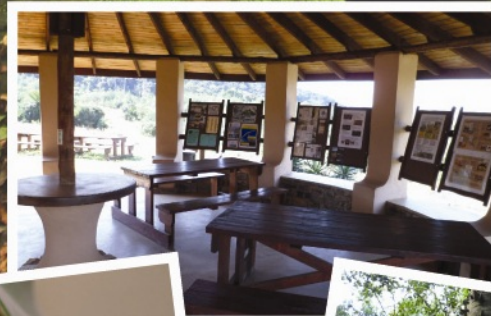




**EZEMVELO  
KZN WILDLIFE**  
Conservation, Partnerships & Ecotourism

# **BULWER FOREST COMPLEX** *Protected Area* **MANAGEMENT PLAN**

Incorporating: Indhloveni Nature Reserve, Ingelabantwana Nature Reserve, Marutswa Nature Reserve, Marwaqa Nature Reserve, Xotsheyake Nature Reserve, Erfs 179, 180 and 181



# **Bulwer complex incorporating:**

**Indhloveni Nature Reserve  
Ingelabantwana Nature Reserve  
Marutswa Nature Reserve  
Marwaqa Nature Reserve  
Xotsheyake Nature Reserve  
Erf 179, 180 and 181**

**KwaZulu-Natal  
South Africa**

## **Protected Area Management Plan**

Prepared by  
Ezemvelo KwaZulu-Natal Wildlife  
Protected Area Management Planning Unit

Citation

*Bulwer complex: Management Plan. Version 1.0 (2012), Ezemvelo KZN Wildlife, Pietermaritzburg.*

Photographs courtesy of:  
Hugh Chittenden (Narina Trogon)  
Michael Cowell (Forest background)  
Ria Fokkens

## **AUTHORISATION**

This Protected Area Management Plan for the Bulwer complex incorporating: Indhloveni Nature Reserve (NR), Ingelabantwana NR, Marutswa NR, Marwaqa NR, Xotsheyaka NR and Erf 179, 180 and 181 is recommended by the Nature Reserve Planning Committee (NRPC), a multi-disciplinary team consisting of:


### **Ezemvelo KZN Wildlife**

Yoliswa Ndlovu	General Manager: West
Athol Marchant	Regional Ecologist
Barrie Barnes	Senior Community Conservation
Mbuyiselo Gxashi	Conservation Manager
Dennis Mkhabela	Acting Biodiversity Conservation Co-ordinator
Steve McKean	Resource Use Ecologist
Andy Blackmore	Acting Manager Land Use Planning
Irene Hatton	Acting Co-ordinator Protected Area Planning
Magda Goosen	Protected Area Management Planner



This Protected Area Management Plan for the Bulwer complex incorporating: Indhloveni Nature Reserve (NR), Ingelabantwana NR, Marutswa NR, Marwaqa NR, Xotsheyaka NR and Erf 179, 180 and 181 is approved:

**Recommended:**

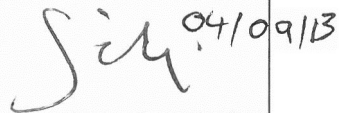
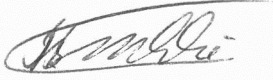
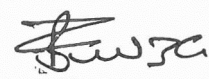
TITLE	NAME	SIGNATURE AND DATE
Chairperson: Operations Committee: West	D. H. BELD	 28/01/2013



This Protected Area Management Plan for the Bulwer complex incorporating: Indhloveni Nature Reserve (NR), Ingelabantwana NR, Marutswa NR, Marwaqa NR, Xotsheyaka NR and Erfs 179, 180 and 181 is approved:

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

**Recommended:**

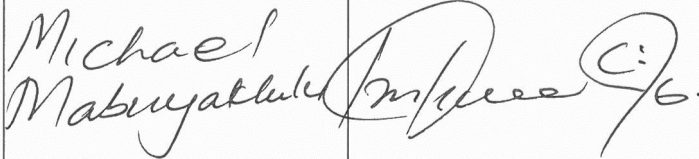
TITLE	NAME	SIGNATURE AND DATE
Chairperson: KZN Nature Conservation Board	Mr ZC Ngidi	 04/09/13
Chief Executive Officer: Ezemvelo KZN Wildlife	DR I.B. MKHIZE	
Chairperson: Ezemvelo KZN Wildlife, Operations Committee		 16 July 2013
Chairperson: Operations Committee: West		





## APPROVAL

This Protected Area Management Plan for the Bulwer Forest complex incorporating: Indhloveni Nature Reserve (NR), Ingelabantwana NR, Marutswa NR, Marwaqa NR, Xotsheyaka NR and Erfs 179,180 and 181 is approved:

TITLE	NAME	SIGNATURE AND DATE
KwaZulu-Natal MEC: Department of Economic Development, Tourism and Environmental Affairs	Michael Mabuyakulu	 C: 16.



## TABLE OF CONTENTS

AUTHORISATION .....	II
TABLE OF CONTENTS .....	VI
LIST OF TABLES.....	IX
LIST OF FIGURES.....	IX
LIST OF MAPS .....	IX
PREFACE.....	X
EXECUTIVE SUMMARY .....	XI
ABBREVIATIONS .....	XIII
1) BACKGROUND.....	1
1.1 Purpose of the plan.....	1
1.2 Structure of the plan.....	1
1.3 Introduction .....	3
1.4 The values of the Bulwer complex .....	4
1.5 Planning approach.....	6
1.5.1 Adaptive management.....	6
1.5.2 Collaboration and transparency.....	7
2) DESCRIPTION OF THE BULWER COMPLEX AND ITS CONTEXT .....	8
2.1 Institutional and administrative framework for the management of the Bulwer complex.....	8
2.2 The legislative basis for the management of the Bulwer reserves.....	8
2.2.1 Proclamation status of the Bulwer reserves .....	9
2.2.2 Invasive species control in terms of the Biodiversity Act .....	9
2.3 The policy framework guiding the management of the Bulwer complex .....	9
CORE VALUES .....	10
2.4 The regional and local planning context of the Bulwer complex .....	11
2.4.1 The National Protected Area Expansion Strategy .....	11
2.4.2 The Provincial Protected Area Expansion Plan .....	11
2.4.3 EIA Regulations in terms of NEMA .....	12
2.5 The history of the Bulwer complex .....	12
2.5.1 Origins of the name of the Bulwer complex .....	12
2.5.2 History of conservation in the Bulwer complex.....	12
2.5.3 History of eco-cultural tourism in the Bulwer complex.....	13
2.6 Ecological context of the Bulwer complex .....	13
2.6.1 Climate and weather .....	13
2.6.2 Topography .....	13
2.6.3 Geology and soils.....	14
2.6.4 Hydrology .....	14
2.6.5 Vegetation .....	14
2.6.6 Fire regime .....	15
2.6.7 Invasive species .....	15
2.6.8 Mammalian fauna .....	16
2.6.9 Avifauna.....	16
2.6.10 Herpetofauna (reptiles and amphibians).....	16
2.6.11 Invertebrates.....	16
2.7 Cultural context of the Bulwer complex .....	17
2.8 Socio-economic context .....	17
2.9 Operational management within the Bulwer complex .....	18

2.9.1	Infrastructure .....	18
2.9.2	Staffing establishment.....	18
2.9.3	Funding levels of the Bulwer complex .....	18
2.9.4	Management effectiveness of the Bulwer complex .....	19
2.10	<i>Summary of management issues, challenges and opportunities</i> .....	19
3)	STRATEGIC MANAGEMENT FRAMEWORK.....	22
3.1	<i>Joint vision of the Bulwer forest complex and erfs</i> .....	22
3.2	<i>Objectives and strategic outcomes</i> .....	22
4)	ZONATION PLAN .....	25
4.1	<i>Zonation of the Bulwer complex</i> .....	25
4.2	<i>Concept development guidelines</i> .....	25
5)	ADMINISTRATIVE STRUCTURE .....	30
6)	OPERATIONAL MANAGEMENT FRAMEWORK .....	31
6.1	<i>Determination of priorities for strategic outcomes</i> .....	31
6.2	<i>Legal compliance and law enforcement</i> .....	32
6.3	<i>Stakeholder Engagement</i> .....	32
6.4	<i>Buffer zone protection and regional management</i> .....	35
6.4.1	Protected area expansion and buffer zone management .....	35
6.4.2	Local and regional planning.....	35
6.5	<i>Eco-cultural tourism development</i> .....	37
6.5.1	Tourism product development .....	37
6.5.2	Environmental interpretation and education .....	37
6.6	<i>Conservation management</i> .....	40
6.6.1	Fire management .....	40
6.6.2	Invasive plant control .....	42
6.6.3	Soil erosion control .....	42
6.6.4	Alien animal control .....	45
6.6.5	Resource utilisation .....	45
6.6.6	Wildlife management.....	47
6.6.7	Conservation targets .....	47
6.7	<i>Operational management</i> .....	53
6.7.1	Financial and human resources.....	53
6.7.2	Facilities and infrastructure.....	53
7)	MONITORING AND REPORTING .....	56
7.1	<i>Annual monitoring</i> .....	56
7.2	<i>Annual protected area management plan implementation review</i> .....	59
8)	BULWER COMPLEX ANNUAL PLAN OF OPERATION.....	61
8.1	<i>Implementation of the protected area management plan</i> .....	61
8.2	<i>Responsibilities in implementing the protected area management plan</i> .....	62
8.3	<i>Bulwer complex resource requirements</i> .....	62
8.3.1	Staff and equipment.....	63
8.3.2	Projects.....	63
8.4	<i>Annual financial plan</i> .....	63
8.5	<i>Financial accounting system</i> .....	63
8.6	<i>Financial reporting</i> .....	64
	REFERENCES .....	65
	DEFINITIONS OF TERMS.....	68

LIST OF STATUTES TO WHICH THE BULWER COMPLEX IS SUBJECT .....	72
LIST OF UNPUBLISHED AND SUPPORTING DOCUMENTATION .....	74
LISTED ACTIVITIES REQUIRING ENVIRONMENTAL AUTHORISATION IN TERMS OF REGULATION R.546, LISTING NOTICE No.3 .....	78
SPECIES LISTS.....	80
PRO FORMA ANNUAL PLAN OF OPERATION .....	86
<i>Notes of a management meeting for Bulwer complex held at ... office on ...</i> .....	86
2012/13 Budget for Indhloveni Nature Reserve .....	93

## LIST OF TABLES

Table 2.9.1	Management challenges and issues
Table 3.1	Objectives and strategic outcomes
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-cultural 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 the Bulwer complex 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

## LIST OF FIGURES

Figure 1.1	Structure of the Protected Area Management Plan
Figure 1.2	The adaptive management cycle
Figure 8.1	Process for the implementation of Protected Area Management Plans

## LIST OF MAPS

Map 1	Location of the Bulwer forest complex	Page 106
Map 2	Vegetation of the Bulwer forest complex	Page 107
Map 3	Geology of the Bulwer forest complex	Page 108
Map 4	Soils of the Bulwer forest complex	Page 109
Map 5	Zonation of the Bulwer forest complex	Page 110
Map 6	5 Km buffer of the Bulwer forest complex (Indicating Bulwer Biosphere)	Page 111

## PREFACE

This Protected Area Management Plan for the Bulwer complex incorporating: Indhloveni Nature Reserve, Ingelabantwana Nature Reserve, Marutswa Nature Reserve, Marwaqa Nature Reserve, Xotsheyaka Nature Reserve and Erfs 179, 180 and 181 is its primary and overarching management document. It forms the framework within which the nature reserves will be managed and developed towards the achievement of its management objectives, derived in collaboration with the nature reserve's stakeholders during May 2012.

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 is a five-year planning document, an annual review process will ensure an active adaptive management planning approach.

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

Ezemvelo KwaZulu-Natal Wildlife, as the appointed Management Authority for Bulwer complex incorporating: Indhloveni Nature Reserve, Ingelabantwana Nature Reserve, Marutswa Nature Reserve, Marwaqa Nature Reserve, Xotsheyaka Nature Reserve and Erfs 179, 180 and 181, hereby commits itself to the implementation of this plan.

Dr. Bandile Mkhize  
Chief Executive Officer



## EXECUTIVE SUMMARY

### Introduction

The Bulwer complex is a group of five forest reserves and three erfs in the immediate surrounds of the town of Bulwer with Ingelabantwana being the furthest away at approximately 8 km from Bulwer. The complex includes:

- Indhloveni Nature Reserve;
- Ingelabantwana Nature Reserve;
- Marutswa Nature Reserve;
- Marwaqa Nature Reserve;
- Xotsheyake Nature Reserve and
- Erf 179,180 and 181

These reserves fall within the Ingwe Local Municipality and the Sisonke District Municipality. They support a number of key habitats and contribute to the conservation of several threatened and protected fauna and flora species including the Cape parrots and Black stinkwood. The Marutswa Nature Reserve differs slightly from the other reserves as it has an ecotourism and environmental education component. The education centre and boardwalk are a well-known stop for birders who want to see Cape parrots (*Poicephalus robustus*) and the Bulwer Mountain in the Marwaqa Nature Reserve is used as a launch site for hang gliders and para-gliders.

The complex jointly protects vegetation types classified as Eastern Mistbelt Forest, Drakensberg Foothill Moist Grassland and Southern Kwa-Zulu Natal Moist Grassland. The reserves provide important ecosystem services especially in terms of climate change mitigation and water services to the Pholela and uMkhomazi rivers.

### Management issues, challenges and opportunities at Bulwer complex

In terms of the 2010 management effectiveness assessment the protected areas all scored lower than 33 % mainly because of a lack of resources with no staff based at the reserves and financial resources gleaned from the Impendle Nature Reserve from where it is currently managed. Other issues included unresolved boundaries especially in terms of the three erfs. There are no buffers between the reserves and urban areas and ever expanding urban and peri-urban development is an issue that urgently needs to be addressed with all stakeholders including the local and district municipality. The Bulwer complex is managed from the Impendle Nature reserve and it is therefore extremely difficult to control poaching of wood, animals and plants that are currently taking place. Cooperation between Ezemvelo and the Bulwer biosphere is a critical issue that affects the management and maintenance of the education centre and the hang gliding and paragliding launch sites.

### Managing the issues, challenges and opportunities at Bulwer complex

The most critical key interventions required to increase management effectiveness of this complex of protected areas will be financial and human resources to manage the area. The forest complex is currently managed from Impendle Nature Reserve and

budget is also taken from the Impendle budget. Especially challenging is the management of poaching and other illegal activities where field staff cannot be on scene immediately and visible law enforcement is also limited. The provision of human and financial resources will enable effective management of the reserves and assist with dealing with issues such as poaching, stakeholder engagement and other. There is also a great need to manage the reserves within the broader conservation landscape in collaboration with stakeholders, communities and other partners. Specifically relevant here is the Bulwer Biosphere who manage the eco-tourism facilities at the complex. The sustainability and maintenance of these facilities is currently re-looked at and possible partnerships with Wildlands Conservation Trust investigated.

