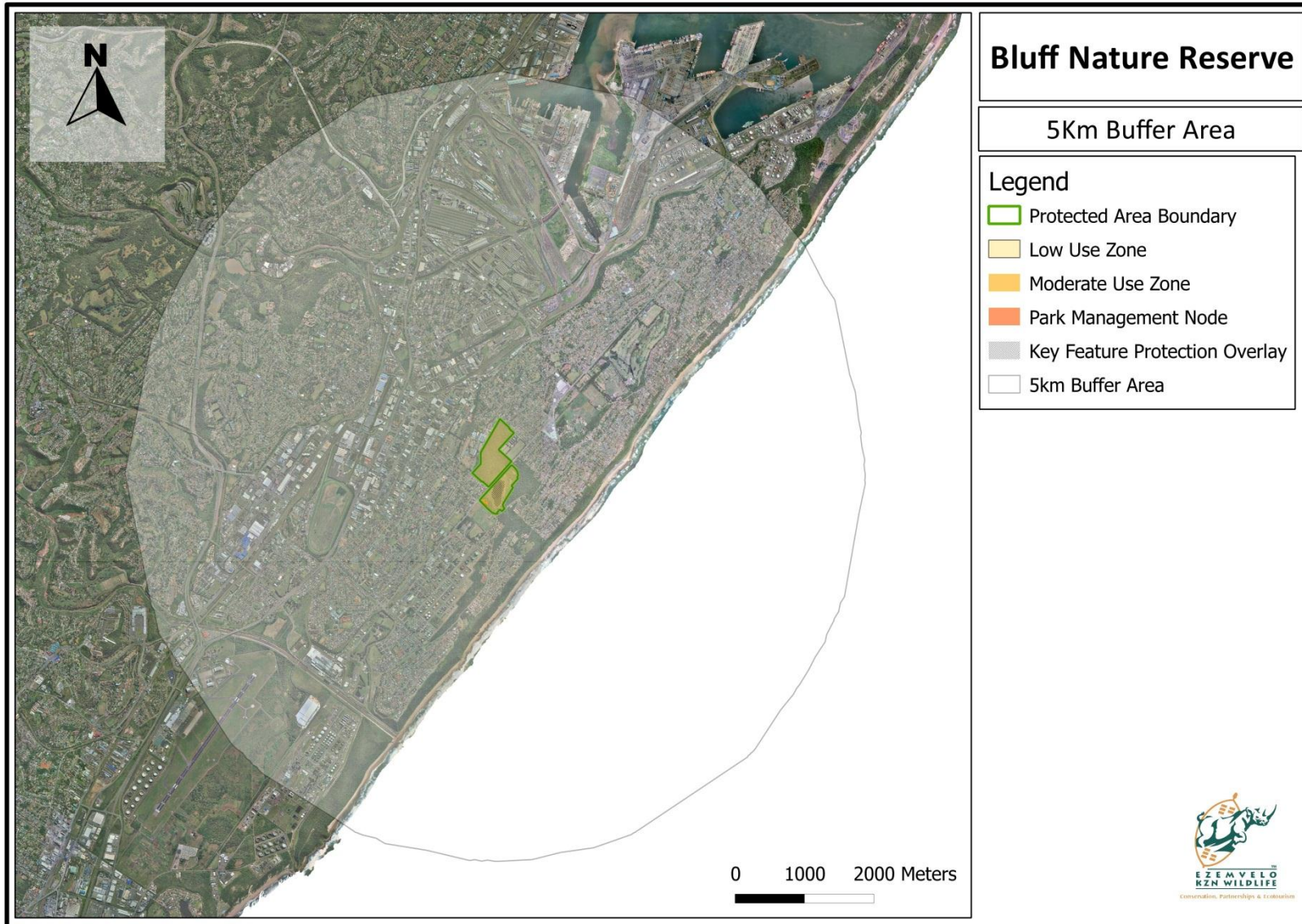


Figure 4.1 Zonation map of Bluff Nature Reserve





**Figure 4.2 Buffer Zone of Bluff Nature Reserve**

## 4.2 Concept development guidelines

The purpose of the zonation of Bluff 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-tourism and other resource use. On this basis, within some zones, the permissible intensity of use will be relatively higher than in others.

Key Feature Protection Overlay	
<b>Description:</b>	
An area that is vulnerable and or scientifically important that require specific additional controls to prevent undesirable impacts on identified sensitive or threatened species, habitats, ecosystems, bio-control release sites, research sites, archaeological, living heritage and paleontological sites.	
<b>Objective:</b>	
This zone is for permanent, temporary or seasonal protection of important core protected area values and aims to provide additional protection for the integrity of key areas.	
Permissible activities and infrastructure	Constraints and implementation
<ul style="list-style-type: none"> <li>▪ The zone may overlay other zones where a range of infrastructure may already exist.</li> <li>▪ In addition to restrictions of the underlying zone, site specific rules and regulations may apply.</li> </ul>	<ul style="list-style-type: none"> <li>▪ This is a protection zone and would only allow for access and development under site specific constraints.</li> <li>▪ This zone does not cater for further developments or resource utilization.</li> <li>▪ This zone provides a higher level of protection than the underlying zone.</li> <li>▪ Could be for permanent, temporary or seasonal protection.</li> <li>▪ Changes to this overlay can be implemented through the Park planning committee and the annual management meeting and recorded as such.</li> <li>▪ Inland Aquatic:               <ul style="list-style-type: none"> <li>▪ No Boat access.</li> <li>▪ No line fishing.</li> </ul> </li> <li>▪ No extractive resource use.</li> </ul>
Low Use Zone	
<b>Description:</b>	
An area where there is little evidence of modification of natural processes and landscapes, that is more sensitive than the moderate use zone and where the ecotourism principles of low human impact will prevail. The zone also serves as a buffer to the wilderness zone.	
<b>Objective:</b>	
To designate an area for tourism experiences and management activities that are focused primarily on low impact activities and where general sensitivity requires that management and tourism impacts on the natural landscape should be mitigated.	
Permissible activities and infrastructure	Constraints and implementation
<ul style="list-style-type: none"> <li>▪ Facilities of a rustic nature such as hides and trails.</li> <li>▪ Motorized access is low key and 4 x 2 access provided to points where trails start or to tourist facilities.</li> <li>▪ Hiking and formalised trails.</li> <li>▪ Management activities must focus on protecting park resources and core values.</li> <li>▪ Limited management roads and tracks.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Activities are mostly low impact and low density.</li> <li>▪ No modern facilities such as restaurants and shops are permissible in this zone.</li> <li>▪ Where possible, facilities should be developed on the periphery of the zone towards the less sensitive adjacent zone.</li> </ul>

<ul style="list-style-type: none"> <li>Controlled extractive resource use in line with Ezemvelo policies and norms and standards.</li> </ul>	
<b>Moderate Use Zone</b>	
<b>Description:</b>	
<p>An area where natural processes and the landscape may be altered to support protected area operation. This zone is less sensitive than the low use zone and this is where experiences, facilities, infrastructure and services are provided to visitors and where general park management activities can take place.</p>	
<b>Objective:</b>	
<ul style="list-style-type: none"> <li>To designate a tourism area that is primarily focused on visitor experience while still securing the values of the protected area.</li> <li>To designate an area that serves the operational and support functions of the protected area.</li> </ul>	
<b>Permissible activities and infrastructure</b>	<b>Constraints and implementation</b>
<ul style="list-style-type: none"> <li>Hiking on formalised trails.</li> <li>The tourism road network including access roads and game viewing roads.</li> <li>Traditional game viewing routes with associated more formalized infrastructure.</li> <li>Infrastructure is accessible by motorized access.</li> <li>Management roads and tracks.</li> <li>Management activities are directed to maintaining park infrastructure for biodiversity conservation, park operations, equipment and material storage.</li> <li>Controlled extractive resource use.</li> </ul>	<ul style="list-style-type: none"> <li>Within the moderate use zone a specific <b>Tourism development node</b> will be defined which could include areas of commercial use.</li> <li>Where possible this node should be outside the protected area.</li> <li>The node should preferably be on the periphery of the Moderate and Low use zone, this will ensure a quality visitor experience in the lower use zone but place the bulk of the impact e.g. access roads and services in the Moderate use zone.</li> <li>This node should be developed in the less sensitive part of the moderate use zone.</li> <li>The Tourism development node can only be developed in areas where it does not compromise the values of the protected area.</li> <li>The node must have a specified footprint.</li> <li>Examples of developments in a Tourism development node include: <ul style="list-style-type: none"> <li>Restaurants</li> <li>Picnic Areas</li> <li>Camping sites</li> </ul> </li> <li><b>Park Administrative Node</b> (Within the Moderate use zone)</li> <li>Facilities include staff accommodation, administrative offices, other operational required infrastructure, bomas and waste handling sites etc.</li> <li>Wherever possible facilities and infrastructure related to park operations should be located outside of the protected area. If not possible they will form part of this node.</li> <li>The node must have a specified area as a footprint.</li> </ul>
<b>Protected Area Buffer Zone</b>	
<b>Description:</b>	
<p>An area outside the boundary of the protected area where actions are taken and agreements are made to protect the integrity of the protected area and to enhance the livelihoods of protected area neighbours.</p>	
<b>Objective:</b>	

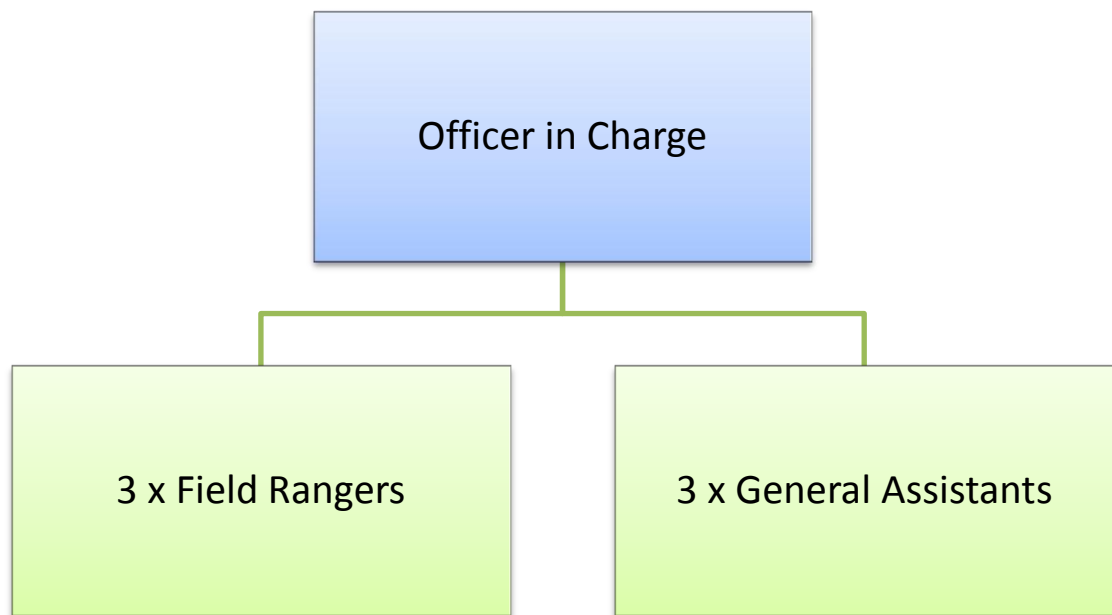


To influence land use adjacent to the protected area to manage external pressures and threats that may threaten its values and objectives.