## ABBREVIATIONS

APO	Annual Plan of Operations
Amafa	Amafa aKwaZulu-Natali (KwaZulu-Natal Provincial Heritage Agency)
CCA	Community Conservation Area
CDP	Concept Development Plan (Component of Ezemvelo protected area management planning process)
CEO	Chief Executive Officer
CRMP	Cultural Resource Management Plan
CMS	Co-management Structure
DAEARD	KwaZulu-Natal Provincial Department of Agriculture, Environmental Affairs and Rural Development
DEAET	Eastern Cape Department of Economic Affairs, Environment and Tourism
DCO	District Conservation Officer
DEA	National Department of Environmental Affairs
DWA	National Department of Water Affairs
EIA	Environmental Impact Assessment
Ezemvelo	Ezemvelo KwaZulu-Natal Wildlife
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EWT	Endangered Wildlife Trust
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
MCM	National Department of Marine and Coastal Management
MEC	Member of the Executive Council
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
NEMA	National Environmental Management Act
NPAES	National Protected Area Expansion Strategy
NRPC	Ntsikeni Nature Reserve Planning Committee
NSBA	National Spatial Biodiversity Assessment
OIC	Officer in Charge
PA	Protected Area
ROC	Ezemvelo KZN Wildlife Regional Operations Committee
ROS	Recreational Opportunity Spectrum
SAHRA	South African Heritage Resources Agency
SAPPI	South African Pulp and Paper Industry
SDF	Municipal Spatial Development Framework
SMME	Small, Micro and Medium Enterprises
SWOT	Strengths, weaknesses, opportunities and threats analysis
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WWF	World Wildlife Fund

## 1) BACKGROUND

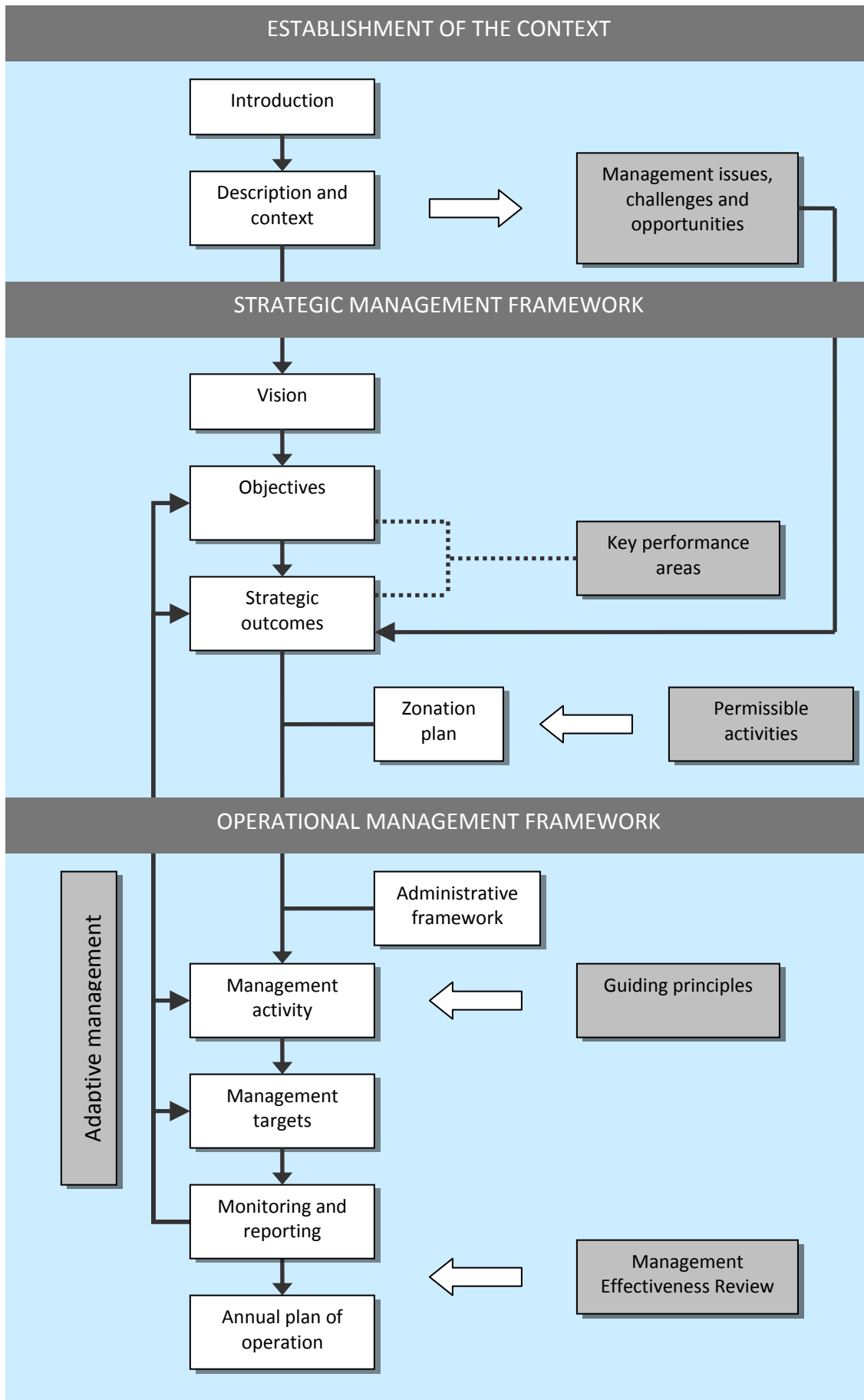
### 1.1 Purpose of the plan

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:

- Provide the primary strategic tool for management of the Bulwer complex, 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 the Bulwer forest complex.
- Provide for capacity building, future thinking and continuity of management.
- Enable Ezemvelo KZN Wildlife to develop and manage the Bulwer forest complex 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 the Bulwer forest complex.
Section 2:	Establishes the context of the nature reserves, providing the basis for the strategic and operational management framework that follow.
Section 3:	Sets out the vision and objectives that must be achieved in efforts to effectively conserve the nature reserves.
Section 4:	Sets out the zonation of the nature reserves, outlining the permissible land uses in particular zones.
Section 5:	Describes the administrative structure required to effectively manage the Bulwer forest complex.
Section 6:	Sets out the detailed management targets that must be achieved in managing the nature reserves.
Section 7:	Sets out the monitoring measures required to determine if management targets are being met and the requirements for reporting on performance in implementing the plan.
Section 8:	Describes the components that must be included in the annual plan of operation.



**Figure 1.1 Structure of the Protected Area Management Plan**

### 1.3 Introduction

The Bulwer complex consists of a group of five indigenous forest reserves and three erfs in the immediate surrounds of the town of Bulwer just off the R617. The complex includes:

- Indhloveni Nature Reserve;
- Ingelabantwana Nature Reserve;
- Marutswa Nature Reserve;
- Marwaqa Nature Reserve;
- Xotsheyake Nature Reserve and
- Erfs 179,180 and 181 (The erfs are leased from the Department of Public Works)

The reserves are located in the Sisonke District Municipality and the Ingwe Local Municipality, they are mostly surrounded by wattle, eucalyptus and pine trees on the fringes as well as by local communities. The reserves closest to town are under severe pressure due to encroaching housing developments. They range in size from Indhloveni Nature Reserve (30 hectare), Marutswa Nature Reserve (268 hectare), Marwaqa Nature Reserve (365 hectare), Ingelabantwana Nature Reserve (338 hectare) and Xotsheyake Nature Reserve at 98 hectares.

The forest complex jointly forms a priority area for meeting specific biodiversity targets as defined in the KZN Conservation plan (2010) and conserves a number of key species and habitats. The education centre at Marwaqa Nature Reserve is a well known destination for birders on the Southern KZN Birding route who come to see Cape parrots (*Poicephalus robustus*) and other scarce forest species. The area is a recognised Important Bird Area (Mistbelt Forest IBA). The reserves provide important ecosystem services especially in terms of water services to the Pholela and uMkomazi Rivers.

The building of the education / tourist centre at the Marutswa forest was funded by Sappi under the auspices of The Wildlands Conservation Trust with financial support for Bird guide training from Bird Life South Africa and N3 toll Roads. It is currently managed by volunteers from the Bulwer Biosphere.

The Bulwer take-off site for para gliders and hang gliders is managed by the Bulwer Biosphere in conjunction with pilots from Bulwer Airsports Club who fund signage, alien plant removal as well as the access road repairs from their site fees. The gliders provide valuable conservation assistance in being able to spot illegal activities such as plant removal, illegal digging and building of dwellings, as well as poachers and hunting dogs from the air. This activity is relayed to the management team that is based at Impendle Nature Reserve who is often too far away to act immediately.

Annual hang gliding and para-gliding competitions do take place from the mountain there are on-going and expanding projects to embrace more local

community members into both sports as recreational pilots, eventual National team members, tandem pilots and potential instructors.

The main hang gliding and para-gliding landing and training fields' coordinates are:

- Para-gliding landing/training field Co-ordinates - S29°48'806" E029°45'801" approximately 500 metres x 500 metres.
- Hang gliding landing / pg/hg training /winching field Co-ordinates - S29°47'.290" E029°44'.269" approximately 1000 metres x500 metres

Both these fields have been in use for Free flying purposes since the early 1970's and are the only safe landing sites in the Bulwer area. The "rare plant ridge" on the hang gliding landing field contain many important plant and invertebrate species.

There is currently one forest receptionist present five days a week at the Education / tourist centre between the hours of 8.30 - 4.30 to collect fees, provide information and sell crafts. Bird guides are currently available only on advance booking and are sourced by the Bulwer Biosphere through Bird Life Sisonke.

The Marutswa education centre has provided an excellent platform for local crafters of practical items and one of the first local artists showcased at the forest making woven ' dream animals ' has since become a featured artist at the Tatham Galleries in Pietermaritzburg.

The education centre has not received any funding for two years, so that maintenance and salaries has relied solely on the entrance fees obtained or the goodwill of local volunteers. The Bulwer Biosphere is currently in discussion and negotiation with stakeholders and potential partners to revive the project and to make it more sustainable in future.

#### 1.4 The values of the Bulwer complex

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 the Bulwer forest complex include:

<b>Natural values</b>	<ul style="list-style-type: none"> <li>▪ Provide habitat for important threatened species including Cape parrot (<i>Poicephalus robustus</i>) breeding sites and Black stinkwood (<i>Ocotea bullata</i>).</li> <li>▪ The forest reserves are important as interdependent components for altitudinal migrant bird species that move from the high berg to this area.</li> <li>▪ The reserves are part of the Mistbelt Forest Important Bird Area (IBA) that contributes to the conservation of various species.</li> <li>▪ Contribute to the protection of threatened vegetation</li> </ul>
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	types including Eastern Mistbelt Forest, Drakensberg Foothill Moist Grassland and Midlands Mistbelt Grassland.
<b>Ecosystem service values</b>	<ul style="list-style-type: none"> <li>▪ Water supply, regulation and storage linked to the Pholela and uMkhomazi Rivers.</li> </ul>
<b>Eco-cultural tourism values</b>	<ul style="list-style-type: none"> <li>▪ The Bulwer Mountain has recreational value as a launch site for para gliders and hang gliders.</li> </ul>
<b>Cultural and historic values</b>	<ul style="list-style-type: none"> <li>▪ The Marutswa forest contains historical saw pits where Yellowwood (<i>Afrocarpus falcatus</i>) trees were planked.</li> </ul>
<b>Social values</b>	<ul style="list-style-type: none"> <li>▪ Marutswa Nature Reserve has an environmental education centre and is a species interest destination for birds.</li> </ul>



Consistent with Section 17 of the Protected Areas Act, the purpose of the Bulwer reserves is to:

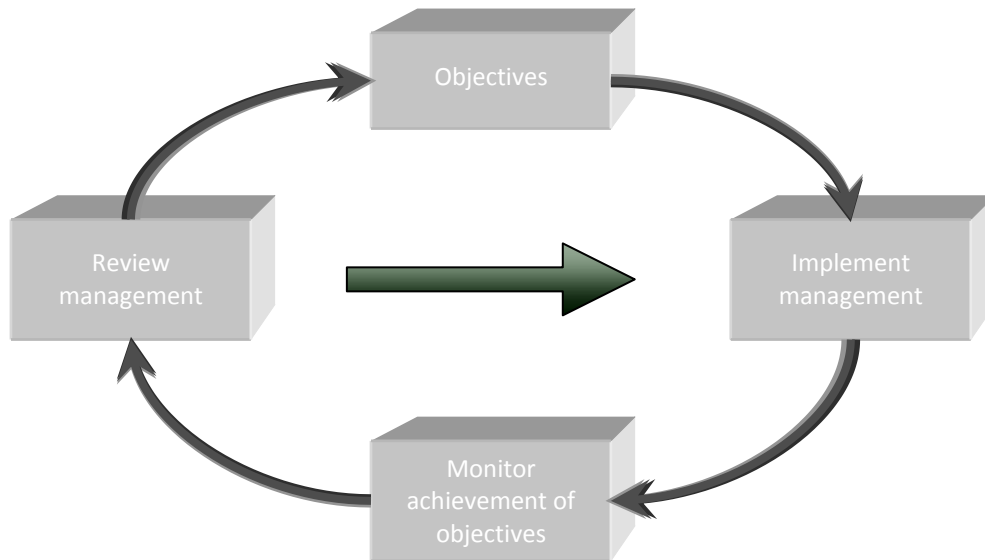
- protect ecologically viable representative portions of Eastern Mistbelt Forest, Drakensberg Foothill Moist Grassland and Midlands Mistbelt Grasslands;
- preserve the ecological integrity of the Bulwer forest complex;
- conserve biodiversity of the Bulwer complex;
- protect areas representative of all ecosystems, habitats and species naturally occurring in the reserves;
- protect threatened or rare species and specifically the Cape parrot (*Poicephalus robustus*) and Black stinkwood (*Ocotea bullata*);
- contributes to a sustained supply of environmental goods and services;
- augment destinations for nature-based tourism and
- manage the interrelationship between natural environmental biodiversity, human settlement 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 1.2 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 13<sup>th</sup> of June 2012. 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 management team.

## **2) DESCRIPTION OF THE BULWER COMPLEX AND ITS CONTEXT**

### **2.1 Institutional and administrative framework for the management of the Bulwer complex**

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 the Bulwer reserves will be undertaken in accordance with relevant legislation and the management policies of Ezemvelo KZN Wildlife, which includes a commitment to maintain the character, ecological, cultural and aesthetic integrity of the site.

The KwaZulu-Natal Nature Conservation Board will be responsible for reporting on the management of the Bulwer complex 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 municipality.

### **2.2 The legislative basis for the management of the Bulwer reserves**

There is a large body of legislation that is relevant to the management of these reserves, but the primary legislation guiding the management of protected areas and forests specifically is the National Forest Act (No.84 of 1998) and 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.

The National Forest Act (No.84 of 1998) provide special measures for the protection of forests and trees and the promotion of sustainable use for environmental, economic, educational, recreational, cultural, health and spiritual purposes.

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 the Bulwer reserves

The Five forest reserves were originally part of the Sarnia State forest proclaimed in the early 1900's. In 1988 they were handed over to the KZN Nature Conservation Service by the then Department of Forestry.

Indhloveni NR	Gazette Number 512/1909
Ingelabantwana NR	Gazette Number 60/1904
Marutswa NR	Gazette Number 60/1904
Marwaqa NR	Gazette Number 60/1904
Xotsheyake NR	Gazette Number 60/1904

The erfs are leased from the Department of Public Works and currently not proclaimed.

### 2.2.2 Invasive species control in terms of the Biodiversity Act

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

## **2.3 Policy framework guiding the management of the Bulwer complex**

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:

## VISION

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

## MISSION STATEMENT

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

## STRATEGIC GOALS

- i) To conserve indigenous biodiversity in KwaZulu Natal both within and outside of protected areas.
- ii) To be a sustainable, well resourced and capacitated biodiversity conservation and ecotourism organisation.
- iii) To foster the value of biodiversity conservation with stakeholders.
- iv) To be an efficient, effective and compliant organisation with good governance.
- v) To effectively promote the mandate of the organisation to stakeholders.

## CORE VALUES

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

A number of policies, specific to particular areas of operation, have also been developed by Ezemvelo KZN Wildlife (Appendix C). These policies have been considered and applied within the plan, where relevant. The protected area manager is required to be familiar with them and to apply them in managing the Bulwer forest complex.

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

## **2.4 The regional and local planning context of the Bulwer complex**

The Bulwer forest complex falls within an extremely transformed area and therefore there are limited opportunities to facilitate connectivity. The complex is in close proximity to the Drakensberg Midlands national priority area for protected area expansion as well as the KZN Protected area expansion plan priority areas.