Permissible activities and infrastructure	Constraints and implementation
<p>Each protected area must define these activities in terms of its specific values and objectives and taking into consideration the following:</p> <ul style="list-style-type: none"> <li>▪ Alien and invasive species</li> <li>▪ Pollution</li> <li>▪ Impact on sense of place or wilderness</li> <li>▪ Habitat fragmentation and isolation</li> <li>▪ Water resource protection</li> <li>▪ Damage causing animal management</li> <li>▪ Climate change adaptation</li> <li>▪ Compatible land use</li> <li>▪ Priority species management</li> </ul>	<ul style="list-style-type: none"> <li>▪ It is desirable for the intensity of land use to decrease closer to the protected area.</li> <li>▪ Discourage activities that are not compatible with the adjacent protected area zonation.</li> <li>▪ Management activities will focus on:               <ul style="list-style-type: none"> <li>▪ Strategically promoting and monitoring compatible land-use and land-care on adjacent lands and upstream catchments</li> <li>▪ Integrated alien species control</li> <li>▪ Biodiversity stewardship and environmental awareness</li> <li>▪ Working collaboratively with neighbours to secure sensitive sites that contribute to the protection of values and objectives of the protected area.</li> </ul> </li> <li>▪ Influencing and input into the municipal and regional planning tools such as SDF's, Schemes, IDP's and Bioregional plans.</li> <li>▪ Park management is responsible for the buffer zone management and planning.</li> <li>▪ The Buffer should spatially indicate the 5km and 10 km border of listed activities as per National Environmental Management Act No. 107 of 1998 Notice 3 of 2010.</li> </ul>

## 5) ADMINISTRATIVE STRUCTURE

A recommended organisational structure for Bluff Nature Reserve is set out in Figure 5.1. The figure represents the staff complement and positions that are required to enable the effective operation, management and protection of Bluff Nature Reserve.



**Figure 5.1 Recommended organisational structure for Bluff Nature Reserve**

## 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 Bluff Nature Reserve.
Priority 2:	A management target that addresses an aspect of management that contributes towards community involvement and support for the conservation of Bluff 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 Bluff 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 Bluff 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.

## **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.

### 6.3.1 Liaison Forum

Bluff Nature Reserve is relatively small in size however there are a number of stakeholders associated with the nature reserve. There is currently no community liaison forum present for the reserve. The management team should champion the development of a community liaison forum where all external issues and ideas will be discussed. Local residents, interested and affected parties, including industries such as Engen Refineries should be a part of the Community Liaison Forum for BNR.

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
<b>LAW ENFORCEMENT</b>					
There is adequate law enforcement within the nature reserve.	<ul style="list-style-type: none"> <li>Develop an integrated security strategy for the nature reserve, which ensures collaboration with all relevant institutions.</li> </ul>	<ul style="list-style-type: none"> <li>Creation of cooperative structures with local communities and law enforcement officials.</li> </ul>	<ul style="list-style-type: none"> <li>Frequent recovery of snares.</li> <li>Arson fires.</li> <li>Recorded losses of game species.</li> <li>Recorded losses of known rare and endangered plant species.</li> <li>Reports of criminal incidents within and around the reserve.</li> <li>Inappropriate behaviour by patrons visiting the nature reserve</li> </ul>	<b>Year 2</b>	Officer in Charge, District Conservation officer
	<ul style="list-style-type: none"> <li>Ensure that staff are equipped and trained to undertake patrols within the nature reserve for law enforcement purposes.</li> <li>Implement a programme of patrols of the nature reserve and its boundaries.</li> </ul>	<ul style="list-style-type: none"> <li>Regular patrols covering the full extent of the nature reserve.</li> <li>Prosecution of any offender caught committing an offence.</li> </ul>		<b>Year 1-on-going</b>	Officer in Charge
<b>LEGAL COMPLIANCE</b>					
Development and adoption of formal agreements between Ezemvelo and the relevant land owners pertaining to the management of land to northern side of nature reserve. (See also: Buffer zone protection and regional management)	<ul style="list-style-type: none"> <li>Develop and implement the legal agreement between Ezemvelo and the land owners.</li> </ul>	<ul style="list-style-type: none"> <li>Legal agreements between Ezemvelo and the land owners.</li> </ul>	<ul style="list-style-type: none"> <li>Absence of legal agreements.</li> <li>Incompatible land use next to the nature reserve.</li> <li>Developments taking place along the boundary of the nature reserve.</li> </ul>	<b>Implement once proposal has been accepted.</b>	Officer in Charge, Regional Management

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
<b>STAKEHOLDER ENGAGEMENT</b>					
Constructive community involvement in the nature reserve's management through an effectively functioning Community Liaison Forum.	<ul style="list-style-type: none"> <li>Collate a database with the contact details of relevant stakeholders.</li> <li>Maintain and update the database periodically.</li> <li>Develop a community liaison forum for the nature reserve and surrounding communities.</li> <li>Conduct regular meetings in order to incorporate community-related management issues.</li> <li>Ensure open lines of communication between members of the local communities and the nature reserve's management.</li> </ul>	<ul style="list-style-type: none"> <li>An up-to-date stakeholder database.</li> <li>Minutes of the meetings of the community liaison forum.</li> <li>Quarterly meetings of the BNR community liaison forum.</li> </ul>	<ul style="list-style-type: none"> <li>Not all stakeholders affiliated with the nature reserve are consulted.</li> <li>Inconsistencies in contact details.</li> <li>Lack of regular meetings.</li> <li>Community dissatisfaction with the nature reserve.</li> <li>No input from the local community.</li> </ul>	<b>Year 1-on-going</b>	Officer in Charge and Community Conservation Officer
Facilitate research and partnerships with educational institutions.	<ul style="list-style-type: none"> <li>Identify possible co-learning opportunities with various relevant institutions &amp; partner organizations.</li> <li>Prioritize and communicate relevant co-learning opportunities to relevant institutions and organisations.</li> </ul>	<ul style="list-style-type: none"> <li>Prioritised research programme and list.</li> </ul>	<ul style="list-style-type: none"> <li>Inability to meet the learning outcomes and opportunities of the nature reserve.</li> <li>Unclear understanding of the functioning of the nature reserve.</li> </ul>	<b>on-going</b>	Officer in Charge and Community Conservation Officer

## **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 not identified any areas as priorities for protected area expansion around the nature reserve. However, the piece of land previously rehabilitated by Engen Refinery should be investigated to be included into the boundaries of Bluff Nature Reserve legally. It is located to the north of the wetland and would serve as a buffer zone.

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

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 Bluff 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 EThekweni 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
<b>LOCAL AND REGIONAL PLANNING</b>					
Incorporation of the Bluff Nature Reserve’s requirements into municipal and regional planning documents such as IDP’s and SDF’s.	<ul style="list-style-type: none"> <li>Make inputs into the development of the municipality IDPs and SDFs in an effort to avoid environmentally harmful land uses in close proximity to BNR.</li> <li>In collaboration with the planning department of the Metropolitan Municipal offices, make joint decisions regarding the best land use practices surrounding the nature reserve.</li> </ul>	<ul style="list-style-type: none"> <li>Adoption of environmentally appropriate land uses in IDPs and SDFs in the areas immediately surrounding the nature reserve.</li> <li>Retention of existing benign land uses in the areas immediately surrounding the nature reserve.</li> </ul>	<ul style="list-style-type: none"> <li>Identification/approval of environmentally harmful land uses on the boundaries of the nature reserve.</li> </ul>	<b>Annually</b>	Officer in Charge, District Conservation Officer
<b>PROTECTED AREA EXPANSION</b>					
Investigate the potential of incorporating additional land from the northern side of the nature reserve (See Also Legal Compliance).	<ul style="list-style-type: none"> <li>Contact the relevant land owners and set up a meeting to discuss the idea.</li> <li>Develop and put forward a proposal to acquire the desired land.</li> </ul>	<ul style="list-style-type: none"> <li>Initial meeting and communication between Ezemvelo and the land owners.</li> <li>A proposal to acquire such land by Ezemvelo through legal agreements.</li> </ul>	<ul style="list-style-type: none"> <li>Incompatible land use next to the nature reserve.</li> <li>Developments taking place along the boundary of the nature reserve.</li> </ul>	<b>Year 1</b>	Officer in Charge, Regional Management

## **6.5 Eco-tourism Management**

### **6.5.1 Tourism product management**

Ezemvelo KZN Wildlife has the mandate to sustainably develop Bluff Nature Reserve to fully realise its eco-tourism and associated income-generating potential, within the context of protecting its biodiversity. Several nature-based tourism products have been developed within the nature reserve and there is potential for further development of tourism products.

### **6.5.2 Environmental interpretation and education**

Environmental interpretation and education of Bluff Nature Reserve natural and cultural resources will be aimed at creating awareness, understanding and appreciation of its biodiversity and ecological function, and their significance. In developing an environmental interpretation and education programme, the following guiding principles should be adhered to:

- There should be a strong focus on neighbouring communities, in efforts to engage, inform and benefit them.
- Wherever possible, local community members should be trained to assist and operate environmental interpretation and education tours.

The detailed operational requirements for eco-tourism development and environmental interpretation and education are set out in Table 6.3 below.

**Table 6.3 Framework for eco-tourism**

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
<b>TOURISM PRODUCT DEVELOPMENT</b>					
Determination of a tourism market profile, through tourism market research for the nature reserve.	<ul style="list-style-type: none"> <li>▪ Capture visitor information and statistics in order to better understand the nature reserve’s tourist numbers and market.</li> <li>▪ Develop an understanding of tourism in the region in order to inform the types of products and activities that may be offered.</li> </ul>	<ul style="list-style-type: none"> <li>▪ An understanding of annual tourist numbers and a tourism market profile for the nature reserve.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Declining tourist numbers.</li> <li>▪ Unhappy tourist.</li> </ul>	<b>Year 3</b>	Ezemvelo KZN Wildlife Ecotourism and Marketing Unit
Promote tourism in the area through collaboration with the eThekweni Municipality tourism initiatives and Ezemvelo marketing programme.	<ul style="list-style-type: none"> <li>▪ Introduce tourist activities based on the outcomes of the tourism market profile.</li> <li>▪ Develop and implement a marketing strategy to be incorporated in the Ezemvelo marketing programme.</li> <li>▪ Promote tourism activities of the nature reserve with the aid of eThekweni Municipality tourism marketing.</li> <li>▪ Engage regularly with the eThekweni Municipality to ensure that any planned tourism activities are aligned with regional tourism initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The nature reserve will be effectively marketed with the aid of eThekweni Municipality programmes and tourism initiatives.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Declining tourist numbers.</li> <li>▪ Unhappy tourist.</li> </ul>	<b>After the implementation of new tourism products</b>	Ezemvelo Marketing Unit and eThekweni Municipality Tourism Body.
<b>ENVIRONMENTAL INTERPRETATION AND EDUCATION</b>					
Development and implementation of an environmental interpretation and education programme.	<ul style="list-style-type: none"> <li>▪ Focus on environmental interpretation and education amongst the nature reserve’s neighbouring communities and visitors.</li> <li>▪ Develop strategies to alert the public about littering and misconceptions about wetlands.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Provision of an environmental interpretation and education tour to each school in the neighbouring local communities.</li> <li>▪ Creative, eye catching signs to make community members aware about littering and misconceptions.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lack of interest in implementing the programme.</li> <li>▪ Communities are not aware of the environmental importance of nature reserves.</li> </ul>	<b>Year 2</b>	Ezemvelo KZN Wildlife Community Conservation Officer

## 6.6 Conservation management

### 6.6.1 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 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.

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

**Table 6.4 Framework for conservation management – fire management**

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
<b>FIRE MANAGEMENT</b>					
Adequate fire safety within the nature reserve is ensured.	<ul style="list-style-type: none"> <li>Maintain a system of firebreaks within the nature reserve that are of adequate extent, which are prepared at the correct time of the year under the appropriate weather conditions.</li> <li>Ensure that staff are trained and that adequate fire fighting equipment is available within the nature reserve.</li> </ul>	<ul style="list-style-type: none"> <li>Enable the nature reserve to have efficient firebreaks in place.</li> <li>Compliance with the National Veld and Forest Fires Act.</li> </ul>	<ul style="list-style-type: none"> <li>Inadequate personnel, equipment or an inability to communicate effectively in fighting fires.</li> <li>Wildfires spreading from the nature reserve to neighbouring properties.</li> </ul>	<b><i>On-going</i></b>	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 prioritises 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 utilised in controlling invasive plants.

An on-going time-bound programme to effectively control these alien weeds and invader plants within Bluff 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 cyclist and trails. 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 stabilised 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.

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 and soil erosion control**

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
<b>INVASIVE PLANT CONTROL</b>					
Development of an invasive species control plan for the nature reserve.	<ul style="list-style-type: none"> <li>▪ Develop a detailed inventory of the listed invasive species.</li> <li>▪ Map the areas and extent of invasive species infestations.</li> <li>▪ Describe previous efforts to control and eradicate invasive plants.</li> <li>▪ Outline the measures required to monitor, control and eradicate the listed invasive species.</li> <li>▪ Identify measurable indicators of progress and success in implementing the invasive species control plan.</li> <li>▪ Identify areas of inflow of invasive species.</li> <li>▪ Develop procedures to prevent inflow of invasive species.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Detail inventory recording all instances of invasive species.</li> <li>▪ High detailed map in order to conduct spatial planning for the management of alien invasive species.</li> <li>▪ Formal document outlining recommendations and the how alien invasive species will be handled.</li> <li>▪ Compliance with the Biodiversity Act.</li> <li>▪ Reduced inflow of invasive species into the nature reserve.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Further spread of existing levels of infestation of listed invasive species.</li> <li>▪ Persistence of existing infestations.</li> <li>▪ New infestations of listed invasive species.</li> </ul>	<b>Year 1</b>	Officer in Charge, Field Rangers, Ecological Advice Unit and Alien Plant Control Unit
<b>SOIL EROSION CONTROL</b>					
Identify and rehabilitate areas that have been affected by soil erosion.	<ul style="list-style-type: none"> <li>▪ Undertake a detailed survey of the nature reserve to identify the extent and severity of soil erosion.</li> <li>▪ Identify the requirements for soil erosion control and rehabilitation within the nature reserve.</li> <li>▪ Implement soil erosion control and rehabilitation measures, focussing strategically on key areas such as those impacting on watercourses or that are growing larger.</li> <li>▪ Undertake preventative measures in areas with low plant cover that may be at risk of soil erosion.</li> <li>▪ If soil erosion is due to factors outside of the nature reserve, contact the respective stakeholder.</li> </ul>	<ul style="list-style-type: none"> <li>▪ A detailed map depicting areas of soil erosion within the nature reserve.</li> <li>▪ Implementation of soil erosion control measures in areas in which plant cover is low, which are susceptible to erosion.</li> <li>▪ Control of soil erosion that have developed due to factors from outside of the nature reserve.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Further erosion of impacted areas.</li> <li>▪ Sedimentation impacts in watercourses and wetland areas.</li> </ul>	<b>Year 2</b>	Officer in Charge

#### 6.6.4 Alien animal control

Alien animal species can threaten the ecological, genetic or natural aesthetic integrity of Bluff 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).

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 behaviour 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 Bluff 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 B, Item 8). If neighbouring landowners contact the Officer in Charge timorously 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.

#### 6.6.5 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 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 Bluff 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 on-going 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 the 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 proactive and reactive environmental awareness programmes. Management will however be ruthless with those that illegally utilize natural resources for commercial or other purposes.

#### *6.6.5.1 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.

#### *6.6.5.2 Bioprospecting*

Requests to collect biological material / samples from the 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.

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

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

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
<b>ALIEN ANIMAL CONTROL</b>					
Implementation of procedures to manage alien animals found within the nature reserve.	<ul style="list-style-type: none"> <li>Together with neighbouring communities, agree on the approach to dealing with domestic animals found in the nature reserve, particularly dogs, which may be used for illegal hunting.</li> <li>Analyse the entry points that may be “soft targets” for alien animals to enter the nature reserve.</li> <li>Monitor and record the effectiveness of such control measures.</li> </ul>	<ul style="list-style-type: none"> <li>Creation of cooperative structures between Ezemvelo, local communities and law enforcement officials.</li> <li>Control of any alien animals found within the nature reserve.</li> <li>Continued monitoring of control measures.</li> </ul>	<ul style="list-style-type: none"> <li>Uncontrolled access of domestic animals within the nature reserve.</li> <li>Incidents are not reported or monitored.</li> <li>Illegal and unlawful entry into the nature reserve via areas known as “soft targets”.</li> </ul>	<i>on-going</i>	Officer in Charge
<b>RESOURCE UTILISATION</b>					
Determine the value of the Eco-system goods and services that BNR contributes to.	<ul style="list-style-type: none"> <li>Initiate a study to identify and quantify the value of the ecosystem goods and services of BNR.</li> </ul>	<ul style="list-style-type: none"> <li>Concise knowledge of the value of goods and services that BNR has to offer.</li> </ul>	<ul style="list-style-type: none"> <li>Lack of understanding of the value of the goods and services contributed by the nature reserve.</li> </ul>	<i>Year 4</i>	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.	<ul style="list-style-type: none"> <li>Consider, with relevant scientific and management staff request, for extractive resource use in accordance with relevant National and provincial Legislation, norms, standards and guidelines.</li> <li>If resource use is approved, communicate with neighbouring communities on the agreed approach to sustainable resource use in the nature reserve.</li> <li>Approved resource use is managed, monitored and reported.</li> <li>Ensure that resource use is in line with zonation of nature reserve.</li> </ul>	<ul style="list-style-type: none"> <li>An agreed upon approach to any extractive resource use.</li> <li>Approved resource use records</li> </ul>	<ul style="list-style-type: none"> <li>Uncontrolled or unsustainable resource extraction</li> <li>Resource use not monitored or reported.</li> </ul>	<i>If required</i>	Officer in Charge and Resource Use Ecologist
If bioprospecting is undertaken, it is done legally and conforms to NEMBA Act Nu 10 of 2004 Chapter 6, and	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>No illegal collection of biological material or samples.</li> </ul>	<ul style="list-style-type: none"> <li>Illegal collection of biological material or samples.</li> </ul>	<i>If required</i>	Officer in Charge and Resource Use Ecologist

the nature reserve's zonation plan.					
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#### 6.6.6 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.

#### 6.6.7 Conservation targets

The 2011 version of the KwaZulu-Natal systematic biodiversity plan identifies the provincial conservation targets referred to in Section 6.6.6, above. The conservation of Bluff 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.

**Table 6.7 Systematic biodiversity planning conservation targets to which Bluff Nature Reserve contributes**

Feature Name	Description	Percentage of target located within Bluff Nature Reserve	Status
<i>Zoothera guttata</i>	Ave	0.12	-
<i>Eremidium erectus</i>	Grasshoper	0.13	-
<i>Centrobolus anulatus</i>	Millipede	1.20	-
<i>Doratogonus cristulatus</i>	Millipede	0.37	-
<i>Doratogonus falcatus</i>	Millipede	0.09	-
<i>Doratogonus natalensis</i>	Millipede	0.17	-
<i>Doratogonus peregrinus</i>	Millipede	0.20	-

<i>Cochlitoma semidecussata</i>	Molusc	1.90	-
<i>Edouardia conulus</i>	Molusc	0.01	-
<i>Barleria natalensis</i>	Plant	0.30	-
<i>Vernonia africana</i>	Plant	0.30	-
KwaZulu-Natal Dune Forests	Vegetation Type	0.27	Least Threatened
North Coast Grassland	Vegetation Type	0.01	Critically Endangered
Subtropical Freshwater Wetlands	Vegetation Type	0.03	Least Threatened

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
<b>WILDLIFE MANAGEMENT</b>					
Implement a strategy for the management of wildlife in the nature reserve in accordance with Ezemvelo policies.	<ul style="list-style-type: none"> <li>Implement the strategy in order to manage wildlife within the nature reserve in accordance with Ezemvelo norms and standards.</li> </ul>	<ul style="list-style-type: none"> <li>An implemented strategy to manage wildlife present in the nature reserve.</li> </ul>	<ul style="list-style-type: none"> <li>No records of management strategies to base future management on.</li> </ul>	<b>Year 3</b>	Officer in Charge and Ecological Advice
	<ul style="list-style-type: none"> <li>Ensure that adequate population control measures are included in the strategy for the management of wildlife in the nature reserve.</li> </ul>	<ul style="list-style-type: none"> <li>Control population numbers of species that are exceeding identified carrying capacities.</li> </ul>	<ul style="list-style-type: none"> <li>Ecological degradation as a result of overstocking of wildlife species</li> </ul>	<b>Ongoing</b>	
Development and implementation of a strategy for problem animal control.	<ul style="list-style-type: none"> <li>Undertake preventative measures, such as boundary fence maintenance, to minimise the need for problem animal control.</li> <li>Apply appropriately humane methods, if problem animals must be destroyed or captured.</li> </ul>	<ul style="list-style-type: none"> <li>Effective procedures and relationships with neighbours in dealing with problem animal control.</li> </ul>	<ul style="list-style-type: none"> <li>Frequent complaints from neighbours with no clear response.</li> </ul>	<b>Year 1</b>	Officer in Charge
Gain a better understanding of flora and fauna within the nature reserve.	<ul style="list-style-type: none"> <li>Conduct a full botanical and faunal inventory survey.</li> <li>Prioritise the survey for endangered and threatened species.</li> </ul>	<ul style="list-style-type: none"> <li>Botanical inventory survey report on which to base management decisions.</li> <li>Faunal inventory report on which to base management decisions.</li> </ul>	<ul style="list-style-type: none"> <li>Lack of knowledge regarding the composition of fauna and flora within the nature reserve.</li> </ul>	<b>On-going</b>	Officer in Charge, Resource Use Ecologist and Ecological Advice
<b>CONSERVATION TARGETS</b>					
Processes are established to determine the success of management interventions in protecting the ecosystems, communities and species of the nature reserve.	<ul style="list-style-type: none"> <li>Develop surveillance and monitoring plans for key management interventions in accordance with the Ezemvelo policies and norms and standards.</li> </ul>	<ul style="list-style-type: none"> <li>Surveillance and monitoring plans for key threatening processes.</li> <li>Monitoring plans for key rare and endangered species.</li> </ul>	<ul style="list-style-type: none"> <li>Lack of awareness of the status of key threatening processes including infestations of invasive plant species and severity and extent of soil erosion.</li> </ul>	<b>Year 3</b>	Ezemvelo Ecological Advice Unit

## 6.7 Operational management

### 6.7.1 Financial and human resources

Bluff 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.
- Commercial operations within the nature reserve must be self-sufficient and, if profitable, should be used to subsidise its conservation and community programmes.
- A capable, experienced administrator and leader is required to fulfil the position of Officer in Charge.
- 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 Bluff Nature Reserve is sourced primarily from the KwaZulu-Natal Provincial Government. There is small amount of income from commercial operations such as visitor fees. In order to ensure that the management of the nature reserve is sustained over time it is necessary to develop a realistic 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 Bluff Nature Reserve management requirements. 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).