Currently there is a process to develop a Bioregional plan for the Sisonke district that includes these reserves. The Sisonke District Municipality has initiated a Regeneration project for the town of Bulwer and Ezemvelo will give input in this in order to facilitate the protection of these forest reserves. The Sisonke district municipality also recognise in their 2011/2012 IDP the need to promote tourism in the area.

The Forest complex is south of the Impendle Nature Reserve from where it is currently managed. With no permanent staff members based at any of the five reserves.

### 2.4.1 The National Protected Area Expansion Strategy

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

In terms of the NPAES, some areas close to the borders of the Bulwer forest complex are identified as priorities for protected areas expansion even though the reserve itself does not fall within a priority area. Certain areas of Region 9, the Drakensberg and midlands focus area is in close proximity to the reserves boundary. The NPAES indicates that this focus area “provides opportunities for consolidating protection of moist high-altitude grassland, protecting eco-system services, and incorporating ecological gradients for resilience for climate change. It is the source area for several free-flowing rivers and includes critically endangered river types.”

### 2.4.2 The Provincial Protected Area Expansion Plan

The KwaZulu-Natal Protected Area Expansion Plan (Ezemvelo KZN Wildlife 2010) also identifies areas around the borders of the Bulwer complex as priorities for protected area expansion. These areas are identified as critical biodiversity priority areas in terms of the Ezemvelo Conservation plan (2007

MinSet analysis). The stewardship sites of Mount Clairemont and the Biosphere reserve also abuts the Marwaqa NR and Ingelabantwana Nature Reserve. This provides potential to facilitate connectivity between some of the components.

### 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 D are proposed in the nature reserve, or within five kilometres of it, they will be subject to either a basic assessment or a full scoping and EIA process. A number of general activities and those proposed for either tourism development or operational management within the nature reserves or its buffer areas will thus also require environmental authorisation. Furthermore activities and developments within these forest reserves are also guided by the National Forest Act (No.84 of 1998).

## **2.5 The history of the Bulwer complex**

### 2.5.1 Origins of the name of the Bulwer complex

The Marutswa Nature Reserve was named after a local Zulu man “Mahustjwa” who harvested Sneezewood (*Ptaeroxylon obliquum*) trees to sell as railway sleepers. The Marutswa NR was previously known as Pursar’s Bush. The meanings of the other reserves are unknown.

### 2.5.2 History of conservation in the Bulwer complex

These reserves form part of a complex of contiguous forests (Sarnia State Forest) in KZN that has been transferred through a rationalisation process from the Department of Environment Affairs Forestry branch in 1988 to the then Natal Parks Board.

The complex of forest reserves was originally placed under the forerunner of the Forestry Branch towards the end of the last century in order to prevent indiscriminate cutting of indigenous timber in the natural forests. The areas have therefore been managed for conservation purposes for a considerable length of time and forest communities are in good condition. The Marutswa forest is bound to the south by tribal land and according to H.G Fourcade’s 1889 Report on Natal Forests: “...The Mahutywa forest is being rapidly destroyed...”

Subsequent to the transfer of the reserves in 1988 no infrastructure or presence was established in the area. At first personnel from Sarnia State

Forest (previously responsible for the management of the area) continued to burn firebreaks and do limited veld management on an informal basis. Even though there were initially a move to relinquish these reserves a site visit to the area established the conservation value based on the genetic resource, biodiversity, the necessity to protect the mountain catchment and the forest communities. The reserves are currently managed from the Impendle NR.

### 2.5.3 History of eco-cultural tourism in the Bulwer complex

Two of the five reserves have eco-tourism components where an agreement between Ezemvelo, Bulwer biosphere, SAPPI and WESSA culminated in the development in 2008 of the Marutswa forest (previously known as Pursar's Bush) interpretation centre, boardwalk and nursery. Access to the site is controlled by the Bulwer Biosphere committee and no permanent fee collection or permanent staff are present at the centre. Currently there is an honesty box at the site and educational material is display informing visitors on species and the importance of the forest. A SA Birdlife qualified guide is available and will take visitors out per arrangement. The infrastructure requires maintenance and it is important to first ensure the sustainability of this venture before other initiatives are considered.

A number of national sports events occur on the Bulwer Mountain in the form of an annual cross country run to the top of the mountain and annual hang gliding championship are sometimes held from the mountain. The forest and grassland are often visited by bird watchers.

## **2.6 Ecological context of the Bulwer complex**

The information in this section was mostly drawn from historic and current reports and it is clear that although there is an assumption that the forests are fairly similar in terms of biodiversity, very little is known about the Inhloveni NR, Xotsheyake NR and Ingelabantwana NR. This lack of information should be addressed in order to improve the management of these reserves. The reserves do not currently receive sufficient resources to provide the most basic of management and the lack of information is one of many gaps that need to be addressed to improve management.

### 2.6.1 Climate and weather

The reserves falls within the summer rainfall region with frequent summer mist serves to moderate temperature and humidity in the forest. Mean temperatures varies from 15°C minimum and 27°C maximum in January to 3°C minimum and 17°C maximum in July. Rainfall in the area is generally greater than 1100 mm per annum.

### 2.6.2 Topography

The forest components are mostly situated on steep south facing slopes of the mist belt escarpment. Altitude range considerable and for the complex it is between 1180 meter above sea level to 1700 meter above sea level. For



Marwaqa NR incorporating the Bulwer Mountain the altitude range is between 1448 and 1999 m. The Marwaqa NR consist of mountainous, broken, valley, rolling and flat terrain types including gentle, moderate and steep slopes.

### 2.6.3 Geology and soils

The geology of the area consists mostly of mudstone with dolerite being present only at Ingelabantwana. This gives rise to Red-yellow apedal, freely drained soils in the bigger part of Ingelabantwana with the the north eastern corner where the dolerite occurs consisting of Glenrosa and Mispah forms.

The rest of the reserves are underlain by mudstone and the most prominent soil form occurring in these reserves is Red-yellow apedal, freely drained soils. See Map 3 and 4.

### 2.6.4 Hydrology

The Bulwer complex provides water services to the Polela and uMkomazi River and several tributaries to these rivers occur within the protected areas.

### 2.6.5 Vegetation

The Bulwer complex consists of five forests in the Bulwer area. The forests are Podocarpus forests and part of a sparse mosaic of Mistbelt Forests found in the KZN Midlands. Some of the tree species that occur in the forests include Knobwood (*Zanthoxylum davyi*), Sneezewood (*Ptaeroxylon obliquum*) and Black Stinkwood (*Ocotea bullata*). The Marwaqa NR is characterised by species of Protea and Sagewood (*Buddleja salvifolia*). The forests are mostly surrounded by wattle, eucalyptus and Pine trees on the fringes with the forest edges frequently being affected by fire.

The following brief description of the vegetation types occurring in the Bulwer complex has been extracted from Mucina and Rutherford (2006) in the KZN Vegetation Type description document for Vegetation Map (Scott Shaw & Escott, 2011). Also see Map 2.

Eastern Mistbelt Forest – Status in terms of the KZN Vegetation Map 2009: Least threatened

On the Great Escarpment (Amathole, Transkei Escarpment) and in the KwaZulu – Natal Midlands these forests are tall (15-20m tall) and multilayered (having two layers of trees, a dense shrubby understory and a well-developed herb layer). The forests found on low-altitude scarps are low (in places having the character of a scrub forest), and although less structured into different tree layers, they are still species-rich. The tall forests show a mix of coarse-grained, canopy gap/disturbance-driven dynamics and fine-grained, regeneration characteristics. In the KZN Midlands forests *Podocarpus henkelii* becomes prominent in the canopy layer. Deciduous elements play an important role.

Drakensberg Foothill Moist Grassland – Status in terms of the KZN Vegetation Map 2009: Vulnerable

Hilly and rolling landscapes supporting tall tussock grassland usually dominated by *Themeda triandra* and *Hyparrhenia hirta*. Open *Acacia sieberiana* var. *woodii* savannoid woodlands encroach up the valleys, usually on disturbed (strongly eroded) sites.

Southern Drakensberg Highland Grassland – Status in terms of the KZN Vegetation Map 2009: Least threatened

Steeply sloping mountainous areas on and below the summit of the Great Escarpment supporting dense tussock grassland on slopes sometimes with a dwarf-shrubby component and dwarf shrubland on exposed rocky areas. The tussock grassland is dominated by various species of *Festuca* and other grasses such as *Themeda triandra*, *Heteropogon contortus*, *Eragrostis racemosa*, *Eragrostis chloromelas*, *E. curvula*, *Elionurus muticus*, *Trachypogon spicatus*, *Andropogon appendiculatus*, *Harpochloa falx* and *Tristachya leucothrix*.

Southern KwaZulu-Natal Moist Grassland – Status in terms of the KZN Vegetation Map 2009: Endangered

Gently sloping valley bottoms of tall mixed veld dominated by *Hyparrhenia hirta* and sparsely scattered *Acacia sieberiana*. *Themeda triandra* is the dominant grass on veld that has been well managed and many species of Drakensberg Foothill Moist Grassland are well represented and include *Diheteropogon filifolius*, *Harpochloa falx* and *Trachypogon spicatus*. Overgrazed areas become dominated by 'mtshiki' species such as *S. pyramidalis*. Selective overgrazing causes certain wiregrass species (*Elionurus muticus* and *Aristida junciformis*) to become abundant (Camp 1999 a, c).

#### 2.6.6 Fire regime

Fire management is done by staff and with budget taken from the Impendle Nature Reserve and focuses on burning fire breaks to prevent fires from damaging the forest margins as well as protecting the infrastructure at the Marutswa NR. The Bulwer Mountain also requires a firebreak along the boundary where it abuts the Mountain Park Hotel. Firebreaks are also burnt strategically to provide rest periods for areas that are regularly burnt due to arson or run away fires.

#### 2.6.7 Invasive species

Invasive species that occur in the protected area include Bugweed, Bramble, Scots thistle and Gooseberry. These species have settled around the Education centre and this should urgently be addressed.

Wattle is taking over patches of grassland on the slope near the fence of the Marutswa NR. Along the trail to the forest there are thickets of wattle and

gum trees on both sides of the trail. These trees and saplings pose a serious threat to the forest.

There is a need for a proper assessment and mapping of all invasive species and the implementation of a coordinated control programme.

#### 2.6.8 Mammalian fauna

Mammal species that can be seen in the forest includes Bush Buck, Bush pigs and Rock dassies and numerous small mammal species also occur in the area.

#### 2.6.9 Avifauna

The endangered Cape Parrot (*Poicephalus robustus*) breeds in the forests and specifically in the Marutswa forest. The forest and boardwalk are visited by birders as part of the Southern KZN Birding Route and other species of interest include Southern Ground hornbills (*Burcorvus leadbeateri*), Orange ground thrush (*Zoothera gurneyi*) and the Narina Trogon (*Apaloderma narina*).

The area is part of the Eastern Mistbelt Forest Important Bird Area and is important as interdependent components for altitudinal migrant bird species that move from the high berg to this area.

#### 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 the area, 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 reserve is considered important for the conservation of this group.

Species of importance include the near-threatened Natal Midlands Dwarf Chameleon (*Bradypodion thamnobates*) and the Drakensberg Crag Lizard (*Pseudocordylus melanotus subviridis*).

#### 2.6.11 Invertebrates

Invertebrate fauna constitutes the greatest component of species diversity in natural systems but it is often poorly understood. The role of invertebrates in ecosystems is important and often overlooked. In terms of biodiversity and the provision of ecosystem services however, it is important to acknowledge that they are fundamentally important. Invertebrates form important components of food webs, assist nutrient cycling and aeration of soil, decomposition and pollination of plants and trees. For many of these invertebrate species habitat conservation is of the most important

management intervention required with habitat loss being the biggest threat to their survival.

Species of importance include the Forest King Emperor/ Forest King Charaxes and Pennington's Protea (*Capys penningtoni*), a species restricted to the Drakensberg foothills in KZN. See Table 6.7 for all species with conservation targets.

## 2.7 Cultural context of the Bulwer complex

There are historically saw pits close to the boardwalk trail in the Marutswa Nature Reserve where Yellowwood trees used to be planked in the early colonial period to be used for rail wood sleepers and other purposes. The Bulwer Biosphere also contains Bushman paintings on the side of the Bulwer Mountain and even though they do not fall within the Marwaqa Nature Reserve it is important to acknowledge this cultural value and ensure that it is protected.

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## 2.8 Socio-economic context

The following population statistics based on Census 2007 estimates was extracted from The Ingwe Local Municipality's 2011 IDP review:

- About 2.1% of KZN's population resides in Ingwe Local Municipality. According to the population census, in 2001 there were 107 558 individuals, made up of 21 332 households.
- The age structure of Ingwe Local Municipality reveals a youthful population profile with 57% of the population under the age of 20 and 71% under the age of 30. Around 36% of the population are within the working age category while 5% of the population is above 60.
- The population is concentrated in tribal areas where the majority of the municipal population resides. The close proximity of dense rural settlements and their location on R617, a major road make Bulwer and Donnybrook accessible to a wider municipal population.

\* Photographs courtesy of the Bulwer Biosphere

It is also clear that there are low levels of literacy and high levels of unemployment in the area.

## **2.9 Operational management within the Bulwer complex**

### 2.9.1 Infrastructure

The only reserve that contain infrastructure is Marutswa Nature Reserve with the Environmental Education centre and the forest boardwalk which is managed as a joint project with Sappi, WESSA and the Bulwer Biosphere. This project promotes the conservation of the unique biodiversity of the area and the upliftment of local communities in the process. This is a unique initiative and there is an urgent need for all stakeholders to jointly initiate the reviving of this project as infrastructure has become dilapidated and requires regular maintenance to achieve these objectives.

The Marwaqa Nature Reserve has a gravel road that run through SAPPI plantations to reach the summit of the Bulwer Mountain where the launch site for para-gliders and hang-gliders can be reached. This road is badly eroded and there is a need to upgrade the road and establish corporate signage leading to the site.

### 2.9.2 Staffing establishment

There are currently no permanent staff based on these reserves and this is one of the key reasons for low management effectiveness. In order to establish a staff component a substantial capital input will be required in order to establish accommodation and management infrastructure at the site. The potential to house staff in the town of Bulwer instead of developing infrastructure within the reserves needs to be investigated.

### 2.9.3 Funding levels of the Bulwer complex

Currently the most basic requirements for financial resources are taken of the Impendle Nature Reserve operational budget. This provides for limited operational interventions in terms of basic law enforcement, mostly on a reactive basis as well as fire management. These reserves range in size from Indhloveni Nature Reserve (30 hectare), Marutswa Nature Reserve (268 hectare), Marwaqa Nature Reserve (365 hectare), Ingelabantwana Nature Reserve (338 hectare) and Xotsheyake Nature Reserve at 98 hectare.

Compared to similar sized protected areas these reserves are clearly not sufficiently funded (Carbutt and Goodman, 2010).

Protected Area	Protected Area Size (ha)	Budget in R/ha (operational budget)
Tugela Drift	37	54.05
Umvoti Vlei	267	96.63

#### 2.9.4 Management effectiveness of the Bulwer complex

During the 2010 assessments of the effectiveness of the Bulwer reserves the following areas have been highlighted:

- The complex has not been proclaimed in its entirety.
- The protected area design could be improved to encompass large scale ecological processes.
- No buffer exists and land-uses adjacent to the reserves are incompatible with biodiversity conservation.
- There are no research taking place and no research needs have been identified.
- No operational budget exists for the critical management need of the reserve.
- The reserve is not capacitated for law enforcement due to lack of human and financial resources.
- Control measures to regulate access to the reserves are ineffective.