### 6.7.2 Facilities and infrastructure

In order for Bluff Nature Reserve to operate appropriately, adequate facilities and infrastructure need to be developed and maintained both for management and eco-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-tourism activities in the nature reserve.

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 operational management – financial and human resources, and facilities and infrastructure**

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
<b>FINANCIAL RESOURCES</b>					
Implementation of the financial plan that identifies the resource needs to achieve the objectives for the nature reserve.	<ul style="list-style-type: none"> <li>Request or source additional funding in order to implement the financial plan as per the approximate in Appendix H which will allow for the effective achievement of the nature reserve’s objectives.</li> </ul>	<ul style="list-style-type: none"> <li>Implementation of the financial plan through additional or requested funding.</li> </ul>	<ul style="list-style-type: none"> <li>Inadequate funding to effectively protect and operate the nature reserve.</li> </ul>	<b>Year 1</b>	Ezemvelo Regional Management Unit
<b>HUMAN RESOURCES</b>					
The nature reserve is adequately staffed for its effective management and operation.	<ul style="list-style-type: none"> <li>Undertake a review of current staffing levels to determine the human resource needs to effectively manage the nature reserve.</li> <li>Undertake regular training and skills development to ensure that staff are able to effectively complete their duties.</li> </ul>	<ul style="list-style-type: none"> <li>Appointment of staff in all positions in the nature reserve.</li> </ul>	<ul style="list-style-type: none"> <li>Inadequate staff numbers or skills for the effective management of the nature reserve.</li> </ul>	<b>Year 2</b>	Ezemvelo Regional Management Unit
<b>FACILITIES AND INFRASTRUCTURE</b>					
All facilities and infrastructure in the nature reserve are adequately maintained.	<ul style="list-style-type: none"> <li>Ensure that the boundary fence is regularly inspected and adequately maintained to ensure security and to contain game species within the nature reserve.</li> <li>Develop and implement a schedule maintenance programme to maintain facilities and infrastructure in a condition that meets relevant environmental, health and safety requirements.</li> <li>Ensure that all signage within and outside the nature reserve are adequately maintained.</li> </ul>	<ul style="list-style-type: none"> <li>Regular scheduled maintenance of all facilities and infrastructure.</li> <li>Proper signage within and outside the nature reserve</li> </ul>	<ul style="list-style-type: none"> <li>Environmental, health or safety incidents associated with inadequately maintained facilities and infrastructure.</li> <li>Tourist being lost and cannot find the nature reserve easily.</li> </ul>	<b>Ongoing</b>	Officer in Charge



## 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. 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.

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

**Table 7.1 Annual surveillance and monitoring schedule for Bluff 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
	Arrests and/or summons issued	Written record	Quarterly		Annual report
	Fines issued (admission of guilt etc.)	Written record	Quarterly		Annual report
	Criminal Cases / Dockets opened	Written record	Quarterly		Annual report
	Civil Actions taken (interdicts etc.)	Written record	Quarterly		Annual report
Stakeholder engagement	Minutes of meetings of the local board and community trust	Written record	Quarterly	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 Conservation Manager	Annual report
Eco-tourism	Visitor statistics	Completion of questionnaire	Ongoing	Officer in Charge	Annual report
Fire 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	Written record/map/photography	Per event		Record of event
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 eradicated				
	Records of labour hours/days	Written record	Annually		Annual report
	Herbicide usage	Written record	Annually		Annual report

**Table 7.1 (cont.)**

Management issue	Parameters to be monitored	Monitoring measures	Monitoring frequency	Responsibility	Reporting requirements
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
Human resources	Staffing levels	Number of full-time staff	Annually	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
	State of facilities and service infrastructure	Maintenance schedule/written records	Monthly	Officer in Charge	Annual report
	Pollution events	Photographs/written records	Per event		Record of event

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 Bluff Nature Reserve, for its review and comment. Records of recommendations for update/changes to the management plan should be kept so that when the plan is revised, 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 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

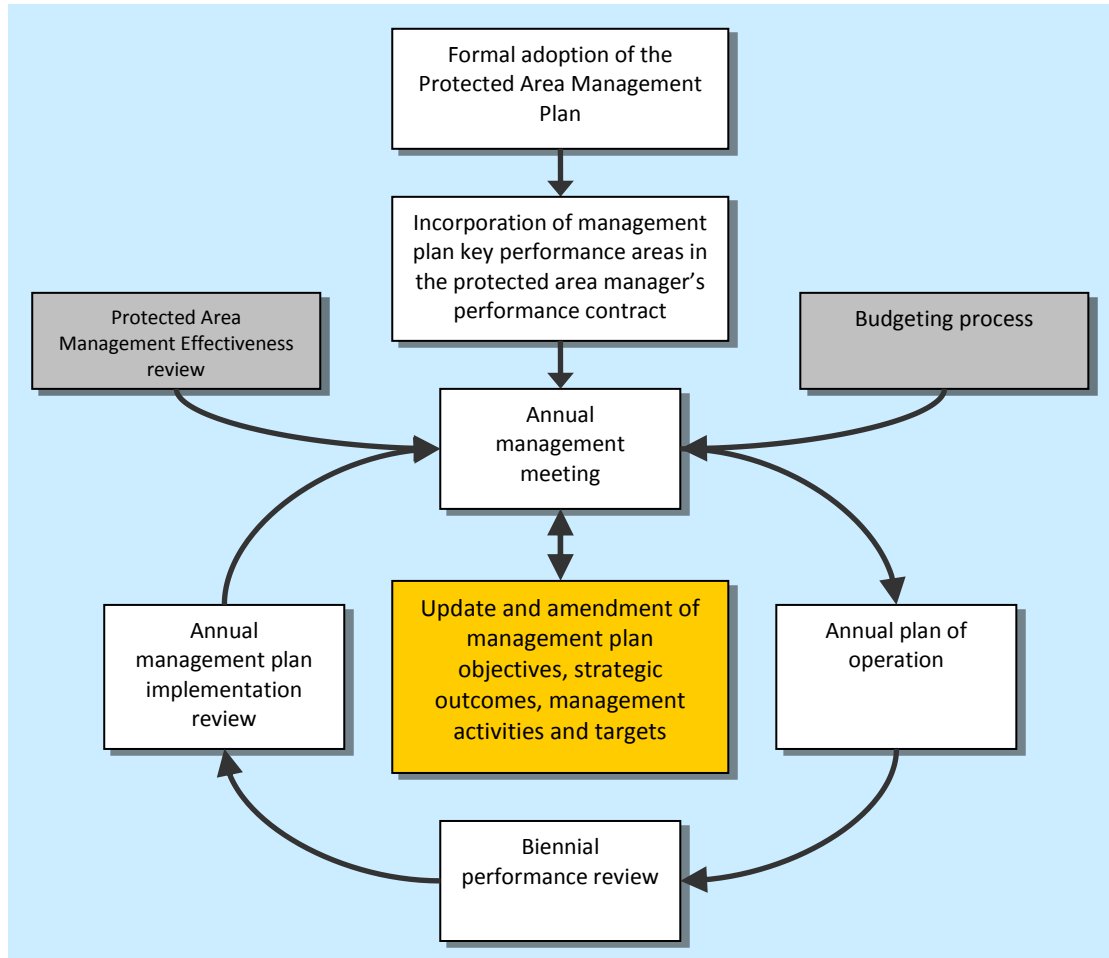
Bank Protected Area Management Effectiveness Tool (Stolton *et al.* 2007).

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 People and Conservation Operations Committee Meeting (P & C OPSCOMM) before being subjected to the appropriate stakeholder participation process and before P & C 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) BLUFF 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 Bluff Nature Reserve will be to:

- 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 Bluff 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 in 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 People & Conservation Operations Committee Meeting (P & C OPSCOMM) in order to assign responsibility for the completion of the management activity. In the case of Bluff Nature Reserve, an example of this would be in the incorporation of additional land from the SAPREF rehabilitation site into the nature reserve. In this instance an action of the annual management meeting would be to refer this management activity to the P & C OPSCOMM so that the correct unit can be assigned responsibility to complete the management activity.

## **8.3 Bluff Nature Reserve resource requirements**

In developing annual plans of operation for Bluff 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:

- Equipment and infrastructure required to undertake appropriate waste management practices within the nature reserve.
- Installation of signage directing tourists to the nature reserve.
- Installation of directional and interpretive signage within the nature reserve.
- Development of facilities and infrastructure to support new tourism products identified tourism market profile.

## **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.
- Basson, M.S. (1997) Overview of water resources availability and utilisation 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.
- 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.
- 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 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.T. (1998) The bioresource units of KwaZulu-Natal. Cedara report N/A95/32. KZN Department of Agriculture.
- 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.
- Department of Environmental Affairs and Tourism (2008) The National Protected Area Expansion Strategy 2008-2012. Pretoria.
- eThekwini Municipality. (2012) eThekwini Municipality Integrated Development Plan (IDP). Available at: [www.durban.gov.za](http://www.durban.gov.za) (accessed on 09/09/13).
- 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.
- 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 (Trichoptera) and blackflies (Diptera: Simuliidae). 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.
- 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.
- Scott-Shaw, C.R. (1999) Rare and threatened plants of KwaZulu-Natal and neighbouring regions. KwaZulu-Natal Nature Conservation Services, Pietermaritzburg.
- Scott-Shaw, C.R. and Escott, B.J. (Eds) (2011) KwaZulu-Natal Provincial Pre-Transformation Vegetation Type Map – 2011. Unpublished GIS Coverage [kznveg05v2\_1\_11\_wll.zip], Biodiversity Conservation Planning Division, Ezemvelo KZN Wildlife, P. O. Box 13053, Cascades, Pietermaritzburg, 3202.

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

## DEFINITIONS OF TERMS

Alien species	Species or genotypes, which are not indigenous to Bluff 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 palaeontological features are included under this definition.
Eco-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	<p>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:</p> <ol style="list-style-type: none"> <li>a. Benefits obtained from ecosystems such as food, fuel and fibre and genetic resources.</li> <li>b. Benefits from the regulation of ecosystem processes such as climate regulation, disease and flood control and detoxification.</li> <li>c. Cultural non-material benefits obtained from ecosystems such as benefits of a spiritual, recreational, aesthetic, inspirational, educational, community and symbolic nature;”</li> </ol> <p>For the purposes of this IMP, sustainable water production is also specifically included under this definition.</p>
Environmental degradation	<p>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</p>
Ezemvelo KZN Wildlife	<p>Nature Conservation Service as established in terms of the KwaZulu-Natal Nature Conservation Management Act No. 9 of 1997.</p>
Indigenous species	<p>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]).</p>
Invasive species	<p>Means any species whose establishment and spread outside of its natural distribution range –</p> <ol style="list-style-type: none"> <li>a. Threaten ecosystems, habitats or other species or have a demonstrable potential to threaten ecosystems, habitats or other species.</li> <li>b. May result in economic and environmental harm or harm to human health.</li> </ol> <p>(As per the National Environmental Management: Protected Areas Act, 2003 [Act No. 57 of 2003]).</p>
Joint management	<p>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.</p>
Local community	<p>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]).</p>
Management	<p>In relation to a protected area, includes control, protection, conservation, maintenance and rehabilitation of the protected area with due regard to the use and extraction of biological resources, community-based practices and benefit sharing activities in the area in a manner consistent with the Biodiversity Act (as per the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003).</p>

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	<ul style="list-style-type: none"> <li>• 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</li> <li>• 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).</li> </ul>
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 roadless, 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 BLUFF 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 BLUFF NATURE RESERVE PROCLAMATION**

2734

Gazette 3830 of 24/10/1974.