The management effectiveness scores (2010) of the reserves were respectively:

Ingelabantwana Nature Reserve	28%
Xotsheyake Nature Reserve	30%
Marwaqa Nature Reserve	30%
Marutswa Nature Reserve	33%
Indhloveni Nature Reserve	30%
Erf 179, 180 and 181	30%

The management effectiveness scores are substantially lower than the minimum standard for Ezemvelo KZN Wildlife protected areas that are set at 73%. This situation could only be addressed through the allocation of sufficient financial and human resources to effectively manage these important reserves before any further tourism initiatives could be considered.

#### **2.10 Summary of management issues, challenges and opportunities**

The Bulwer complex are managed from Impendle Nature Reserve and budget for these operations as well as staff to carry out operations are shared from the Impendle Nature Reserve's resources. This mean that operations are re-active in stead of pro-active and this further affect the relationship with stakeholders and communities as uncontrolled fires present a major risk to the community. Law enforcement is also re-active and the time lapse until follow-ups could be made is not facilitating effective law enforcement.

Furthermore there is a need to survey the boundaries of the reserves and specifically the erfs and negotiate agreements relevant to these. Previous

efforts to formalise agreements on boundaries to facilitate connectivity and make provision for buffer requirements have not been resolved. Due to increasing development pressure these agreements needs to be finalised as a matter of urgency.

**Table 2.9.1 Management challenges and issues**

<b>Key performance area</b>	<b>Issue that must be addressed</b>
Legal compliance and law enforcement	▪ Proclamation and consolidation of protected areas
	▪ Lack of agreed demarcated boundary
	▪ Erf development with clarity on consolidated boundaries and an updated lease agreement with the department of Works
	▪ Poaching and wood theft
Stakeholder engagement	▪ Community relationships needs to be improved
	▪ Lack of a formal relationship with the Bulwer biosphere in implementing existing partnerships
	▪ Job creation opportunities and small business opportunities for the community based on the outcome of feasibility study
Buffer zone protection and regional management	▪ Expanding peri-urban and urban development
	▪ Relationship and liaison with municipalities is critical due to the location of the reserves in the immediate surround of Bulwer
Eco-cultural tourism development	▪ There are potential opportunities for eco-tourism and the feasibility of these needs to be investigated and implemented (This
	▪ Tourist numbers are currently low and the possibility to tap into the Ezemvelo marketing resources in order to profile the reserves needs to be investigated
	▪ There is a need to have trained bird guides from the community to take visitors to see Cape parrots in the forest
	▪ There is a critical need to expand the environmental education programme in the area to include the values of the protected areas and key management issues
	▪ Potential to market the Bulwer “small five” needs to be investigated as part of the tourism strategy
Conservation management	▪ Environmental program for alien plant control exist in the area and needs to be expanded to incorporate the protected areas
	▪ Environmental education and awareness should form part of the alien plant program and where possible the resources should benefit neighbouring communities (e.g. wattle for firewood)
	▪ Arson fires is a threat to the biodiversity of the reserves as well as to the communities living in the area
	▪ Compliance in terms of the National Veld and forest fire Act
	▪ Grazing management is a key issue in the reserves since there are no boundary fence
	▪ Damage causing animals and specifically bush pigs
Operational management	▪ Lack of cooperate signage
	▪ Waste management at the para-gliding and hang-gliding launch site
	▪ Maintenance of infrastructure
	▪ Lack of management and conservation infrastructure to ensure effective management of the reserves
	▪ The lack of financial and human resources to effectively manage the

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reserves

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### 3) STRATEGIC MANAGEMENT FRAMEWORK

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

The vision describes the overall long-term goal for the operation, protection and development of these reserves. 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 Joint vision of the Bulwer forest complex and erfs

*An area that conserves biodiversity through community support and partnerships in the broader conservation landscape to provide connectivity and allowing for sustainable flow of ecosystem services*

#### 3.2 Objectives and strategic outcomes

An objective has been identified for each of the 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 the Bulwer complex**

Key performance area	Objective	Strategic outcome
Legal compliance and law enforcement	Comply with and enforce legislation and policies pertaining to protection, development and management of PA.	<ul style="list-style-type: none"> <li>▪ Determination and proclamation of reserve boundaries and formal agreements of access with neighbouring communities.</li> <li>▪ Consolidation and formalisation of lease agreements with Ingwe municipality and the Department of Public Works in terms of the Erf's and other parcels of land.</li> <li>▪ Ensure that there is adequate law enforcement in the nature reserves to protect the reserve's integrity.</li> </ul>
Stakeholder engagement	Establish good neighbour relationships through collaboration and open communication channels.	<ul style="list-style-type: none"> <li>▪ Investigate the development of strategic partnerships which could assist with the achievement of the reserve objectives.</li> <li>▪ Provision of support to the community in developing its capacity to make inputs into the management of and to understand the values of the Bulwer Reserves.</li> <li>▪ Establish and maintain a liaison forum for The Bulwer Nature reserves to facilitate constructive community involvement.</li> </ul>
Buffer zone protection and regional management	Protect the biodiversity of the Bulwer complex from activities, processes and land uses outside its boundaries that may threaten it.	<ul style="list-style-type: none"> <li>▪ Sustainable access to the Bulwer reserves in order to provide safe access to the public and communities.</li> <li>▪ Incorporation of the Bulwer reserves' buffer requirements in municipal and regional planning documents.</li> <li>▪ Prioritisation of key buffer zone areas within the provincial Protected Area Expansion Plan.</li> <li>▪ Determination of the buffer zone requirements around the reserves.</li> </ul>
Eco-cultural tourism development	Promote and develop opportunities for eco-cultural tourism and environmental awareness.	<ul style="list-style-type: none"> <li>▪ Determination of a tourism market profile, through tourism market research for the nature reserves.</li> <li>▪ Preparation and implementation of a feasibility study indicating the tourism options that may be considered for the Bulwer reserves.</li> <li>▪ Promote tourism in the area through profiling the region in collaboration with the Ezemvelo marketing programme.</li> <li>▪ Access to the nature reserve is maintained.</li> <li>▪ Maintain an effective environmental interpretation and education programme.</li> </ul>
Conservation management	Protect the ecosystem functioning, ecological integrity and biodiversity through adaptive management	<ul style="list-style-type: none"> <li>▪ Annual planning is undertaken for the implementation of the season's burning regime.</li> <li>▪ Adequate fire safety within the nature reserves is ensured.</li> <li>▪ Development of a comprehensive fire management plan for the nature reserves.</li> <li>▪ Achievement of a significant reduction in levels of invasive plant (wattle, bramble and gums) infestations in the nature reserve.</li> <li>▪ Development of an invasive species control plan for the nature reserve.</li> <li>▪ Implementation of procedures to identify, rehabilitate and manage areas that have been significantly impacted by soil erosion.</li> <li>▪ Investigate and effectively communicate the value of The Bulwer complex's ecosystem goods and services to the relevant stakeholders.</li> </ul>

		<ul style="list-style-type: none"> <li>▪ If bioprospecting is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy.</li> <li>▪ Ensure that if extractive resource use is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy.</li> <li>▪ Conform to procedures and policies for problem animal control.</li> <li>▪ Implementation of a strategy for the management of wildlife in the nature reserves in accordance with Ezemvelo KZN Wildlife policies.</li> <li>▪ Rare and endangered species management is undertaken based on the best available scientific knowledge.</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>▪ Critical ecological processes and functions are maintained within the Bulwer reserves.</li> </ul>
Operational management	Provide adequate human resources, equipment and funding to enable effective management of the reserves	<ul style="list-style-type: none"> <li>▪ Development of a financial plan that identifies the resource needs to achieve the objectives for the complex.</li> <li>▪ All facilities and infrastructure in the nature reserve are adequately maintained.</li> <li>▪ Identify infrastructure required in order to facilitate permanent staff based at the reserves.</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 the Bulwer complex

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. The zonation system recognises and reflects:

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

The final management zonation is a composite of ecological zonation (based on natural resource sensitivity), sense of place, cultural features, patterns of environmental settings, and existing development and use patterns. The final zonation map is represented as a desired state, i.e. directing management towards a vision for each zone, which reflects and respects the broader conservation and eco-cultural tourism objectives for the protected area. Biophysical features that are readily located on the ground have been used to demarcate and delineate the zone boundaries. See Map 5.

##### 4.2 Concept development guidelines

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

The Forest complex consist mostly of the Low Use Zone due to sensitivity of the protected areas and a Key feature protection Overlay can be implemented when required to protect specific features.

#### 4.2.1 Key Feature Protection Overlay

<p>Description: 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 palaeontological sites.</p>	
<p>Objective: 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.</p>	
<b><i>Permissible activities and infrastructure</i></b>	<b><i>Constraints and implementation</i></b>
<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>▪ The 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 planning committee and the annual management meeting and recorded as such.</li> </ul>

#### 4.2.2 Low Use Zone

<p>Description: 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.</p>	
<p>Objective: 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.</p>	
<b><i>Permissible activities and infrastructure</i></b>	<b><i>Constraints and implementation</i></b>
<ul style="list-style-type: none"> <li>▪ Hiking and formalised trails.</li> <li>▪ Facilities of a rustic nature such as rustic overnight hiking huts, hides and trails.</li> <li>▪ Motorized access is low key and 4</li> </ul>	<ul style="list-style-type: none"> <li>▪ Where possible, facilities should be developed on the periphery of the zone towards the less sensitive adjacent zone.</li> <li>▪ Activities are mostly low impact</li> </ul>

<p>x 2 access provided to points where trails start or to tourist facilities.</p> <ul style="list-style-type: none"> <li>▪ Management activities must focus on protecting park resources and core values.</li> <li>▪ Limited management roads and tracks.</li> <li>▪ Controlled extractive resource use in line with Ezemvelo KZN Wildlife policies and norms and standards.</li> </ul>	<p>and low density.</p> <ul style="list-style-type: none"> <li>▪ No modern facilities such as restaurants and shops are permissible in this zone.</li> </ul>
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#### 4.2.3 Moderate Use Zone

<p><b>Description:</b> 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>	
<p><b>Objective:</b> To designate a tourism area that is primarily focused on visitor experience while still securing the values of the protected area. To designate an area that serves the operational and support functions of the protected area.</p>	
<p><b><i>Permissible activities and infrastructure</i></b></p>	<p><b><i>Constraints and implementation</i></b></p>
<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 in line with Ezemvelo KZN Wildlife policy.</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>▪ 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>▪ Small, medium and large resorts.</li> <li>▪ Lodges</li> <li>▪ Rock Art Centre</li> <li>▪ Restaurants</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>▪ Picnic Areas</li> <li>▪ Camping sites</li> <li>▪ <b>Park Administrative Node</b> (Within the Moderate use zone) <ul style="list-style-type: none"> <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> </li> </ul>
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#### 4.2.4 Protected Area Buffer Zone

<p>Description: 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>	
<p>Objective: To influence land use adjacent to the protected area to manage external pressures and threats that may threaten its values and objectives.</p>	
<i>Permissible activities and infrastructure</i>	<i>Constraints and implementation</i>
<ul style="list-style-type: none"> <li>▪ Alien and invasive species control</li> <li>▪ Habitat consolidation</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 e.g. Cape Parrots.</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</li> </ul> </li> </ul>

	<p>objectives of the protected area.</p> <ul style="list-style-type: none"> <li>▪ Influencing and input into the municipal and regional planning tools such as SDF's, Schemes, IDP's and Bioregional plans.</li> </ul>
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These guidelines are to be used when doing the feasibility study to identify potential sustainable tourism development opportunities for the Bulwer complex. This development is a longer term goal and should only be considered once management effectiveness has improved and resources for maintenance of current and future facilities are available.



## 5) ADMINISTRATIVE STRUCTURE

Currently there are no staff members on site at the Bulwer complex. The reserves are managed by the Conservation Manager from Impendle Nature Reserve. In order to effectively manage the reserves there is a need for at least a field ranger's outpost with one senior field ranger and three field rangers based in the immediate area of the reserves. Because of the fact that the reserves are surrounded by the town of Bulwer there is potential to find accommodation for these staff members in the town with no need to develop accommodation in the reserves.

## 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 management target. 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 three categories, which have been determined on the following basis:

Priority 1:	A management target that is central to the responsibilities and mandate of Ezemvelo KZN Wildlife or that addresses an aspect of management that is fundamental to the protection of the values and purpose of the reserves.
Priority 2:	A management target that addresses an aspect of management that contributes towards community involvement and support for the conservation of the Bulwer reserves, which is a key principle of effective protected area management.
Priority 3:	A management target that indirectly contributes towards the protection of biodiversity or the development of social and/or economic benefits and opportunities for the Bulwer reserves 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 management target. In addition, a date is indicated in the priorities column, 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 manager of the reserves 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. Community participation should be aimed at developing a strong sense of partnership between the 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 ecological services to the region.
- Community participation 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.

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

**Table 6.1 Framework for legal compliance and law enforcement, and community participation**

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
<b>LAW ENFORCEMENT</b>					
Ensure that there is adequate law enforcement in the nature reserves to protect the reserve's integrity.	<ul style="list-style-type: none"> <li>Develop an integrated security strategy for the nature reserves, 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> </ul>	<b>Year 2</b>	Conservation Manager
	<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>	<ul style="list-style-type: none"> <li>Recorded losses of game species.</li> <li>Recorded losses of known rare and endangered plant species.</li> </ul>	<b>Ongoing</b>	Conservation Manager
<b>NATURE RESERVE PROCLAMATION</b>					
Determination of reserve boundaries and formal agreements of access with neighbouring communities	<ul style="list-style-type: none"> <li>Survey the boundary of the Bulwer complex.</li> <li>Formalise access agreements with communities to ensure consistency in the implementation of these agreements.</li> <li>Communicate the new agreed upon boundaries with all stakeholders and communities.</li> </ul>	<ul style="list-style-type: none"> <li>Surveillance report and proclamation diagram</li> <li>Formal access agreements.</li> <li>Demarcated boundaries.</li> </ul>	<ul style="list-style-type: none"> <li>Inconsistent interpretation of the boundaries and the servitudes of the Bulwer reserves.</li> </ul>	<b>Year 1</b>	Biodiversity Conservation Coordinator East-uKhahlamba LAW ENFORCEMENT
Consolidation and formalisation of agreements and lease with the municipality and the Department of Public works in terms of the Erfs and other parcels of land.	<ul style="list-style-type: none"> <li>Proposal for consolidation of area as proposed by the management team to be approved at the relevant Ezemvelo committee.</li> <li>Active negotiation with the municipality and the Department of Works for the approval and implementation of proposal.</li> <li>Consolidate proclamation of the new agreed upon boundary.</li> </ul>	<ul style="list-style-type: none"> <li>Approved agreements and updated lease agreement.</li> <li>Proclamation containing all sections as per updated agreements.</li> </ul>	<ul style="list-style-type: none"> <li>Encroaching developments on land set aside for conservation.</li> </ul>	<b>Year 1</b>	Biodiversity Conservation Coordinator and Ezemvelo Legal department

STAKEHOLDER ENGAGEMENT					
Establish and maintain a liaison forum for The Bulwer Nature reserves to facilitate constructive community involvement	<ul style="list-style-type: none"> <li>Ensure open lines of communication between members of the local communities and the nature reserve's management.</li> <li>Ensure harmonisation of the operational outputs such as fire management with the Clairemont stewardship sites.</li> </ul>	<ul style="list-style-type: none"> <li>Quarterly meetings of the liaison forum.</li> </ul>	<ul style="list-style-type: none"> <li>Lack of regular meetings and community dissatisfaction with the nature reserve.</li> </ul>	<b>Ongoing</b>	Conservation Manager
Provision of support to the community in developing its capacity to make inputs into the management of and to understand the values of the Bulwer Reserves	<ul style="list-style-type: none"> <li>Support the community in creating an understanding of the values and management of the reserves as well as Land care through the liaison forum and in conjunction with strategic partners.</li> </ul>	<ul style="list-style-type: none"> <li>Capacity building in the communities in terms of management of the reserves, an understanding of the values and management of the reserves as well as Land care.</li> </ul>	<ul style="list-style-type: none"> <li>Lack of understanding of issues and management practices at the nature reserve</li> </ul>	<b>Ongoing</b>	Community Conservation Officer
Investigate the development of strategic partnerships which could assist with the achievement of the reserve objectives	<ul style="list-style-type: none"> <li>Actively pursue strategic partnerships with key stakeholders in order to achieve the reserve's objectives. (Working for water, Wildlands Conservation Trust, Wessa, Birdlife SA)</li> <li>Reviving of the relationship with Bulwer Biosphere in order to ensure clarity on responsibilities and collaborative management.</li> </ul>	<ul style="list-style-type: none"> <li>Formal agreements with partners to facilitate, alien plant control, environmental education, bird monitoring and other.</li> <li>MOU with the Bulwer Biosphere.</li> </ul>	<ul style="list-style-type: none"> <li>Not achieving reserve objectives due to lack of resources and lack of strategic partnerships.</li> </ul>	<b>Year 1</b>	Biodiversity Conservation Coordinator East-uKhahlamba

## **6.4 Buffer zone protection and regional management**

### 6.4.1 Protected area expansion and buffer zone management

In terms of Ezemvelo KZN Wildlife's protected area expansion strategy, it has identified a number of areas as priorities for protected area expansion around the nature reserve. Even though the priority areas for expansion do not cover the immediate surrounds of the reserve there critical areas of biodiversity exist in close proximity to the reserves and still provide opportunities for stewardship agreements. In order to safeguard the biodiversity within the nature reserve and to counter any threatening processes or edge effects, suitable buffer zones and appropriate land uses in these zones should be identified. Appropriate actions may then be taken to secure these buffer zones through protected area expansion mechanisms and local planning tools, as described in Section 6.4.2 below. In ensuring the protection of its biodiversity, the following guiding principles will be adopted in terms of protected area expansion and buffer zone management:

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

### 6.4.2 Local and regional planning

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 the Bulwer complex. In this regard it is necessary to ensure that buffer zone considerations are captured in planning tools such as IDPs and SDFs. In developing relationships with the local and district municipality, Ezemvelo KZN Wildlife will adhere to the following guiding principles:

- Relationships with local government and other provincial and national departments will be developed in the spirit of cooperative governance.
- Ezemvelo KZN Wildlife will endeavour to assist the local and district municipality in determining appropriate land uses and development strategies in the areas surrounding the nature reserve.
- Ezemvelo KZN Wildlife will endeavour to align its plans and strategies with the programmes and strategies of the local and district municipality, where appropriate.

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

**Table 6.2 Framework for buffer zone protection and regional management**

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
<b>PROTECTED AREA EXPANSION</b>					
Determination of the buffer zone requirements around the reserves.	<ul style="list-style-type: none"> <li>Determine the ecological impacts and edge effects influencing the ecology of the protected areas on its boundary.</li> <li>Determine the areas that should be demarcated as buffer zones for the purposes of protecting the biodiversity within the nature reserves.</li> </ul>	<ul style="list-style-type: none"> <li>Identification of threatening processes on the nature reserves boundary.</li> </ul>	<ul style="list-style-type: none"> <li>Edge effects such as invasive plant encroachment along the boundary of the protected areas.</li> </ul>	<b>Year 2</b>	Ezemvelo KZN Wildlife Ecological Advice Unit
Prioritisation of key buffer zone areas within the provincial Protected Area Expansion Plan	<ul style="list-style-type: none"> <li>Focus efforts of the biodiversity stewardship programme on priority areas in the buffer around the Bulwer reserves.</li> </ul>	<ul style="list-style-type: none"> <li>Legal protection of key buffer areas through the stewardship programme.</li> </ul>	<ul style="list-style-type: none"> <li>Detrimental impacts due to land use changes in the buffer areas.</li> </ul>	<b>Year 3</b>	Ezemvelo KZN Wildlife stewardship unit.
<b>LOCAL AND REGIONAL PLANNING</b>					
Incorporation of the Bulwer reserves' buffer requirements in municipal and regional planning documents	<ul style="list-style-type: none"> <li>Make inputs into the development of local and district municipality IDPs and SDFs in an effort to avoid environmentally harmful land uses in the Bulwer reserves' buffer zones.</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 reserves.</li> <li>Retention of existing benign land uses in the areas immediately surrounding the nature reserves.</li> </ul>	<ul style="list-style-type: none"> <li>Identification/approval of environmentally harmful land uses on the boundaries of the nature reserves.</li> </ul>	<b>Annually</b>	Ezemvelo KZN Wildlife Planning Unit
Sustainable access to the Bulwer reserves in order to provide safe access to the public and communities.	<ul style="list-style-type: none"> <li>Work collaboratively with the Local and District Municipality to on the maintenance of the district roads that provides access to the nature reserves.</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance of access road to the nature reserves.</li> </ul>	<ul style="list-style-type: none"> <li>Inability to access the reserves due to the condition of the access road.</li> </ul>	<b>Annually</b>	Conservation Manager

## 6.5 Eco-cultural tourism development

### 6.5.1 Tourism product development

Ezemvelo KZN Wildlife has the mandate to sustainably develop the Bulwer reserves to fully realise its eco-cultural tourism and associated income-generating potential, within the context of protecting its biodiversity and cultural values. Several nature-based tourism products have been developed within the nature reserve and there is the potential to further develop nature-based and cultural-based tourism products. In further developing tourism within the nature reserve, the following guiding principles should be adhered to:

- Tourism products developed within the nature reserve must be appropriate to the values and purpose for which the nature reserve has been proclaimed and must not threaten its biodiversity or ecological function.
- In developing tourism products, requirements for environmental authorisation must be considered and adhered to.
- Tourism products should be designed to capitalise on the unique beauty and biodiversity features of the nature reserve.
- Tourism products should be developed in response to tourism market demands and opportunities within the nature reserve and should be carefully assessed to determine their viability.
- The development of tourism products within the nature reserve must be integrated with tourism strategies and plans in the region.
- Tourism should be used as a tool for the generation of economic activity and employment in the communities surrounding the nature reserve.

### 6.5.2 Environmental interpretation and education

Environmental interpretation and education of the Bulwer reserves and specifically Marutswa Nature Reserve's 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-cultural tourism development and environmental interpretation and education are set out in Table 6.3 below.



**Table 6.3 Framework for eco-cultural 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 reserves.	<ul style="list-style-type: none"> <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>Unprofitable occupancy rates in accommodation within the nature reserve.</li> </ul>	<b>Year 3</b>	Ezemvelo KZN Wildlife Ecotourism and Marketing Unit
Preparation and implementation of a feasibility study indicating the tourism options that may be considered for the Bulwer reserves.	<ul style="list-style-type: none"> <li>Identify in consultation with stakeholder's tourism products that could sustainable be developed to meet the tourism market requirements based on the feasibility study. Consideration must be given to potential value adding community based ventures.</li> <li>Develop a detailed map outlining potential tourism products including hiking trails within the context of the reserves zonation plan.</li> <li>In accordance with the feasibility study and the map implement the agreed upon tourism products.</li> <li>Ensure that all access roads to the reserve are signposted in the standard Ezemvelo format.</li> <li>Ensure that there is a standardized entrance and boundary sign.</li> <li>Ensure that there are effective directional, interpretation and information signage and brochures based on the feasibility study.</li> </ul>	<ul style="list-style-type: none"> <li>A feasibility study to guide the development of tourism products in the Bulwer reserves.</li> <li>Sustainable tourism products within the reserve.</li> </ul>	<ul style="list-style-type: none"> <li>Ad hoc development and unsustainable development of tourism products within the nature reserve.</li> <li>Lack of sustainable tourism products in the nature reserves.</li> </ul>	<b>Year 2</b>	Biodiversity Conservation Coordinator East-uKhahlamba
Promote tourism in the area through profiling the region in	<ul style="list-style-type: none"> <li>Develop and implement a marketing strategy to be incorporated in the Ezemvelo marketing programme.</li> </ul>	<ul style="list-style-type: none"> <li>A well profiled protected area with sustainable tourist</li> </ul>	<ul style="list-style-type: none"> <li>Tourism products that are not utilised to its</li> </ul>	<b>With implementation</b>	Ezemvelo Marketing Unit

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
collaboration with the Ezemvelo marketing programme.		numbers.	potential.	<b><i>of new tourism products</i></b>	
Access to the nature reserve is maintained.	<ul style="list-style-type: none"> <li>Work collaboratively with the Local and District Municipality to ensure a well maintained access road.</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance of access road.</li> </ul>	<ul style="list-style-type: none"> <li>Inability to access the reserve due to the condition of the access road.</li> </ul>	<b><i>Annually</i></b>	Conservation Manager
<b>ENVIRONMENTAL INTERPRETATION AND EDUCATION</b>					
Maintain an effective environmental interpretation and education programme.	<ul style="list-style-type: none"> <li>Focus on environmental interpretation and education amongst the nature reserves' neighbouring communities.</li> <li>Employ and train members of the local community to assist in and to implement the programme.</li> <li>Support the current environmental education programme in collaboration with Wildlands Conservation Trust, Bulwer Biosphere and SAPPI at Marutswa Nature Reserve.</li> </ul>	<ul style="list-style-type: none"> <li>Provision and support of the education programme with all stakeholders.</li> </ul>	<ul style="list-style-type: none"> <li>Lack of environmental awareness in neighbouring communities.</li> </ul>	<b><i>Ongoing</i></b>	Ezemvelo KZN Wildlife Community Conservation Officer and Conservation Manager.

## 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 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>					
Development of a comprehensive fire management plan for the nature reserves.	<ul style="list-style-type: none"> <li>Develop a fire management plan that address fire management objectives, scientific understanding, legal compliance, equipment, personnel training requirements, monitoring and research required.</li> </ul>	<ul style="list-style-type: none"> <li>Adoption and implementation of the fire management plan.</li> </ul>	<ul style="list-style-type: none"> <li>Burning regimes that result in ecological degradation of the nature reserves.</li> </ul>	<b>Year 1</b>	Conservation Manager and Ecological Advice Unit
Adequate fire safety within the nature reserves is ensured.	<ul style="list-style-type: none"> <li>Maintain a system of firebreaks within the nature reserves that are of adequate extent, which are prepared at the correct time of the year under the appropriate weather conditions.</li> <li>Investigate the potential of developing a partnership with Working on fire in order to facilitate legal compliance.</li> <li>Ensure that staff is trained and that adequate fire fighting equipment is available within the nature reserve.</li> <li>Become a member of the local Fire Protection Association, or if one does not exist, champion the creation of one.</li> </ul>	<ul style="list-style-type: none"> <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>Ongoing</b>	Conservation Manager
Annual planning is undertaken for the implementation of the season's burning regime.	<ul style="list-style-type: none"> <li>Review the previous fire season burns (planned and unplanned) in determining the burning regime for the coming season.</li> <li>Determine the annual burning requirements.</li> </ul>	<ul style="list-style-type: none"> <li>Burning according to the annual plan based on ecological advice.</li> </ul>	<ul style="list-style-type: none"> <li>Unplanned fires</li> </ul>	<b>Annually</b>	Conservation Manager and Ecological Advice Unit

### 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.

### 6.6.3 Soil erosion control

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>▪ Include an environmental education component in the invasive species control programme.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Compliance with the Biodiversity Act.</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>	Conservation Manager, Ecological Advice Unit and Alien Plant Control Unit
Achievement of a significant reduction in levels of invasive plant (wattle, bramble and gums) infestations in the nature reserve.	<ul style="list-style-type: none"> <li>▪ Implement concerted, sustained control efforts in identified areas of heavy invasive plant infestation.</li> <li>▪ Undertake suitable rehabilitation measures, including re-vegetation using indigenous plant species, to prevent soil erosion, following clearing of invasive plant species.</li> <li>▪ Develop partnerships with Working for Water and other strategic programmes ensuring that job creation opportunities and the use of the wood of alien trees removed benefit neighbouring communities.</li> </ul>	<ul style="list-style-type: none"> <li>▪ 50% reduction in wattle infestation levels in five years.</li> <li>▪ 50% reduction in infestations of all other listed invasive plants in five years.</li> <li>▪ Getting the reserve to maintenance level in 5 years.</li> </ul>			<b>Year 5</b>
<b>SOIL EROSION CONTROL</b>					
Implementation of procedures to identify, rehabilitate and manage areas that have been significantly impacted 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 reserves.</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</li> </ul>	<ul style="list-style-type: none"> <li>▪ A detailed map depicting areas of soil erosion within the nature reserves.</li> <li>▪ Implementation of soil erosion control measures in areas in which plant cover is low, which are susceptible to erosion.</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 5</b>	Conservation Manager

	that may be at risk of soil erosion.				
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#### 6.6.4 Alien animal control

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

#### 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.

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>Develop an approach to dealing with stray livestock and domestic animals found in the nature reserve, particularly dogs, which may be used for illegal hunting and communicate this through the liaison forum to communities.</li> <li>Develop a policy to address the control of alien fauna found within the nature reserve.</li> </ul>	<ul style="list-style-type: none"> <li>Creation of cooperative structures between Ezemvelo KZN Wildlife, local communities and relevant authorities.</li> <li>Control of any alien animals found within the nature reserves.</li> </ul>	<ul style="list-style-type: none"> <li>Uncontrolled access of domestic animals or livestock within the nature reserve.</li> </ul>	<b>Year2-ongoing</b>	Conservation Manager
<b>RESOURCE UTILISATION</b>					
Ensure that if extractive resource use is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy.	<ul style="list-style-type: none"> <li>Together with neighbouring communities, agree on the approach to sustainable extractive resource use in the nature reserves.</li> <li>Ensure that any approved extractive resource use is confined to the moderate and low use zones within the zonation plan.</li> </ul>	<ul style="list-style-type: none"> <li>An agreed upon approach to any extractive resource use.</li> </ul>	<ul style="list-style-type: none"> <li>Uncontrolled or unsustainable resource extraction</li> </ul>	<b>If required</b>	Conservation Manager
If bioprospecting is undertaken, it is done legally and conforms to Ezemvelo KZN Wildlife policy.	<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 NEMBA chapter 6.</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>	<b>If required</b>	Conservation Manager and Resource Use Ecologist
Investigate and effectively communicate the value of The Bulwer complex's ecosystem goods and services to the relevant stakeholders.	<ul style="list-style-type: none"> <li>Initiate a study to determine the value of ecosystem goods and services of the Bulwer reserves.</li> </ul>	<ul style="list-style-type: none"> <li>Knowledge of the specific value of ecosystem goods and services on which funding requirements etc could be motivated.</li> </ul>	<ul style="list-style-type: none"> <li>Lack of an understanding of the value of ecosystem services provided by the nature reserves.</li> </ul>	<b>Year 4</b>	Resource Use Ecologist

### 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 2009 version of the KwaZulu-Natal systematic biodiversity plan identifies the provincial conservation targets referred to in Section 6.6.6, above. The conservation of the Bulwer reserves 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 the Bulwer Reserves contribute**

Feature	Description	Percentage of target located within the reserve	Notes
Indhloveni Nature Reserve			
Eastern Mistbelt Forests: Midlands	Vegetation Type	0.1	VERY SMALL PRESENCE
Southern KwaZulu-Natal Moist Grassland	Vegetation Type	0.0	PRESENT BUT NOT ACCOUNTED FOR IN MINSET - TARGET ACCOUNTED FOR IN OTHER PSEUDO-SPECIES
Drakensberg Foothill Moist Grassland	Vegetation	0.0	PRESENT BUT NOT ACCOUNTED FOR