†No. 181, 1974.

[Afrikaans text signed by the Administrator.]

### PROCLAMATION

By the Administrator of the Province of Natal

**U**NDER and by virtue of the powers vested in me by Section 2 (1) (c) of the Nature Conservation Ordinance, 1974 (Ordinance No. 15 of 1974), I, acting on the advice and with the consent of the Executive Committee of the Province of Natal, do hereby proclaim, declare and make known that the land described in the schedule hereto shall be a Nature Reserve with effect from the date of publication hereof and shall be known as the Bluff Nature Reserve.

Given under my hand at Pietermaritzburg, Natal, this 2nd day of October, One Thousand Nine Hundred and Seventy-four.

W. W. B. HAVEMANN,  
Administrator.

#### SCHEDULE

From the Southernmost beacon of the Remainder of Woodville of Wentworth No. 860, thence in a north-easterly direction along Tara road for a distance of approximately 514 metres to the south-western boundary of Andries Pretorius Junior High School (Tara Road); thence in a north-westerly direction along the south-western boundary of the said school for a distance of approximately 253 metres to the western corner of the said school site; thence in a south-westerly direction for approximately 244 metres then westerly for approximately 92 metres, and again south-westerly for approximately 183 metres until this boundary intersects the south-western boundary of the Remainder of Woodville aforesaid at a point approximately 314 metres from the point first named; thence in a south-easterly direction along the south-western boundary of the Remainder of Woodville aforesaid, to the point first named.

GA 102945/MW6901/25-10-74

6/3/2/59.

24 October, 1974.

Repealed by Proc. 53/75

†No. 181, 1974.

[Afrikaanse teks deur die Administrateur onderteken.]

### PROKLAMASIE

van die Administrateur van die Provinsie Natal

**K**RAGTENS my bevoeghede ingevolge artikel 2 (1) (c) van die Ordinnansie op Natuurbehouding, 1974 (Ordinnansie No. 15 van 1974), proklameer, verklaar en maak ek hierby op raad, en met die toestemming van die Uitvoerende Komitee van die provinsie Natal bekend dat die gebied wat in die bylae hiervan omskryf word, met ingang van die publikasiedatum hiervan 'n Natuurtuin is, en as die Natuurtuin Bluff bekend sal staan.

Gegee onder my handtekening te Pietermaritzburg, Natal, op hede die 2de dag van Oktober eenduisend negehoenderd vier-esewentig.

W. W. B. HAVEMANN,  
Administrateur.

#### BYLAE

Vanaf die mees suidelike baken van die restant van Woodville van Wentworth No. 860, daarvandaan in 'n noordoostelike rigting langs Taraweg vir 'n afstand van ongeveer 514 meter tot by die suidwestelike grens van die Junior Hoërskool Andries Pretorius (Taraweg); daarvandaan in 'n noordwestelike rigting langs die suidwestelike grens van genoemde skool vir 'n afstand van ongeveer 253 meter tot by die westelike hoek van genoemde skoolperseel; daarvandaan in 'n suidwestelike rigting vir ongeveer 244 meter, dan in 'n westelike rigting vir ongeveer 92 meter, en weer suidweswaarts vir ongeveer 183 meter totdat hierdie grens die suidwestelike grens van die restant van voornoemde Woodville kruis by 'n punt ongeveer 314 meter vanaf die eersgenoemde punt; daarvandaan in 'n suidoostelike rigting langs die suidwestelike grens van die restant van voornoemde Woodville, tot by die eersgenoemde punt.

6/3/2/59.





[Afrikaans text signed by  
the Administrator.]

## PROCLAMATION

By the Administrator of the Province of Natal.

UNDER and by virtue of the powers vested in me by Section 2 (1) (c) of the Nature Conservation Ordinance 1974 (Ordinance No. 15 of 1974), I, acting on the advice and with the consent of the Executive Committee of the Province of Natal, do hereby proclaim, declare and make known that the land described in the Schedule hereto shall be a Nature Reserve with effect from the date of publication hereof and shall be known as the Bluff Nature Reserve.

Proclamation No. 181 of 1974 is hereby repealed.

Given under my hand at Pietermaritzburg this 17th day of April, One Thousand Nine Hundred and Seventy-five.

W. W. B. HAVEMANN,  
Administrator.

From the southernmost beacon of Remainder of Woodville of Wentworth, No. 860, thence in a north-easterly direction along the south-eastern boundary of Remainder of Woodville where it adjoins Tara Road for a distance of approximately 495 metres to the southernmost corner of Andries Pretorius Junior High School (Tara Road), thence in a north-westerly direction for approximately 253 metres and thence in a north-easterly direction for approximately 332 metres (so as to coincide with the boundaries of but exclude from this area the aforesaid school), to where the north-eastern boundary of Remainder of Woodville aforesaid is intersected at a point approximately 250 metres from the easternmost beacon of Remainder of Woodville; thence continuing along the north-eastern boundary of Remainder of Woodville in a north-westerly direction for approximately 285 metres until it meets the security fence on the eastern side of the Wentworth Hospital complex; thence along the said security fence in a south-westerly direction for approximately 1 820 metres, thence proceeding in a general southerly direction for approximately 165 metres, thence in a south-westerly direction (approximately parallel to Tara Road) for approximately 183 metres until it meets the south-western boundary of Remainder of Woodville aforesaid at a point approximately 314 metres from the point first named; thence in a south-eastern direction along the south-western boundary of Remainder of Woodville to the point first named.

6/3/2/8/59.

[Afrikaanse teks deur die  
Administrateur onderteken.]

## PROKLAMASIE

van die Administrateur van die provinsie Natal

KRAGTENS my bevoegdheid ingevolge artikel 2 (1) (c) van die Ordonnansie op Natuurbewaring 1974 (Ordonnansie No. 15 van 1974), proklameer, verklaar en maak ek hierby op raad en met die toestemming van die Uitvoerende Komitee van die provinsie Natal, bekend dat die grond in die bylae hiervan vermeld met ingang van die publikasiedatum hiervan 'n natuurreservaat uitmaak en bekend moet staan as die natuurreservaat Bluff.

Proklamasie No. 181 van 1974 word hierby herroep.

Gegee onder my handtekening te Pietermaritzburg op bode die 17de dag van April, eenduisend negehonderd vyft-en-sewentig.

W. W. B. HAVEMANN,  
Administrateur.

Vanaf die mees suidelike baken van restant van Woodville van Wentworth, No. 860, daarvandaan in 'n noordoostelike rigting lands die suidoostelike grens van restant van Woodville waar by aan Taraweg grens, vir 'n afstand van ongeveer 495 meter tot by die mees suidelike hoek van die Junior Hoërskool Andries Pretorius (Taraweg), daarvandaan in 'n noordwestelike rigting vir ongeveer 253 meter en daarvandaan in 'n noordoostelike rigting vir ongeveer 332 meter (om met die grense van voornoemde skool saam te val maar hom van hierdie gebied uit te sluit) tot waar die noordoostelike grens van voornoemde restant van Woodville by 'n punt ongeveer 250 meter vanaf die mees oostelike baken van restant van Woodville gekruis word; daarvandaan voert langs die noordoostelike grens van restant van Woodville in 'n noordwestelike rigting vir ongeveer 285 meter totdat by die sekuriteitsheining aan die oostelike kant van die Wentworth-hospitaalkompleks ontmoet, daarvandaan langs genoemde sekuriteitsheining in 'n suidwestelike rigting vir ongeveer 1 820 meter, daarvandaan in 'n algemeen suidelike rigting vir ongeveer 165 meter; daarvandaan in 'n suidwestelike rigting (ongeveer parallel met Taraweg) vir ongeveer 183 meter totdat by die suidwestelike grens van voornoemde restant van Woodville by 'n punt ongeveer 314 meter vanaf die eersgenoemde punt ontmoet; daarvandaan in 'n suid-oostelike rigting langs die suidwestelike grens van restant van Woodville tot by die eersgenoemde punt.

6/3/2/8/59.

PROKLAMASIE

van die Administrateur van die Provinsie Natal

KRAGTENS die bevoegdhede aan my verleen by artikel 2 (1) van die Ordonnansie op Natuurbewaring, 1974 (Ordonnansie No. 15 van 1974), proklameer, verklaar en maak ek hierby bekend dat die eiendomme wat in die bylae hiervan omskryf word, met ingang van die publikasiedatum hiervan 'n natuurtuin is en deel uitmaak van die Natuurtuin Bluff.

Gegee onder my handtekening te Pietermaritzburg, Natal, op hede die 9de dag van Februarie tweeduusend tweek-en-tig.

J. C. G. BOTHA  
Administrateur

BYLAE

nom	Grootte	Opmetingsdiagram
1. Huurkontrak 1 oor Ond D van 25	1,4130 ha	L.G. No. 2237/1981
2. Huurkontrak 1 oor Ond E van 25	210 m <sup>2</sup>	L.G. No. 2238/1981
3. Ond 3 van B van 25	1,8859 m	L.G. No. 4557/62
4. Huurkontrak 1 oor Ond 1 van Baker van A van 25	1,707 ha	L.G. No. 2235/1981
5. Huurkontrak 4 oor Ond Baker van A van 25	2 738 m <sup>2</sup>	L.G. No. 2234/1981
6. Huurkontrak 1 oor Ond 6 van Lionel van 27	3,7538 ha	L.G. No. 2239/1981
7. Huurkontrak 2 oor Ond B van 5 van 121 New Brighton van 27	1,2709 ha	L.G. No. 2240/1981
8. Huurkontrak 1 oor Ond 70 van Panday	4,5639 ha	L.G. No. 2233/1981
9. H v N		1981
10. H v N		1981
11. O E 29		d. 54
12. O E 25		d. 55
13. O E 25		d. 56
14. O E 29		d. 57
15. O E 29		d. 58
16. R E 25		d. 59
17. H v B		1981
18. T R 12		1981
19. H van Ond 22 van 124 New Brighton van 31	1 185 m <sup>2</sup>	L.G. No. 2244/1981
20. Huurkontrak 2 oor Ond J van Ond 22 van 124 New Brighton van 31	890 m <sup>2</sup>	L.G. No. 2246/1981
21. Ond K van 22 van 124 New Brighton van 31	943 m <sup>2</sup>	Ond Vol. 870 fol. 70

Afval van die plaas Wentworth No. 860 geleë in die Stad en County Durban.

PROCLAMATION

by the Administrator of the Province of Natal

UNDER the powers vested in me by section 2 (1) of the Nature Conservation Ordinance, 1974 (Ordinance No. 15 of 1974), I do hereby proclaim, declare and make known that with effect from the date of publication hereof, the properties described in the schedule hereto shall be a nature reserve and shall form part of the Bluff Nature Reserve.

Given under my hand at Pietermaritzburg, Natal, this 9th day of February, one thousand nine hundred and eighty-two.