	Type		IN MINSET - TARGET ACCOUNTED FOR IN OTHER PSEUDO-SPECIES
<i>Bradypodion thamnobates</i>	Reptile	2.6	VERY SMALL PRESENCE
<i>Euonyma lymnaeiformis</i>	Mollusc	0.1	VERY SMALL PRESENCE
<i>Eremidium erectus</i>	Grasshopper	0.0	PRESENT BUT NOT ACCOUNTED FOR IN MINSET - TARGET ACCOUNTED FOR IN OTHER PSEUDO-SPECIES
<i>Gulella inhluzaniensis</i>	Mollusc	0.3	VERY SMALL PRESENCE
<i>Gulella juxtidentis</i>	Mollusc	0.2	% OF HISTORIC DISTRIBUTION
<i>Centrobolus tricolor</i>	Millipede	0.0	VERY SMALL PRESENCE
<i>Doratogonus montanus</i>	Millipede	0.2	VERY SMALL PRESENCE
<b>Ingelebantwana Nature Reserve</b>			
Eastern Mistbelt Forests: Midlands	Vegetation Type	0.9	VERY SMALL PRESENCE
Southern KwaZulu-Natal Moist Grassland	Vegetation Type	0.1	VERY SMALL PRESENCE
Drakensberg Foothill Moist Grassland	Vegetation Type	0.0	PRESENT BUT NOT ACCOUNTED FOR IN MINSET - TARGET ACCOUNTED FOR IN OTHER PSEUDO-SPECIES
<i>Kniphofia brachystachya</i>	Plant	2.8	VERY SMALL PRESENCE
<i>Encephalartos ghellinckii</i>	Plant	1.1	VERY SMALL PRESENCE
<i>Euonyma lymnaeiformis</i>	Mollusc	0.8	VERY SMALL PRESENCE
<i>Bradypodion thamnobates</i>	Reptile	26.7	% OF HISTORIC DISTRIBUTION
<i>Eremidium erectus</i>	Grasshopper	0.6	VERY SMALL PRESENCE
<i>Cochlitoma omissa</i>	Mollusc	178.7	TARGET MORE THAN ACCOUNTED FOR
<i>Gulella inhluzaniensis</i>	Mollusc	5.2	% OF HISTORIC DISTRIBUTION
<i>Gulella juxtidentis</i>	Mollusc	2.5	% OF HISTORIC DISTRIBUTION
<i>Capys penningtoni</i>	Butterfly	0.8	VERY SMALL PRESENCE
Transvaaliana draconis	Grasshopper	0.1	VERY SMALL PRESENCE
<i>Chrysoritis oreas</i>	Butterfly	0.4	VERY SMALL PRESENCE
<i>Centrobolus tricolor</i>	Millipede	0.2	VERY SMALL PRESENCE
<i>Doratogonus montanus</i>	Millipede	0.1	VERY SMALL PRESENCE
<i>Spinotarsus triangulosus</i>	Millipede	2.0	% OF HISTORIC DISTRIBUTION
<b>Marutswa Nature Reserve</b>			
Eastern Mistbelt Forests: Midlands	Vegetation Type	0.7	VERY SMALL PRESENCE
Southern KwaZulu-Natal Moist Grassland	Vegetation Type	0.2	VERY SMALL PRESENCE
Drakensberg Foothill Moist Grassland	Vegetation Type	0.0	PRESENT BUT NOT ACCOUNTED FOR IN MINSET - TARGET ACCOUNTED FOR IN OTHER PSEUDO-SPECIES

<i>Kniphofia brachystachya</i>	Plant	1.0	% OF HISTORIC DISTRIBUTION
<i>Ocotea bullata</i>	Plant	6.7	
<i>Euonyma lymneaeformis</i>	Mollusc	0.6	VERY SMALL PRESENCE
<i>Bradypodion thamnobates</i>	Reptile	16.6	% OF HISTORIC DISTRIBUTION
<i>Eremidium erectus</i>	Grasshopper	0.2	VERY SMALL PRESENCE
<i>Gulella inhluzaniensis</i>	Mollusc	1.8	% OF HISTORIC DISTRIBUTION
<i>Gulella juxtidentis</i>	Mollusc	1.3	% OF HISTORIC DISTRIBUTION
<i>Transvaalana draconis</i>	Grasshopper	0.0	PRESENT BUT NOT ACCOUNTED FOR IN MINSET - TARGET ACCOUNTED FOR IN OTHER PSEUDO-SPECIES
<i>Chrysoritis oreas</i>	Butterfly	0.1	VERY SMALL PRESENCE
<i>Centrobolus tricolor</i>	Millipede	0.1	VERY SMALL PRESENCE
<i>Doratogonus montanus</i>	Millipede	0.3	VERY SMALL PRESENCE
<i>Spinotarsus triangulosus</i>	Millipede	0.6	VERY SMALL PRESENCE
<b>Marwaqa Nature Reserve</b>			
Drakensberg Foothill Moist Grassland	Vegetation Type	0.2	VERY SMALL PRESENCE
Eastern Mistbelt Forests: Midlands	Vegetation Type	0.6	VERY SMALL PRESENCE
<i>Kniphofia brachystachya</i>	Plant	5.5	% OF HISTORIC DISTRIBUTION
<i>Eremidium erectus</i>	Grasshopper	1.3	% OF HISTORIC DISTRIBUTION
<i>Euonyma lymneaeformis</i>	Mollusc	0.9	VERY SMALL PRESENCE
<i>Transvaalana draconis</i>	Grasshopper	0.6	VERY SMALL PRESENCE
<i>Capys penningtoni</i>	Butterfly	3.1	% OF HISTORIC DISTRIBUTION
<i>Chrysoritis oreas</i>	Butterfly	2.7	% OF HISTORIC DISTRIBUTION
<i>Pseudocordylus melanotus subviridis</i>	Reptile	1.8	
<i>Tritogenia lunata</i>	Annelid	12.5	
<i>Doratogonus montanus</i>	Millipede	0.1	VERY SMALL PRESENCE
<i>Centrobolus tricolor</i>	Millipede	0.3	VERY SMALL PRESENCE
<i>Spinotarsus triangulosus</i>	Millipede	10.7	% OF HISTORIC DISTRIBUTION
<b>Xotsheyake Nature Reserve</b>			
Eastern Mistbelt Forests: Midlands	Vegetation Type	0.2	VERY SMALL PRESENCE
Southern KwaZulu-Natal Moist Grassland	Vegetation Type	0.1	VERY SMALL PRESENCE
Drakensberg Foothill Moist Grassland	Vegetation Type	0.0	VERY SMALL PRESENCE
<i>Kniphofia brachystachya</i>	Plant	0.4	VERY SMALL PRESENCE
<i>Encephalartos ghellinckii</i>	Plant	0.3	VERY SMALL PRESENCE

<i>Bradypodion thamnobates</i>	Reptile	8.6	% OF HISTORIC DISTRIBUTION
<i>Euonyma lymnaeiformis</i>	Mollusc	0.2	VERY SMALL PRESENCE
<i>Charaxes xiphares penningtoni</i>	Butterfly	1.3	% OF HISTORIC DISTRIBUTION
<i>Eremidium erectus</i>	Grasshopper	0.1	VERY SMALL PRESENCE
<i>Capys penningtoni</i>	Butterfly	0.0	PRESENT BUT NOT ACCOUNTED FOR IN MINSET - TARGET ACCOUNTED FOR IN OTHER PSEUDO-SPECIES
<i>Gulella inhluzaniensis</i>	Mollusc	0.4	VERY SMALL PRESENCE
<i>Gulella juxtidentis</i>	Mollusc	0.3	VERY SMALL PRESENCE
<i>Transvaaliana draconis</i>	Grasshopper	0.0	VERY SMALL PRESENCE
<i>Chrysoritis oreas</i>	Butterfly	0.0	VERY SMALL PRESENCE
<i>Centrobolus tricolor</i>	Millipede	0.0	VERY SMALL PRESENCE
<i>Doratogonus montanus</i>	Millipede	0.0	VERY SMALL PRESENCE
<i>Spinotarsus triangulosus</i>	Millipede	0.4	VERY SMALL PRESENCE

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

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

Strategic outcome	Management activities	Management targets	Indicators of Concern	Priority	Responsibility
<b>WILDLIFE MANAGEMENT</b>					
Implement a strategy for the management of wildlife in the nature reserves in accordance with Ezemvelo KZN Wildlife policies.	<ul style="list-style-type: none"> <li>Manage wildlife according to the wildlife management strategy.</li> </ul>	<ul style="list-style-type: none"> <li>An agreed upon approach to future wildlife management.</li> </ul>	<ul style="list-style-type: none"> <li><i>Ad hoc</i> introductions of species, particularly those that may not have historically occurred in the nature reserve.</li> </ul>	<b>Year 1</b>	Ezemvelo KZN Wildlife Ecological Advice Unit and Conservation Manager
Conform to procedures and policies for problem animal control.	<ul style="list-style-type: none"> <li>Advise communities on issues and solutions relating to 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>	Conservation Manager
<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 KZN Wildlife 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 KZN Wildlife ecological advice unit
Rare and endangered species management is undertaken based on the best available scientific knowledge.	<ul style="list-style-type: none"> <li>Ensure that the Bulwer reserves are included in and aware of any research being conducted on rare and endangered species that occur in the reserve, especially those that have conservation targets.</li> <li>Adopt procedures for the management of rare and endangered species within the reserve based on known best practices.</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance of optimum population numbers of rare and endangered species.</li> </ul>	<ul style="list-style-type: none"> <li>Declining population numbers of rare and endangered species.</li> </ul>	<b>Ongoing</b>	Ezemvelo KZN Wildlife Ecological Advice Unit and Conservation Manager
	<ul style="list-style-type: none"> <li>Undertake monitoring of key rare and endangered species including Cape parrots.</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of flagship species.</li> <li>Integration of nature reserve within NGO's species monitoring</li> </ul>	<ul style="list-style-type: none"> <li>Lack of understanding of flagship species.</li> </ul>	<b>Ongoing</b>	Ezemvelo KZN Wildlife Ecological

		programmes.			Advice Unit and Conservation Manager
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## 6.7 Operational management

### 6.7.1 Financial and human resources

The Bulwer complex 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 nature reserve manager.
- Adequate, properly trained and experienced staff must be employed at the nature reserve to undertake the operations required for its effective management.

### 6.7.2 Facilities and infrastructure

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

- Facilities and infrastructure must be maintained to avoid any damage to the environment and ensure the safety of staff and visitors to the nature reserve.
- Facilities and infrastructure must be provided to ensure the effective management and operation of the nature reserve.
- Practical solutions to the provision of electricity should be sought at the nature reserve based on available renewable energy technologies.
- Facilities and infrastructure must be provided to support the eco-cultural tourism activities in the nature reserve.

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>					
Development of a financial plan that identifies the resource needs to achieve the objectives for the nature reserve.	<ul style="list-style-type: none"> <li>Detailed annual budgets must be included in annual plan of operation.</li> </ul>	<ul style="list-style-type: none"> <li>Adequate funding to achieve the objectives of the nature reserve.</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 KZN Wildlife 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>Employ sufficient, appropriately skilled staff to meet the management and operational requirements of the nature reserve.</li> <li>Undertake regular training and skills development to ensure that staff is able to effectively complete their duties.</li> </ul>	<ul style="list-style-type: none"> <li>Submit a proposal for the appointment of staff required to effectively manage the reserves.</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 4</b>	Ezemvelo KZN Wildlife Regional Management Unit
<b>FACILITIES AND INFRASTRUCTURE</b>					
Identify infrastructure required in order to facilitate permanent staff based at the reserves.	<ul style="list-style-type: none"> <li>Identify infrastructure requirements.</li> <li>Cost the implementation of these requirements.</li> <li>Implement the project once funding becomes available.</li> </ul>	<ul style="list-style-type: none"> <li>A budget submission for the development of management infrastructure in the reserves.</li> <li>Infrastructure available for management requirements.</li> </ul>	<ul style="list-style-type: none"> <li>Lack of facilities to base permanent staff at the nature reserves.</li> </ul>	<b>Year 5</b>	Conservation Manager.
All facilities and infrastructure in the nature reserve are adequately maintained.	<ul style="list-style-type: none"> <li>Develop and implement a schedule maintenance programme in collaboration with the Bulwer Biosphere to maintain facilities and infrastructure in a condition that meets relevant environmental, health and safety requirements.</li> </ul>	<ul style="list-style-type: none"> <li>Tourism facilities that are well maintained and supports sustainable ecotourism.</li> </ul>	<ul style="list-style-type: none"> <li>Environmental, health or safety incidents associated with inadequately maintained facilities and</li> </ul>	<b>Ongoing</b>	Conservation Manager

			infrastructure.		
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## 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 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 the Bulwer complex is set out in Table 7.1.

**Table 7.1 Annual surveillance and monitoring schedule for the Bulwer complex**

Management issue	Parameters to be monitored	Monitoring measures	Monitoring frequency	Responsibility	Reporting requirements
Law enforcement	Schedule of patrols	Written record	Weekly	Conservation Manager	Annual report
	Recovery of snares	Photographs/written record	Weekly		Annual report
	Illegal incidents	Photographs/written record	Per event		Record of event
Stakeholder engagement	Minutes of meetings of the liaison forum	Written record	Bi-monthly	Conservation Manager	Annual report
Buffer zone management	Influx of listed invasive vegetation on the nature reserve's boundaries.	Surveillance plan	To be determined	Conservation Manager 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-cultural tourism	Visitor statistics	Completion of questionnaire	Ongoing	Conservation Manager and Bulwer Biosphere	Annual report
Fire management	Burning of firebreaks as part of fire management	Written record/map/photography	Annually	Conservation Manager	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	Conservation Manager 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	Conservation Manager 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	Conservation Manager	Record of event
	Status of key rare and endangered species, particularly those for which conservation targets have been set (Cape parrots included)	Monitoring plan	To be determined	Conservation Manager supported by Ecological Advice Unit	Annual report
Resource utilisation	Extraction of resources from the nature reserve	Photographs/written records	Per event	Conservation Manager	Annual report
Human resources	Staffing levels	Number of full-time staff	Annually	Conservation Manager	Annual report
Facilities and infrastructure	State of roads, 4x4 tracks and paths	Photographs/written records	Quarterly	Conservation Manager	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	Conservation Manager	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 including the Cape Parrot.

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 the Bulwer complex, for its review and comment. Records of recommendations for update/changes to the five-year plan should be kept so that when the five-year plan is revised for the subsequent five years, these recommendations can be assessed and included where necessary. This should be undertaken in the form of a running list, which is updated in each annual report so that the final annual report before the five-yearly review of the management plan contains the complete list of recommendations. The review process should include:

- Any recommended minor amendments to the management plan that do not affect the substance of the vision, objectives or zonation.

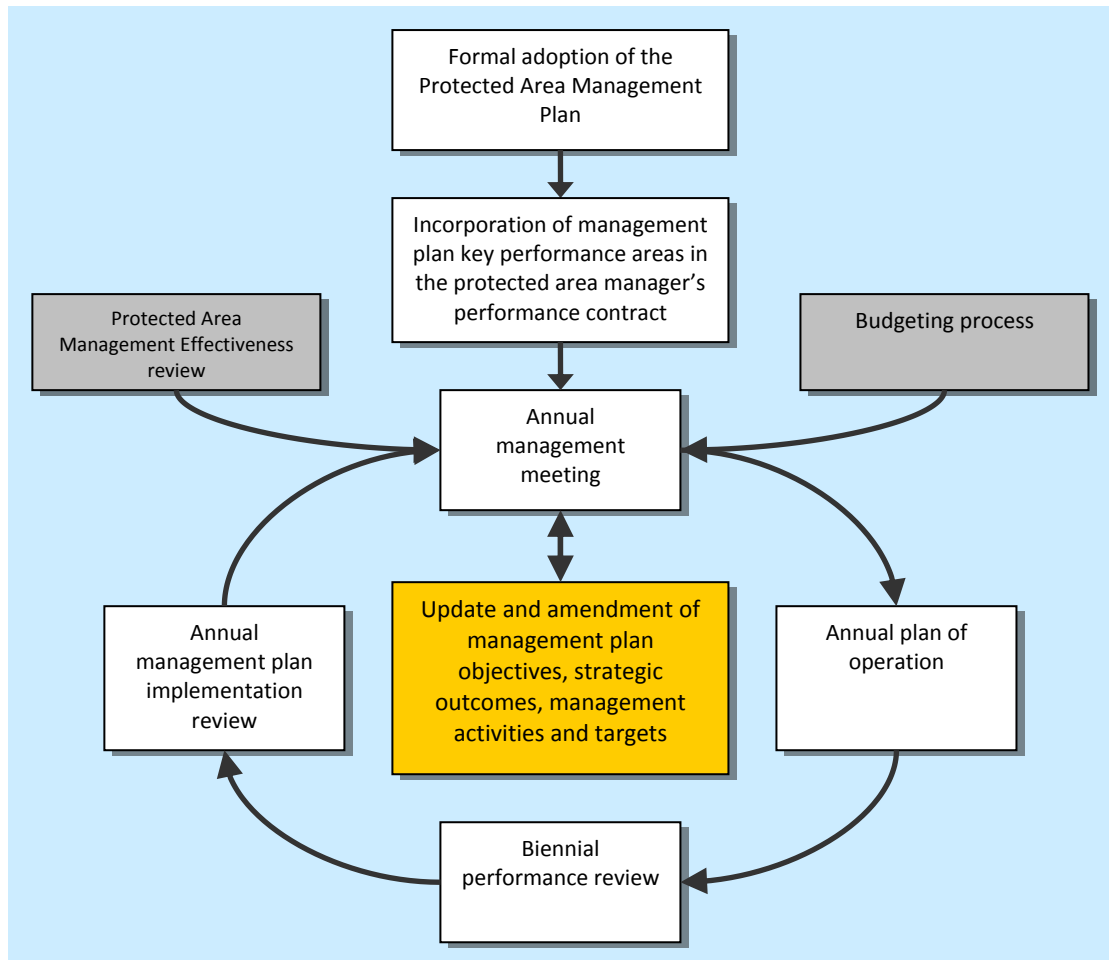
- The results of an evaluation of the management effectiveness achieved for the protected area, calculated using the WWF and World Bank Protected Area Management Effectiveness Tool (Stolton *et al.* 2007).

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

## 8) BULWER COMPLEX 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 the Bulwer complex 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 Bulwer complex manager'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 F.

## **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 Biodiversity Conservation Operations Management Meeting (BCOMM) in order to assign responsibility for the completion of the management activity. In this instance an action of the annual management meeting would be to refer this management activity to the BCOMM so that the correct unit can be assigned responsibility to complete the management activity.

## **8.3 Bulwer complex resource requirements**

In developing annual plans of operation for the Bulwer complex 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:

- Installation of signage directing tourists to the nature reserve.
- Installation of directional and interpretive signage within the nature reserve.
- Infrastructure (Field Ranger Outpost) should no alternative accommodation be secured and staff appointed.

## **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.

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## DEFINITIONS OF TERMS

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

Ecosystem services	<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>Benefits obtained from ecosystems such as food, fuel and fibre and genetic resources.</li> <li>Benefits from the regulation of ecosystem processes such as climate regulation, disease and flood control and detoxification.</li> <li>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>Threaten ecosystems, habitats or other species or have a demonstrable potential to threaten ecosystems, habitats or other species.</li> <li>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 BULWER COMPLEX 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]

**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 Ntsikeni Nature Reserve.
4. Proclamations of Bulwer complex
5. Bulwer complex Public Participation Report, 2012.

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>Policy File No.</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>Policy File No.</b>	<b>INTERNAL AUDIT</b>
C 5	➤ Management Control
<b>BIODIVERSITY CONSERVATION OPERATIONS</b>	
<b>1. NATURAL RESOURCE SUSTAINABILITY</b>	
<b>Policy File No.</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>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.

**EZEMVELO KZN WILDLIFE CORPORATE POLICIES (NORMS & STANDARDS)**

<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

<b>Ingelabantwana Nature Reserve: Plants</b>	
<i>Apodytes dimidiata</i> var. <i>dimidiata</i>	
<i>Buddleja loricata</i>	
<i>Canthium kuntzeanum</i>	
<i>Cassipourea gerrardii</i>	Bastard Onionwood, Common Onionwood
<i>Centella glabrata</i> var. <i>glabrata</i>	
<i>Chionanthus foveolatus foveolatus</i>	
<i>Chionanthus foveolatus foveolatus</i>	
<i>Chionanthus foveolatus foveolatus</i>	
<i>Clutia abyssinica</i> var. <i>abyssinica</i>	
<i>Crassula sarcocaulis rupicola</i>	
<i>Cryptocarya woodii</i>	
<i>Diospyros dichrophylla</i>	
<i>Diospyros whyteana</i>	
<i>Dovyalis lucida</i>	
<i>Dovyalis rhamnoides</i>	
<i>Dovyalis zeyheri</i>	
<i>Erica cooperi</i> var. <i>cooperi</i>	
<i>Helichrysum cymosum cymosum</i>	
<i>Helichrysum cymosum cymosum</i>	
<i>Helichrysum glomeratum</i>	
<i>Maytenus peduncularis</i>	
<i>Maytenus undata</i>	Koko Tree, South African Holly
<i>Ochna serrulata</i>	
<i>Olinia emarginata</i>	
<i>Pavetta cooperi</i>	
<i>Phylica paniculata</i>	
<i>Pterocelastrus rostratus</i>	
<i>Rhus rigida</i>	
<i>Schistostephium hippifolium</i>	
<i>Scolopia flanagani</i>	
<i>Seemannaralia gerrardii</i>	Wild maple
<b>Marutswa Nature Reserve: Plants</b>	
<i>Allophylus africanus</i>	
<i>Allophylus dregeanus</i>	
<i>Andrachne ovalis</i>	False Lightning Bush
<i>Bersama tysoniana</i>	Common White Ash, Common Bersama
<i>Buddleja salviifolia</i>	
<i>Burchellia bubalina</i>	Wild Pomegranate
<i>Calodendrum capense</i>	Cape Chestnut
<i>Calpurnia aurea aurea</i>	
<i>Carissa bispinosa</i> var. <i>acuminata</i>	
<i>Cassine papillosa</i>	Common Saffron, Common Saffronwood
<i>Celtis africana</i>	

<i>Clausena anisata</i>	
<i>Clerodendrum glabrum</i> var. <i>glabrum</i>	
<i>Combretum edwardsii</i>	
<i>Cryptocarya woodii</i>	
<i>Cussonia sphaerocephala</i>	
<i>Cussonia spicata</i>	
<i>Dais cotinifolia</i>	
<i>Diospyros whyteana</i>	
<i>Englerodaphne pilosa</i>	
<i>Euclea crispa crispa</i>	
<i>Eugenia zuluensis</i>	
<i>Ficus craterostoma</i>	
<i>Grewia occidentalis</i> var. <i>occidentalis</i>	
<i>Halleria lucida</i>	
<i>Heteromorpha trifoliata</i>	
<i>Kiggelaria africana</i>	
<i>Maytenus mossambicensis</i> var. <i>mossambicensis</i>	
<i>Maytenus nemorosa</i>	
<i>Maytenus peduncularis</i>	
<i>Ocotea bullata</i>	Black Stinkwood
<i>Pavetta kotzei</i>	
<i>Pavetta lanceolata</i>	
<i>Pittosporum viridiflorum</i>	Cheesewood, Kasuur
<i>Pleurostyliia capensis</i>	Coffee Pear
<i>Podocarpus falcatus</i>	
<i>Podocarpus latifolius</i>	
<i>Prunus africana</i>	Red Stinkwood, Bitter Almond
<i>Ptaeroxylon obliquum</i>	Sneezewood
<i>Rapanea melanophloeos</i>	Cape Beech
<i>Rhamnus prinoides</i>	
<i>Rhoicissus digitata</i>	Baboon Grape
<i>Rhus pyroides</i> var. <i>pyroides</i>	
<i>Rothmannia globosa</i>	
<i>Scolopia mundii</i>	
<i>Scolopia zeyheri</i>	
<i>Scutia myrtina</i>	
<i>Trimeria grandifolia grandifolia</i>	
<i>Vepris lanceolata</i>	White Ironwood
<i>Xymalos monospora</i>	
<i>Zanthoxylum davyi</i>	
<b>Marutswa Nature Reserve: Animals</b>	
<i>Bradypodion</i> cf. <i>thamnobates</i>	
<i>Centrobolus tricolor</i>	Three-coloured millipede
<i>Charaxes xiphares penningtoni</i>	Pennington's Forest-king Charaxes
<i>Gnomeskelus brevipes</i>	Short-legged keeled millipede
<i>Microstylum</i> sp. 3	
<i>Sphaerotherium</i> sp.	

<b>Marwaqa Nature Reserve: Plants</b>	
<i>Acalypha punctata</i>	
<i>Acalypha schinzii</i>	
<i>Ajuga ophrydis</i>	
<i>Albuca setosa</i>	
<i>Albuca sp.</i>	
<i>Alloteropsis semialata</i>	
<i>Anthospermum herbaceum</i>	
<i>Aristea woodii</i>	
<i>Asclepias gibba</i>	
<i>Aster bakeranus</i>	Wild Aster
<i>Athrixia phyllicoides</i>	
<i>Berkheya setifera</i>	
<i>Brachiaria serrata</i>	
<i>Buchnera sp.</i>	
<i>Bulbostylis schoenoides</i>	
<i>Cephalaria oblongifolia</i>	
<i>Chaetacanthus burchellii</i>	
<i>Commelina africana</i>	Yellow Wandering Jew, Yellow Commelina
<i>Corycium nigrescens</i>	
<i>Crassula vaginata</i>	
<i>Cyanotis speciosa</i>	Doll's Powderpuff
<i>Cyperus sp.</i>	
<i>Cyperus sphaerocephalus</i>	
<i>Diascia megathura</i>	
<i>Dicoma anomala</i>	
<i>Dierama latifolium</i>	
<i>Diheteropogon amplexans</i>	
<i>Diheteropogon filifolius</i>	
<i>Disa hircicornis</i>	
<i>Elionurus muticus</i>	
<i>Eragrostis capensis</i>	
<i>Eragrostis curvula</i>	
<i>Eragrostis racemosa</i>	
<i>Erica woodii</i>	
<i>Eriosema kraussianum</i>	
<i>Eriosema salignum</i>	Brown Bonnet, Narrow-leaved Salignum
<i>Eriospermum ornithogaloides</i>	
<i>Eucomis autumnalis</i>	
<i>Eulophia aculeata huttonii</i>	
<i>Eulophia leontoglossa</i>	
<i>Eulophia ovalis ovalis</i>	
<i>Eulophia zeyheriana</i>	
<i>Euryops laxus</i>	
<i>Ficinia sp.</i>	
<i>Ficinia stolonifera</i>	
<i>Gerbera ambigua</i>	

<i>Gerbera piloselloides</i>	Small Yellow Gerbera
<i>Gladiolus sp.</i>	
<i>Habenaria dives</i>	
<i>Haplocarpha scaposa</i>	
<i>Harpochloa falx</i>	
<i>Hebenstretia dura</i>	
<i>Helichrysum acutatum</i>	
<i>Helichrysum aureonitens</i>	Golden Everlasting
<i>Helichrysum aureum</i>	
<i>Helichrysum cephaloideum</i>	
<i>Helichrysum glomeratum</i>	
<i>Helichrysum herbaceum</i>	
<i>Helichrysum miconiifolium</i>	
<i>Helichrysum nudifolium</i>	
<i>Helichrysum pallidum</i>	
<i>Helichrysum pilosellum</i>	
<i>Helichrysum spiralepis</i>	
<i>Helichrysum umbraculigerum</i>	
<i>Hermannia woodii</i>	
<i>Heteropogon contortus</i>	
<i>Hibiscus aethiopicus</i>	
<i>Hypericum aethiopicum</i>	
<i>Hypericum lalandii</i>	
<i>Hypochaeris radicata</i>	
<i>Hypoxis angustifolia</i>	
<i>Hypoxis argentea</i>	
<i>Hypoxis costata</i>	
<i>Hypoxis iridifolia</i>	
<i>Hypoxis rigidula</i>	
<i>Indigofera tristis</i>	
<i>Ischaemum fasciculatum</i>	
<i>Kniphofia breviflora</i>	
<i>Kniphofia rufa</i>	
<i>Koeleria capensis</i>	
<i>Kohautia amatymbica</i>	
<i>Kyllinga odorata</i>	
<i>Ledebouria cooperi</i>	
<i>Ledebouria ovalifolia</i>	
<i>Leucosidea sericea</i>	
<i>Lobelia flaccida</i>	
<i>Loudetia simplex</i>	
<i>Melinis nerviglumis</i>	
<i>Microchloa caffra</i>	
<i>Monocymbium cerasiiforme</i>	
<i>Moraea inclinata</i>	
<i>Moraea trifida</i>	
<i>Oxalis obliquifolia</i>	

<i>Oxalis semiloba</i>	
<i>Oxalis smithiana</i>	
<i>Pachycarpus campanulatus</i>	
<i>Panicum aequinerve</i>	
<i>Panicum ecklonii</i>	
<i>Panicum natalense</i>	
<i>Pavetta cooperi</i>	
<i>Pelargonium luridum</i>	
<i>Pentanisia angustifolia</i>	
<i>Pentanisia prunelloides</i>	
<i>Plectranthus calycinus</i>	
<i>Polygala gracilentia</i>	
<i>Polygala hottentotta</i>	Small Purple Broom
<i>Pteridium aquilinum</i>	
<i>Ranunculus baurii</i>	
<i>Rendlia altera</i>	
<i>Rhamnus prinoides</i>	
<i>Rhodohypoxis milloides</i>	
<i>Rhynchosia adenodes</i>	
<i>Satyrium longicauda</i>	
<i>Satyrium sp.</i>	
<i>Schoenoxiphium burttii</i>	
<i>Scilla nervosa</i>	
<i>Sebaea sedoides</i>	
<i>Senecio bupleuroides</i>	
<i>Setaria nigrirostris</i>	
<i>Sonchus nanus</i>	
<i>Sopubia cana</i>	
<i>Sporobolus pectinatus</i>	
<i>Stachys aethiopica</i>	
<i>Striga bilabiata</i>	
<i>Themeda triandra</i>	
<i>Thesium pallidum</i>	
<i>Trachypogon spicatus</i>	
<i>Tristachya leucothrix</i>	
<i>Vernonia capensis</i>	
<i>Vernonia hirsuta</i>	
<i>Vernonia natalensis</i>	
<i>Vernonia oligocephala</i>	
<i>Vigna vexillata</i>	
<i>Wahlenbergia fasciculata</i>	
<i>Watsonia densiflora</i>	
<i>Watsonia gladioloides</i>	
<i>Watsonia latifolia</i>	
<b>Marwaqa Nature Reserve: Animals</b>	
<i>Aloeides oreas</i>	Oreas Copper
<i>Caliscalidae sp.</i>	

<i>Capys alphaeus extentus</i>	Orange-banded Protea-butterfly
<i>Capys penningtoni</i>	Pennington's Protea-butterfly
<i>Chaetocnema longicornis</i>	Long-horned flea beetle
<i>Cheloctonus anthracinus anthracinus</i>	Coal-black scorpion
<i>Chrysoritis lycegenes</i>	Mooi River Opal
<i>Chrysoritis oreas</i>	Drakensberg Daisy Copper
<i>Crucinotacris cruciata</i>	
<i>Dictyophorus spumans</i>	
<i>Doratogonus cf. montanus</i>	
<i>Drakensbergena armstrongi</i>	Armstrong's Drakensberg leafhopper
<i>Drakensbergena cuneifer</i>	Wedge-plated Drakensberg leafhopper
<i>Drakensbergena spinula</i>	Small-spined Drakensberg leafhopper
<i>Gymnbothrus carinatus</i>	
Leafhopper sp.	
<i>Machaeridia bilineata</i>	Two-lined grasshopper
<i>Pseudocordylus melanotus subviridis</i>	Drakensberg crag lizard
<i>Pseudonympha poetula</i>	Drakensberg Brown
<i>Serradinga clarki dracomontana</i>	Clark's Widow
<i>Sheldonia sp.</i>	
<i>Tritogenia lunata</i>	Crescent-shaped earthworm
Wasp sp.	