J. C. G. BOTHA  
Administrator

SCHEDULE

Property	Extent	Survey diagram
1. Lease 1 on Sub D of 25	1,4130 ha	S.G. No. 2237/1981
2. Lease 1 on Sub E of 25	210 m <sup>2</sup>	S.G. No. 2238/1981
3. Sub 3 of B of 25	1,8859 ha	S.G. No. 4557/62
4. Lease 1 on Sub 1 of Baker of A of 25	1,7077 ha	S.G. No. 2235/1981
5. Lease 4 on Sub Baker of A of 25	2 738 m <sup>2</sup>	S.G. No. 2234/1981
6. Lease 1 on Sub 6 of Lionel of 27	3,7538 ha	S.G. No. 2239/1981
7. Lease 2 on Sub B of 5 of 121 New Brighton of 27	1,2709 ha	S.G. No. 2240/1981
8. Lease 1 on Sub 70 of Panday	4,5639 ha	S.G. No. 2233/1981
9. Lease 1 on Sub 9 of A of 21 of Lot 124 New Brighton of 29	872 m <sup>2</sup>	S.G. No. 2241/1981
10. Lease 1 on Sub 10 of A of 21 of Lot 124 New Brighton of 29	1 157 m <sup>2</sup>	S.G. No. 2242/1981
11. Sub 11 of A of 21 of Lot 124 New Brighton of 29	1 169 m <sup>2</sup>	Sub Vol. 870 fol. 54
12. Sub 12 of A of 21 of Lot 124 New Brighton of 29	1 169 m <sup>2</sup>	Sub Vol. 870 fol. 55
13. Sub 13 of A of 21 of Lot 124 New Brighton of 29	1 159 m <sup>2</sup>	Sub Vol. 870 fol. 56
14. Sub 14 of A of 21 of Lot 124 New Brighton of 29	1 169 m <sup>2</sup>	Sub Vol. 870 fol. 57
15. Sub 15 of A of 21 of Lot 124 New Brighton of 29	1 400 m <sup>2</sup>	Sub Vol. 870 fol. 58
16. Remainder of A of 21 of Lot 124 New Brighton of 29	929 m <sup>2</sup>	Sub Vol. 870 fol. 59
17. Lease 2 on Sub F of 22 of Lot 124 New Brighton of 31	110 m <sup>2</sup>	S.G. No. 2245/1981
18. Lease 1 on the Remainder of Sub 22 of 124 New Brighton of 31	595 m <sup>2</sup>	S.G. No. 2243/1981
19. Lease 1 on Sub H of Sub 22 of 124 New Brighton of 31	1 185 m <sup>2</sup>	S.G. No. 2244/1981
20. Lease 2 on Sub J of Sub 22 of 124 New Brighton of 31	890 m <sup>2</sup>	S.G. No. 2246/1981
21. Sub K of 22 of 124 New Brighton of 31	943 m <sup>2</sup>	Sub Vol. 870 fol. 70

All of the farm Wentworth No. 860 situate in the City and County of Durban.

## 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 Bluff Nature Reserve.
4. Proclamations of Bluff Nature Reserve
5. Bluff Nature Reserve Public Participation Report, March 2014.

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.

<b><u>EZEMVELO CORPORATE POLICIES (NORMS &amp; STANDARDS)</u></b>	
<b><u>Policy File No.</u></b>	<b>CORPORATE AFFAIRS</b>
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.
<b><u>Policy File No.</u></b>	<b>INTERNAL AUDIT</b>
C 5	➤ Management Control
<b>BIODIVERSITY CONSERVATION OPERATIONS</b>	
<b>1. NATURAL RESOURCE SUSTAINABILITY</b>	
<b><u>Policy File No.</u></b>	<b>Threatened Species and Ecosystems</b>
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.
D 1.8	➤ Disposal of Threatened Species.

<b>EZEMVELO CORPORATE POLICIES (NORMS &amp; STANDARDS)</b>	
<b>BIODIVERSITY CONSERVATION OPERATIONS</b>	
<b>1. NATURAL RESOURCE SUSTAINABILITY</b>	
<b>Policy File No.</b>	<b>Exotic and Invasive Species</b>
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.
	➤
<b>Policy File No.</b>	<b>Migratory Species</b>
D 1.14	➤ Black Wildebeest and Blue Wildebeest Hybridization and Conservation.
D 1.15	➤ Permit authorising the collection of Biological Material within Board Areas.
<b>2. CONSERVATION EFFECTIVENESS</b>	
<b>Policy File No.</b>	<b>Strategic Applications</b>
D 2.1	➤ Involvement of the KwaZulu-Natal Nature Conservation Board in Project 8 of the MAB (Man and Biosphere) Programme.
<b>Policy File No.</b>	<b>Conservation Management: Protected Area Management</b>
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.
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.
<b>Policy File No.</b>	<b>Integrated Environmental Management</b>
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).
<b>Policy File No.</b>	<b>Ex Situ Wild Animal Management</b>
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.

<b>EZEMVELO CORPORATE POLICIES (NORMS &amp; STANDARDS)</b>	
<b>BIODIVERSITY CONSERVATION OPERATIONS</b>	
<b>2. CONSERVATION EFFECTIVENESS</b>	
<b>Policy File No.</b>	<b>Human Animal Conflict - Inside and Outside Protected Areas</b>
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.
<b>Policy File No.</b>	<b>Environmental Awareness</b>
D 2.34	➤ Environmental Education Policy.
<b>3. BIODIVERSITY PROTECTION</b>	
<b>Policy File No.</b>	<b>Co-management</b>
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
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
<b>Policy File No.</b>	<b>Resource-use benefits</b>
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.
<b>4. RELATIONSHIPS</b>	
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.

<b>EZEMVELO CORPORATE POLICIES (NORMS &amp; STANDARDS)</b>	
<b>Policy File No.</b>	<b>COMMERCIAL OPERATIONS</b>
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<sup>3</sup>.
- 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<sup>2</sup> in size.
  - Slipways exceeding 10m<sup>2</sup> in size.
  - Buildings with a footprint exceeding 10m<sup>2</sup> in size.
  - Infrastructure covering 10m<sup>2</sup> 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<sup>3</sup>.
- 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<sup>2</sup> in size or more.
  - Slipways where the slipway will be expanded by 10m<sup>2</sup> or more.
  - Buildings where the buildings will be expanded by 10m<sup>2</sup> or more in size.
  - Infrastructure where the infrastructure will be expanded by 10m<sup>2</sup> 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 of 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

## Appendix F 1: Fauna Species List

Taxon Name	English Name
<b>Amphibians</b>	
<i>Hyperolius marmoratus</i>	Painted reed frog
<i>Hyperolius pusillus</i>	Water lily frog
<i>Afrivalus spinifrons spinifrons</i>	Natal leaf-folding frog
<i>Hyperolius marmoratus marmoratus</i>	Painted reed frog
<i>Strongylopus fasciatus fasciatus</i>	Striped stream frog
<b>Birds</b>	
<i>Anas erythrorhyncha</i>	Red-billed Teal
<i>Anas hottentota</i>	Hottentot Teal
<i>Anas smithii</i>	Cape Shoveler, Cape Shoveller
<i>Anas undulata</i>	Yellow-billed duck
<i>Dendrocygna bicolor</i>	Fulvous Duck
<i>Dendrocygna viduata</i>	White-faced Duck
<i>Plectropterus gambensis</i>	Spur-winged goose
<i>Vanellus armatus</i>	Blacksmith Lapwing, Blacksmith Plover
<i>Glareola pratincola</i>	Collared Pratincole, Red-winged Pratincole
<i>Ixobrychus minutus</i>	Little Bittern
<i>Falco biarmicus</i>	Lanner falcon
<i>Accipiter melanoleucus</i>	Black sparrowhawk
<i>Accipiter minullus</i>	Little Sparrowhawk
<i>Accipiter tachiro</i>	African Goshawk
<i>Sarothrura rufa</i>	Red-chested Flufftail
<i>Pelecanus onocrotalus</i>	Great White Pelican
<i>Pelecanus rufescens</i>	Pink-backed Pelican
<i>Acridotheres tristis</i>	Common Myna, Indian Myna
<i>Acrocephalus arundinaceus</i>	Great Reed-Warbler
<i>Acrocephalus baeticatus</i>	African Reed-Warbler, African Marsh Warbler
<i>Acrocephalus gracilirostris</i>	Lesser Swamp-Warbler, Cape Reed Warbler
<i>Acrocephalus palustris</i>	Marsh Warbler, European Marsh Warbler
<i>Acrocephalus schoenobaenus</i>	Sedge Warbler, European Sedge Warbler
<i>Actitis hypoleucos</i>	Common Sandpiper
<i>Actophilornis africanus</i>	African Jacana
<i>Alcedo cristata</i>	Malachite Kingfisher
<i>Amaurornis flavirostris</i>	Black Crake
<i>Amblyospiza albifrons</i>	Thick-billed Weaver
<i>Andropadus importunus</i>	Sombre Greenbul, Sombre Bulbul
<i>Anthus cinnamomeus</i>	African Pipit, Grassveld Pipit
<i>Apalis flavida</i>	Yellow-breasted Apalis
<i>Apalis thoracica</i>	Bar-throated Apalis
<i>Apus affinis</i>	Little Swift
<i>Apus barbatus</i>	African Black Swift, Black Swift
<i>Apus caffer</i>	White-rumped Swift
<i>Ardea cinerea</i>	Grey Heron

Taxon Name	English Name
<i>Ardea goliath</i>	Goliath Heron
<i>Ardea melanocephala</i>	Black-headed Heron
<i>Ardea purpurea</i>	Purple Heron
<i>Ardeola ralloides</i>	Squacco Heron
<i>Batis capensis</i>	Cape Batis
<i>Bostrychia hagedash</i>	Hadedda Ibis
<i>Bradypterus baboecala</i>	Little Rush-Warbler, African Sedge Warbler
<i>Bubo africanus</i>	Spotted Eagle-Owl
<i>Bubulcus ibis</i>	Cattle Egret
<i>Burhinus vermiculatus</i>	Water Thick-knee, Water Dikkop
<i>Calidris ferruginea</i>	Curlew Sandpiper
<i>Calidris minuta</i>	Little Stint
<i>Camaroptera brachyura</i>	Green-backed Camaroptera, Bleating Warbler
<i>Campethera abingoni</i>	Golden-tailed Woodpecker
<i>Centropus burchellii</i>	Burchell's Coucal
<i>Ceryle rudis</i>	Pied Kingfisher
<i>Charadrius tricollaris</i>	Three-banded Plover
<i>Chlidonias leucopterus</i>	White-winged Tern
<i>Chlorocichla flaviventris</i>	Yellow-bellied Greenbul, Yellow-bellied Bulbul
<i>Chloropeta natalensis</i>	Dark-capped Yellow Warbler, Yellow Warbler
<i>Chrysococcyx caprius</i>	Diederick Cuckoo, Diederik Cuckoo
<i>Chrysococcyx klaas</i>	Klaas's Cuckoo
<i>Circus ranivorus</i>	African Marsh-Harrier
<i>Cisticola aberrans</i>	Lazy Cisticola
<i>Cisticola chiniana</i>	Rattling Cisticola
<i>Cisticola erythrops</i>	Red-faced Cisticola
<i>Cisticola fulvicapilla</i>	Neddicky
<i>Cisticola galactotes</i>	Rufous-winged Cisticola, Black-backed Cisticola
<i>Cisticola juncidis</i>	Zitting Cisticola, Fan-tailed Cisticola
<i>Clamator jacobinus</i>	Jacobin Cuckoo
<i>Colius striatus</i>	Speckled Mousebird
<i>Corvus albus</i>	Pied Crow
<i>Corvus splendens</i>	House Crow
<i>Cossypha natalensis</i>	Red-capped Robin-Chat, Natal Robin
<i>Coturnix coturnix</i>	Common Quail
<i>Cypsiurus parvus</i>	African Palm-Swift, Palm Swift
<i>Dicrurus adsimilis</i>	Fork-tailed Drongo
<i>Dicrurus ludwigii</i>	Square-tailed Drongo
<i>Dryoscopus cubla</i>	Black-backed Puffback, Puffback
<i>Egretta alba</i>	Great Egret, Great White Egret
<i>Egretta ardesiaca</i>	Black Heron, Black Egret
<i>Egretta garzetta</i>	Little Egret
<i>Egretta intermedia</i>	Yellow-billed Egret
<i>Estrilda astrild</i>	Common Waxbill
<i>Euplectes ardens</i>	Red-collared Widowbird, Red-Collared Widow
<i>Euplectes axillaris</i>	Fan-tailed Widowbird, Red-shouldered Widow
<i>Euplectes orix</i>	Southern Red Bishop, Red Bishop

Taxon Name	English Name
<i>Fulica cristata</i>	Red-knobbed Coot
<i>Gallinago nigripennis</i>	African Snipe, Ethiopian Snipe
<i>Gallinula chloropus</i>	Common Moorhen
<i>Halcyon albiventris</i>	Brown-hooded Kingfisher
<i>Haliaeetus vocifer</i>	African Fish-Eagle
<i>Himantopus himantopus</i>	Black-winged Stilt
<i>Hirundo abyssinica</i>	Lesser Striped Swallow
<i>Hirundo albigularis</i>	White-throated Swallow
<i>Hirundo fuligula</i>	Rock Martin
<i>Hirundo rustica</i>	Barn Swallow, European Swallow
<i>Hirundo smithii</i>	Wire-tailed Swallow
<i>Indicator minor</i>	Lesser Honeyguide
<i>Ispidina picta</i>	African Pygmy-Kingfisher, Pygmy Kingfisher
<i>Jynx ruficollis</i>	Red-throated Wryneck
<i>Lagonosticta rubricata</i>	African Firefinch, Blue-billed Firefinch
<i>Lamprotornis corruscus</i>	Black-bellied Starling
<i>Laniarius ferrugineus</i>	Southern Boubou
<i>Lanius collaris</i>	Fiscal Shrike
<i>Lanius collurio</i>	Red-backed Shrike
<i>Larus cirrocephalus</i>	Grey-headed Gull
<i>Lybius torquatus</i>	Black-collared Barbet
<i>Macronyx croceus</i>	Yellow-throated Longclaw
<i>Mandingoa nitidula</i>	Green Twinspot
<i>Melaenornis pammelaina</i>	Southern Black Flycatcher, Black Flycatcher
<i>Merops pusillus</i>	Little Bee-eater
<i>Milvus migrans</i>	Black Kite, Yellow-billed Kite
<i>Motacilla aguimp</i>	African Pied Wagtail
<i>Motacilla capensis</i>	Cape Wagtail
<i>Muscicapa adusta</i>	African Dusky Flycatcher, Dusky Flycatcher
<i>Muscicapa striata</i>	Spotted Flycatcher
<i>Netta erythrophthalma</i>	Southern Pochard
<i>Numenius phaeopus</i>	Common Whimbrel, Whimbrel
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron
<i>Onychognathus morio</i>	Red-winged Starling
<i>Pandion haliaetus</i>	Osprey
<i>Parus niger</i>	Southern Black Tit
<i>Passer domesticus</i>	House Sparrow
<i>Phalacrocorax africanus</i>	Reed Cormorant
<i>Philomachus pugnax</i>	Ruff
<i>Phoeniculus purpureus</i>	Green Wood-Hoopoe, Red-billed Woodhoopoe
<i>Phyllastrephus terrestris</i>	Terrestrial Brownbul, Terrestrial Bulbul
<i>Phylloscopus trochilus</i>	Willow Warbler
<i>Platalea alba</i>	African Spoonbill
<i>Ploceus bicolor</i>	Dark-Backed Weaver, Forest Weaver
<i>Ploceus cucullatus</i>	Village Weaver, Spotted-backed Weaver
<i>Ploceus ocularis</i>	Spectacled Weaver
<i>Ploceus subaureus</i>	Yellow Weaver

Taxon Name	English Name
<i>Pogoniulus bilineatus</i>	Yellow-rumped Tinkerbird, Golden-rumped Tinker Barbet
<i>Pogoniulus pusillus</i>	Red-fronted Tinkerbird, Red-fronted Tinker Barbet
<i>Porzana pusilla</i>	Baillon's Crake
<i>Prinia subflava</i>	Tawny-flanked Prinia
<i>Psittacula krameri</i>	Rose-ringed Parakeet
<i>Rallus caerulescens</i>	African Rail
<i>Riparia paludicola</i>	Brown-throated Martin
<i>Riparia riparia</i>	Sand Martin
<i>Rostratula benghalensis</i>	Greater Painted-snipe, Painted Snipe
<i>Sarkidiornis melanotos</i>	Comb Duck, Knob-billed Duck
<i>Scopus umbretta</i>	Hamerkop
<i>Sigelus silens</i>	Fiscal Flycatcher
<i>Spermestes cucullatus</i>	Bronze Mannikin
<i>Sphenoeacus afer</i>	Cape Grassbird, Grassbird
<i>Sterna hirundo</i>	Common Tern
<i>Sterna paradisaea</i>	Arctic Tern
<i>Streptopelia semitorquata</i>	Red-eyed Dove
<i>Streptopelia senegalensis</i>	Laughing Dove
<i>Tachybaptus ruficollis</i>	Little Grebe, Dabchick
<i>Tchagra tchagra</i>	Southern Tchagra
<i>Terpsiphone viridis</i>	African Paradise-Flycatcher, Paradise Flycatcher
<i>Thalassornis leuconotus</i>	White-backed Duck
<i>Threskiornis aethiopicus</i>	African Sacred Ibis, Sacred Ibis
<i>Tringa glareola</i>	Wood Sandpiper
<i>Tringa nebularia</i>	Common Greenshank, Greenshank
<i>Tringa stagnatilis</i>	Marsh Sandpiper
<i>Turtur tympanistria</i>	Tambourine Dove
<i>Vidua macroura</i>	Pin-tailed Whydah
<i>Zoothera guttata</i>	Spotted Ground-Thrush, Spotted Thrush
<i>Alopochen aegyptiaca</i>	Egyptian Goose
<i>Gallirex porphyreolophus</i>	Purple-crested Turaco, Purple-crested Lourie
<i>Porphyrio madagascariensis</i>	African Purple Swamphen, Purple Gallinule
<i>Sterna caspia</i>	Caspian Tern
<i>Phalacrocorax lucidus</i>	White-breasted Cormorant
<i>Butorides striata</i>	Green-backed Heron
<i>Telophorus viridis</i>	Gorgeous Bush-Shrike
<i>Psaldoprocne holomelaena</i>	Black Saw-wing, Black Saw-wing Swallow
<i>Pycnonotus tricolor</i>	Dark-capped Bulbul, Black-eyed Bulbul
<i>Zosterops virens</i>	Cape White-eye
<i>Turdus libyanus</i>	Kurrichane Thrush
<i>Cercotrichas leucophrys</i>	White-browed Scrub-Robin, White-browed Robin
<i>Saxicola torquatus</i>	African Stonechat, Stonechat
<i>Cyanomitra olivacea</i>	Olive Sunbird
<i>Cyanomitra veroxii</i>	Grey Sunbird
<i>Chalcomitra amethystina</i>	Amethyst Sunbird, Black Sunbird
<i>Hedypipna collaris</i>	Collared Sunbird
<i>Cinnyris talatala</i>	White-bellied Sunbird

Taxon Name	English Name
<i>Crithagra mozambicus</i>	Yellow-fronted Canary, Yellow-eyed Canary
<i>Crithagra sulphuratus</i>	Brimstone Canary, Bully Canary
<i>Megaceryle maximus</i>	Giant Kingfisher
<i>Cercomela familiaris</i>	Familiar Chat
<i>Anhinga rufa</i>	African Darter, Darter
Earthworms and Leeches	
<i>Dichogaster sp.</i>	
<i>Pontoscolex corethrurus</i>	
Insects	
<i>Hypolimnas misippus</i>	Common Diadem
<i>Deudorix antalus</i>	Brown Playboy
<i>Eicochrysops hippocrates</i>	White-tipped Blue
<i>Erotylid sp.</i>	
<i>Papilio demodocus demodocus</i>	Citrus Swallowtail
<i>Papilio nireus lyaeus</i>	Green-banded Swallowtail
<i>Amauris albimaculata albimaculata</i>	Layman Friar
<i>Amauris niavius dominicanus</i>	Common Friar
<i>Belenois creona severina</i>	African Common White
<i>Charaxes varanes varanes</i>	Pearl Charaxes
<i>Danaus chrysippus orientis</i>	African Monarch
<i>Eurema hecabe solifera</i>	Common Grass Yellow
<i>Gegenes niso niso</i>	Common Hottentot Skipper
<i>Hypolycaena philippus philippus</i>	Purple-brown Hairstreak
<i>Telchinia encedon encedon</i>	Common Mimic Acraea
<i>Junonia natalica natalica</i>	Brown Pansy
<i>Junonia oenone oenone</i>	Blue Pansy
<i>Silvanidium peninsulare</i>	Bluff forest wingless grasshopper
Mammals	
<i>Tragelaphus scriptus</i>	Bushbuck
<i>Genetta tigrina</i>	South African large-spotted genet
<i>Amblysomus hottentotus</i>	Hottentot golden mole
<i>Crocidura flavescens</i>	Greater red musk shrew
<i>Philantomba monticola bicolor</i>	Blue duiker
<i>Mungos mungo taenianotus</i>	Banded mongoose
<i>Mastomys natalensis natalensis</i>	Natal multimammate mouse
<i>Millipedes</i>	
<i>Sphaerotherium sp.</i>	
<i>Centrobolus anulatus</i>	Ringed millipede
<i>Doratogonus cristulatus</i>	Cristulate black millipede
Reptiles	
<i>Pelusios rhodesianus</i>	Mashona hinged terrapin
<i>Bradypodion melanocephalum</i>	Black-headed dwarf chameleon
<i>Chamaeleo dilepis</i>	Flap-neck chameleon
<i>Gerrhosaurus flavigularis</i>	Yellow-throated plated lizard
<i>Hemidactylus mabouia</i>	Moreau's tropical house gecko
<i>Panaspis wahlbergii</i>	Wahlberg's snake-eyed skink
<i>Crotaphopeltis hotamboeia</i>	Herald snake

Taxon Name	English Name
<i>Causus rhombeatus</i>	Rhombic night adder
<i>Lygodactylus capensis capensis</i>	Cape dwarf gecko
<i>Acanthocerus atricollis atricollis</i>	Southern tree agama
Slugs, snails, limpets	
<i>Trachycystis aenea</i>	Bronze pinwheel

#### Appendix F 2: Flora Species List

Taxon Name	English Name
<i>Kniphofia gracilis</i>	
<i>Disa woodii</i>	
<i>Bonatea speciosa</i>	



### Appendix F 3: Important Fauna Species List

Taxon Name	English Name	Endemism List	SARDB Name	IUCN Name	CITES	ToPS Category
<b>Amphibians</b>						
<i>Hyperolius marmoratus marmoratus</i>	Painted reed frog	Near-endemic (50-75%) to KZN; Endemic to South Africa, Lesotho or Swaziland				
<b>Birds</b>						
<i>Glareola pratincola</i>	Collared Pratincole, Red-winged Pratincole		Near Threatened			
<i>Falco biarmicus</i>	Lanner falcon		Near Threatened		Appendix II	
<i>Accipiter melanoleucus</i>	Black sparrowhawk				Appendix II	
<i>Accipiter minullus</i>	Little Sparrowhawk				Appendix II	
<i>Accipiter tachiro</i>	African Goshawk				Appendix II	
<i>Pelecanus onocrotalus</i>	Great White Pelican		Near Threatened			
<i>Pelecanus rufescens</i>	Pink-backed Pelican		Vulnerable			Endangered
<i>Acridotheres tristis</i>	Common Myna, Indian Myna					
<i>Bubo africanus</i>	Spotted Eagle-Owl				Appendix II	
<i>Circus ranivorus</i>	African Marsh-Harrier		Vulnerable		Appendix II	Vulnerable
<i>Corvus splendens</i>	House Crow					
<i>Haliaeetus vocifer</i>	African Fish-Eagle				Appendix II	
<i>Milvus migrans</i>	Black Kite, Yellow-billed Kite				Appendix II	
<i>Pandion haliaetus</i>	Osprey				Appendix II	
<i>Passer domesticus</i>	House Sparrow					
<i>Psittacula krameri</i>	Rose-ringed Parakeet					
<i>Rostratula benghalensis</i>	Greater Painted-snipe, Painted Snipe		Near Threatened			
<i>Sarkidiornis melanotos</i>	Comb Duck, Knob-billed Duck				Appendix II	
<i>Tchagra tchagra</i>	Southern Tchagra	Endemic to South Africa, Lesotho or Swaziland				
<i>Zoothera guttata</i>	Spotted Ground-Thrush, Spotted Thrush		Endangered	Endangered		
<i>Sterna caspia</i>	Caspian Tern		Near Threatened			
<b>Earthworms and Leeches</b>						
<i>Dichogaster sp.</i>						
<i>Pontoscolex corethrurus</i>						
<b>Insects</b>						
<i>Silvanidium peninsulare</i>	Bluff forest wingless grasshopper	Restricted in KZN; Endemic to KZN;				
<b>Mammals</b>						
<i>Amblysomus hottentotus</i>	Hottentot golden mole		Data Deficient			
<i>Crocidura flavescens</i>	Greater red musk shrew	Endemic to South Africa, Lesotho or Swaziland	Data Deficient			

Taxon Name	English Name	Endemism List	SARDB Name	IUCN Name	CITES	ToPS Category
<i>Philantomba monticola bicolor</i>	Blue duiker		Vulnerable			Vulnerable
<b>Millipedes</b>						
<i>Centrobolus anulatus</i>	Ringed millipede	Restricted in KZN; Endemic to KZN; Endemic to South Africa, Lesotho or Swaziland				
<i>Doratogonus cristulatus</i>	Cristulate black millipede	Restricted in KZN; Endemic to KZN; Endemic to South Africa, Lesotho or Swaziland				
<b>Reptiles</b>						
<i>Pelusios rhodesianus</i>	Mashona hinged terrapin	Restricted in KZN;	Peripheral			
<i>Bradypodion melanocephalum</i>	Black-headed dwarf chameleon	Restricted in KZN; Endemic to KZN; Endemic to South Africa, Lesotho or Swaziland				
<i>Chamaeleo dilepis</i>	Flap-neck chameleon				Appendix II	
<b>Slugs, snails, limpets</b>						
<i>Trachycystis aenea</i>	Bronze pinwheel	Near-endemic (75-99%) to KZN;				

#### Appendix F 4: Important Flora Species List

Family	Taxon Name	English Name	Endemism List	SARDB Name	IUCN Name	CITES	ToPS Category	Ordinance
Asphodelaceae	<i>Kniphofia gracilis</i>	Graceful/Slender Redhot Poker	Endemic to South Africa, Lesotho or Swaziland	Least Concern				
Orchidaceae	<i>Disa woodii</i>	Wood's Disa		Least Concern		Appendix II		
Orchidaceae	<i>Bonatea speciosa</i>	Green Wood Orchid		Least Concern		Appendix II		

**PRO FORMA ANNUAL PLAN OF OPERATION**

**Notes of a management meeting for Bluff Nature Reserve held at ... office on ...**

Present:

Apologies:

CC:

Management target	2013/14 Progress	2015/16 goals	Completion date	Responsibility	Action
<b>LEGAL COMPLIANCE AND ENFORCEMENT</b>					
Creation of cooperative structures with local communities and law enforcement officials.			Year 2	Officer in Charge, District Conservation officer	
Regular patrols covering the full extent of the nature reserve.			Year 1 - Ongoing	Officer in Charge	
Prosecution of any offender caught committing an offence.					
Legal agreements between Ezemvelo and the land owners.			Once proposal has been accepted (see buffer zone management)	Officer in Charge, Regional Management	
<b>STAKEHOLDER ENGAGEMENT</b>					
An up-to-date stakeholder database.			Year 1 - ongoing	Officer in Charge and Community Conservation Officer	
Minutes of the meetings of the community liaison forum.					
Quarterly meetings of the BNR community liaison forum.					
Prioritised research programme and list.			ongoing		
<b>BUFFER ZONE PROTECTION, PROTECTED AREA EXPANSION AND REGIONAL MANAGEMENT</b>					
Initial meeting and communication between Ezemvelo and the land owners.			Year 1	Officer in Charge, Regional Management	
A proposal to acquire such land by Ezemvelo through legal agreements.					
Adoption of environmentally appropriate land uses in IDPs and SDFs in the areas immediately			Annually	Officer in Charge, District	

Management target	2013/14 Progress	2015/16 goals	Completion date	Responsibility	Action
surrounding the nature reserve.				Conservation Officer	
Retention of existing benign land uses in the areas immediately surrounding the nature reserve.					
<b>ECO-TOURISM</b>					
An understanding of annual tourist numbers and a tourism market profile for the nature reserve.			Year 3	Officer in Charge, Ezemvelo KZN Wildlife Ecotourism and Marketing Unit	
The nature reserve will be effectively marketed with the aid of eThekweni Municipality programmes and tourism initiatives.			After the implementation of new tourism products	Officer in Charge, Ezemvelo KZN Wildlife Senior Conservation Manager	
Provision of an environmental interpretation and education tour to each school in the neighbouring local communities.			Year 2	Ezemvelo KZN Wildlife Community Conservation Officer	
Creative, eye catching signs to make community members aware about littering and misconceptions.					
<b>CONSERVATION MANAGEMENT</b>					
Enable the nature reserve to have efficient firebreaks in place.			Ongoing	Officer in Charge	
Compliance with the National Veld and Forest Fires Act.					
Detail inventory recording all instances of invasive species.			Year 1	Officer in Charge, Field Rangers, Ecological Advice	
High detailed map in order to					

Management target	2013/14 Progress	2015/16 goals	Completion date	Responsibility	Action
conduct spatial planning for the management of alien invasive species.				Unit and Alien Plant Control Unit	
Formal document outlining recommendations and the how alien invasive species will be handled.					
Compliance with the Biodiversity Act.					
Reduced inflow of invasive species into the nature reserve.					
A detailed map depicting areas of soil erosion within the nature reserve.			Year 2	Officer in Charge	
Implementation of soil erosion control measures in areas in which plant cover is low, which are susceptible to erosion.					
Control of soil erosion that have developed due to factors from outside of the nature reserve.					
Creation of cooperative structures between Ezemvelo, local communities and law enforcement officials.			On going	Officer in Charge	
Control of any alien animals found within the nature reserve.					
Continued monitoring of control measures.					
Concise knowledge of the value of goods and services that BNR has to			Year 4	Resource Use ecologist	

Management target	2013/14 Progress	2015/16 goals	Completion date	Responsibility	Action
offer.			If required	Officer in Charge and Resource Use Ecologist	
An agreed upon approach to any extractive resource use.					
Approved resource use records					
No illegal collection of biological material or samples.					
An implemented strategy to manage wildlife present in the nature reserve.			Year 3	Officer in Charge and Ecological Advice	
Control population numbers of species that are exceeding identified carrying capacities.			On going		
Effective procedures and relationships with neighbours in dealing with problem animal control.			Year 1	Officer in Charge	
Surveillance and monitoring plans for key threatening processes.			Year 3	Ezemvelo Ecological Advice Unit	
Monitoring plans for key rare and endangered species.					
<b>OPERATIONAL MANAGEMENT</b>					
Implementation of the financial plan through additional or requested funding.			Year 1	Ezemvelo Regional Management Unit	
Appointment of staff in all positions in the nature reserve.			Year 2		
Regular scheduled maintenance of all facilities and infrastructure.			On going	Officer in Charge	
Proper signage within and outside					



Management target	2013/14 Progress	2015/16 goals	Completion date	Responsibility	Action
the nature reserve					

## FINANCIAL PLAN

### 1. Purpose and aim

The National Environmental Management: Protected Areas Act (No.57 of 2003) stipulates that the management plan must contain at least:

“A programme for the implementation of the plan and its costing” for the approval of a Protected Area Management Plan by the MEC or Minister.”

Management Effectiveness of protected areas relates directly to the availability of financial resources to achieve biodiversity conservation objectives. It is recognised that most protected areas do not have adequate financial resources to achieve their vision and stated objectives. The Financial plan should be developed in the context of the management plan and should be tied in with management priorities.

This financial plan has been developed in the interests of proper planning and sustained conservation management of the Bluff Nature Reserve. Certain management recommendations have been made in the Management Plan which requires dedicated financial resources which include:

- Upgrade and maintain all building infrastructure (management and tourism).
- Maintenance of roads including tourist and management roads.
- Replace and upgrade the BNR fence to secure the boundary of the protected area.
- Installation of signage directing tourists to the nature reserve.
- Installation of directional and interpretive signage within the nature reserve.

### 2. Financial management of Bluff Nature Reserve

The financial objective for the reserve stipulates:

**Provide adequate human resources, equipment, infrastructure and funding to enable the effective protection, development and management of Bluff Nature Reserve.**

Current income generation activities include:

- Day visitor fees
- Bird viewing groups
- School groups

There are no other potential income generating activities that have been identified for the following five year implementation period.

Current funding is not sufficient to effectively maintain the reserve and of particular concern is the security of fauna, tourism and management infrastructure and in particular the effective maintenance of the road and fence infrastructure. The table below provides a cost estimate of the requirements for the implementation of the management plan.

**Projected income:**

Income 2011 to 2014	
2011/2012	R 14790
2012/2013	R 21650
2013/2014	R 21980
Projected Income	
Year 1	R 22000
Year 2	R 22500
Year 3	R 23000
Year 4	R 23500
Year 5	R 24000

## BLUFF NATURE RESERVE - Cost Estimate

Ezemvelo provincial budget allocation (2013)					
	Year 1	Year 2	Year 3	Year 4	Year 5
<b>EXPENSES (Projected operational requirement for critical activities per annum)</b>					
Road maintenance					
Fence maintenance					
Building maintenance					
Equipment maintenance					
Alien and invasive plant control					
Fire management					
Erosion control and rehabilitation					
Law enforcement					
Services (gas, electricity, water)					
Vehicle running cost and maintenance					
<b>TOTAL</b>					
<b>TOTAL PAYROLL</b>					
<b>TOTAL EXPENSES (Critical Activities)</b>					

<b>CAPITAL REQUIREMENT (Not included in annual operational requirement)</b>					
	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Roads</b>	0	0	0	0	0
<b>Buildings</b>	0	0	0	0	0
<b>Fences</b>	0	5000	1000	1000	1000
<b>TOTAL CAPITAL REQUIREMENT</b>	<b>0</b>	<b>5000</b>	<b>1000</b>	<b>1000</b>	<b>1000</b>