**PRO FORMA ANNUAL PLAN OF OPERATION**

**Notes of a management meeting for Bulwer complex held at ... office  
on ...**

Present:

Apologies:

CC:

Appendix F

Management target	2011/12 Progress	2012/13 goals	Completion date	Responsibility	Action
<b>LEGAL COMPLIANCE AND ENFORCEMENT</b>					
Creation of cooperative structures with local communities and law enforcement officials.		▪	Year 2	Conservation Manager	
Regular patrols covering the full extent of the nature reserve.		▪	Ongoing	Conservation Manager	
Prosecution of any offender caught committing an offence.		▪	Ongoing	Conservation Manager	
Approved agreements and updated lease agreement.		▪	Year 1	Biodiversity Conservation Coordinator and Ezemvelo Legal department	
Proclamation containing all sections as per updated agreements.		▪	Year 1	Biodiversity Conservation Coordinator and Ezemvelo Legal department	
Surveillance report and proclamation diagram.		▪	Year 1	Biodiversity Conservation Coordinator and Ezemvelo Legal department	
Formal access agreements.		▪	Year 1	Biodiversity Conservation Coordinator and Ezemvelo Legal department	
Demarcated boundaries.		▪	Year 1	Biodiversity Conservation Coordinator and Ezemvelo Legal department	

STAKEHOLDER ENGAGEMENT					
Quarterly meetings of the liaison forum.		▪	Ongoing	Conservation Manager	
Capacity building in the communities in terms of management of the reserves, an understanding of the values and management of the reserves as well as Land care.		▪	Ongoing	Community Conservation Officer	
Formal agreements with partners to facilitate, alien plant control, environmental education, bird monitoring and other.		▪	Year 1	Biodiversity Conservation Coordinator and Ezemvelo Legal department	
MOU with the Bulwer Biosphere.		▪	Year 1	Biodiversity Conservation Coordinator and Ezemvelo Legal department	
Management target	2011/12 Progress	2012/13 goals	Completion date	Responsibility	Action
BUFFER ZONE PROTECTION AND REGIONAL MANAGEMENT					
Identification of threatening processes on the nature reserves boundary.		▪	Year 2	Ezemvelo KZN Wildlife Ecological Advice Unit	
Legal protection of key buffer areas through the stewardship programme.		▪	Year 3	Ezemvelo KZN Wildlife stewardship unit.	
<ul style="list-style-type: none"> <li>▪ Adoption of environmentally appropriate land uses in IDPs and SDFs in the areas immediately surrounding the nature reserves.</li> <li>▪ Retention of existing benign land uses in the areas immediately surrounding the nature</li> </ul>		▪	Annually	Ezemvelo KZN Wildlife Planning Unit	

reserves.					
<b>ECO-CULTURAL TOURISM</b>					
An understanding of annual tourist numbers and a tourism market profile for the nature reserve.		▪	Year 3	Ezemvelo KZN Wildlife Ecotourism and Marketing Unit	
<ul style="list-style-type: none"> <li>▪ A feasibility study to guide the development of tourism products in the Bulwer reserves.</li> <li>▪ Sustainable tourism products within the reserve.</li> </ul>		▪	Year 2	Biodiversity Conservation Coordinator East-uKahlamba	
A well profiled protected area with sustainable tourist numbers.		▪	With implementation of tourism products/activities	Ezemvelo Marketing Unit	
Maintenance of access road to the reserves.		▪	Annually	Conservation manager	
Provision and support of the education programme with all stakeholders.		▪			
<b>Management target</b>	<b>2011/12 Progress</b>	<b>2012/13 goals</b>	<b>Completion date</b>	<b>Responsibility</b>	<b>Action</b>
<b>CONSERVATION MANAGEMENT</b>					
Adoption and implementation of the fire management plan.		▪	Year 1	Conservation Manager and Ecological Advice Unit	
Compliance with the National Veld and Forest Fires Act.		▪	Ongoing	Conservation Manager	
Burning according to the annual plan based on ecological advice.		▪	Annually	Conservation Manager and Ecological Advice Unit	

Compliance with the Biodiversity Act.		▪	Year 1	Conservation Manager, Ecological Advice Unit and Alien Plant Control Unit	
<ul style="list-style-type: none"> <li>▪ 50% reduction in wattle infestation levels in five years.</li> <li>▪ 50% reduction in infestations of all other invasive plants in five years.</li> <li>▪ Getting the reserve to maintenance level in 5 years.</li> </ul>		▪	Year 5	Ezemvelo KZN Wildlife Alien Plant Control Unit and Conservation Manager	
<ul style="list-style-type: none"> <li>▪ A detailed map depicting areas of soil erosion within the nature reserves.</li> <li>▪ Implementation of soil erosion control measures in areas in which plant cover is low, which are susceptible to erosion.</li> </ul>		▪	Year 5	Conservation Manager	
<ul style="list-style-type: none"> <li>▪ Creation of cooperative structures between Ezemvelo KZN Wildlife, local communities and relevant authorities.</li> <li>▪ Control of any alien animals found within the nature reserves.</li> </ul>		▪	Year 2 then ongoing	Conservation Manager	
An agreed upon approach to any extractive resource use.		▪	If Required	Conservation Manager	
No illegal collection of biological material or samples.		▪	If Required	Conservation Manager and Resource Use Ecologist	

Management target	2011/12 Progress	2012/13 goals	Completion date	Responsibility	Action
<b>CONSERVATION MANAGEMENT</b>					
Knowledge of the specific value of ecosystem goods and services on which funding requirements etc could be motivated.		▪	Year 4	Resource Use Ecologist	
An agreed upon approach to future wildlife management.		▪	Year 1	Ezemvelo KZN Wildlife Ecological Advice Unit and Conservation Manager	
Effective procedures and relationships with neighbours in dealing with problem animal control.		▪	Ongoing	Ezemvelo KZN Wildlife Ecological Advice Unit and Conservation Manager	
<ul style="list-style-type: none"> <li>▪ Surveillance and monitoring plans for key threatening processes (e.g. invasive plant control).</li> <li>▪ Monitoring plans for key rare and endangered species.</li> </ul>		▪	Year 1	Conservation Manager	
Maintenance of optimum population numbers of rare and endangered species.		▪	Ongoing	Ezemvelo KZN Wildlife Ecological Advice Unit and Conservation Manager	
<ul style="list-style-type: none"> <li>▪ Monitoring of flagship species.</li> <li>▪ Integration of nature reserve within NGO's species monitoring programmes.</li> </ul>		▪	Year3	Ezemvelo KZN Wildlife ecological advice unit	

OPERATIONAL MANAGEMENT					
Adequate funding to achieve the objectives of the nature reserve.		▪	Year 1	Ezemvelo KZN Wildlife Regional Management Unit	
Submit a proposal for the appointment of staff required to effectively manage the reserves.		▪	Year 4	Ezemvelo KZN Wildlife Regional Management Unit	
<ul style="list-style-type: none"> <li>▪ A budget submission for the development of management infrastructure in the reserves.</li> <li>▪ Infrastructure available for management requirements.</li> </ul>		▪	Year 1	Conservation Manager	
Tourism facilities that are well maintained and supports sustainable ecotourism.		▪	Ongoing	Conservation Manager	

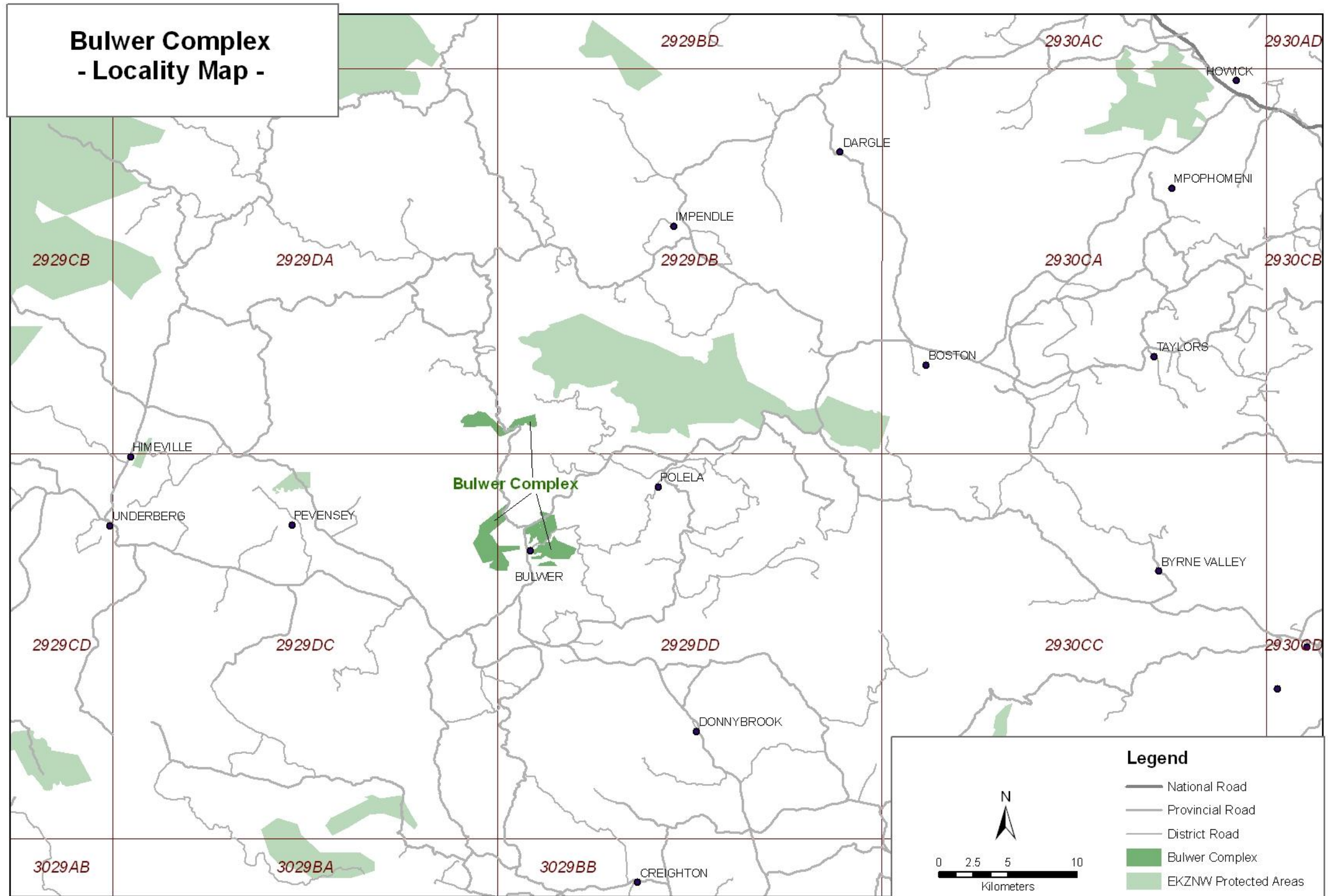
2012/13 Budget for Indhloveni Nature Reserve

The budget should be apportioned to those items that are the responsibility of the Indhloveni Nature Reserve Manager and should be based on the goals for the 2012/13 financial year.

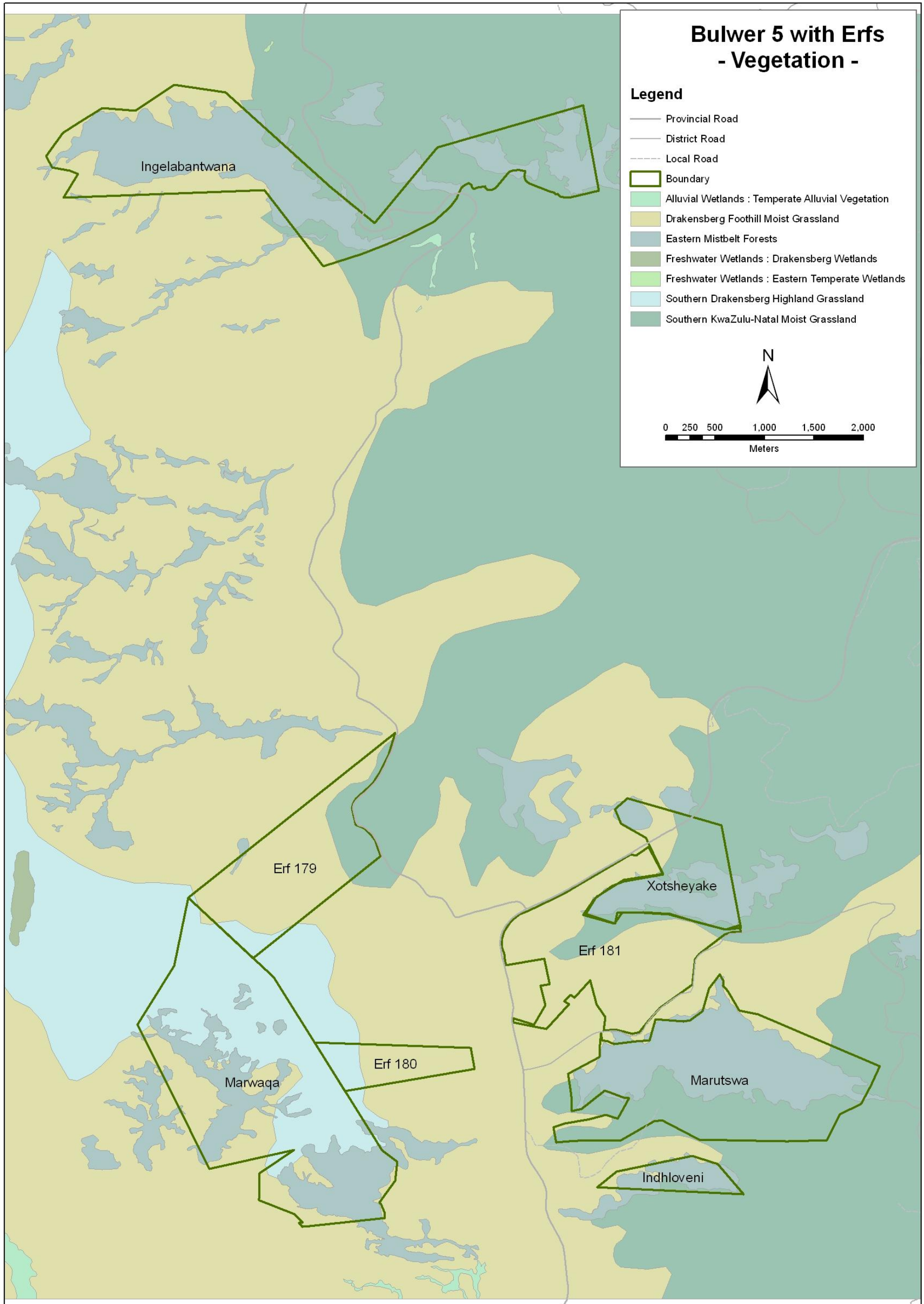
2012/13 Goals	Budget
LEGAL COMPLIANCE AND LAW ENFORCEMENT	
COMMUNITY PARTICIPATION	
BUFFER ZONE PROTECTION AND REGIONAL MANAGEMENT	
ECO-CULTURAL TOURISM DEVELOPMENT	
CONSERVATION MANAGEMENT	
OPERATIONAL MANAGEMENT	



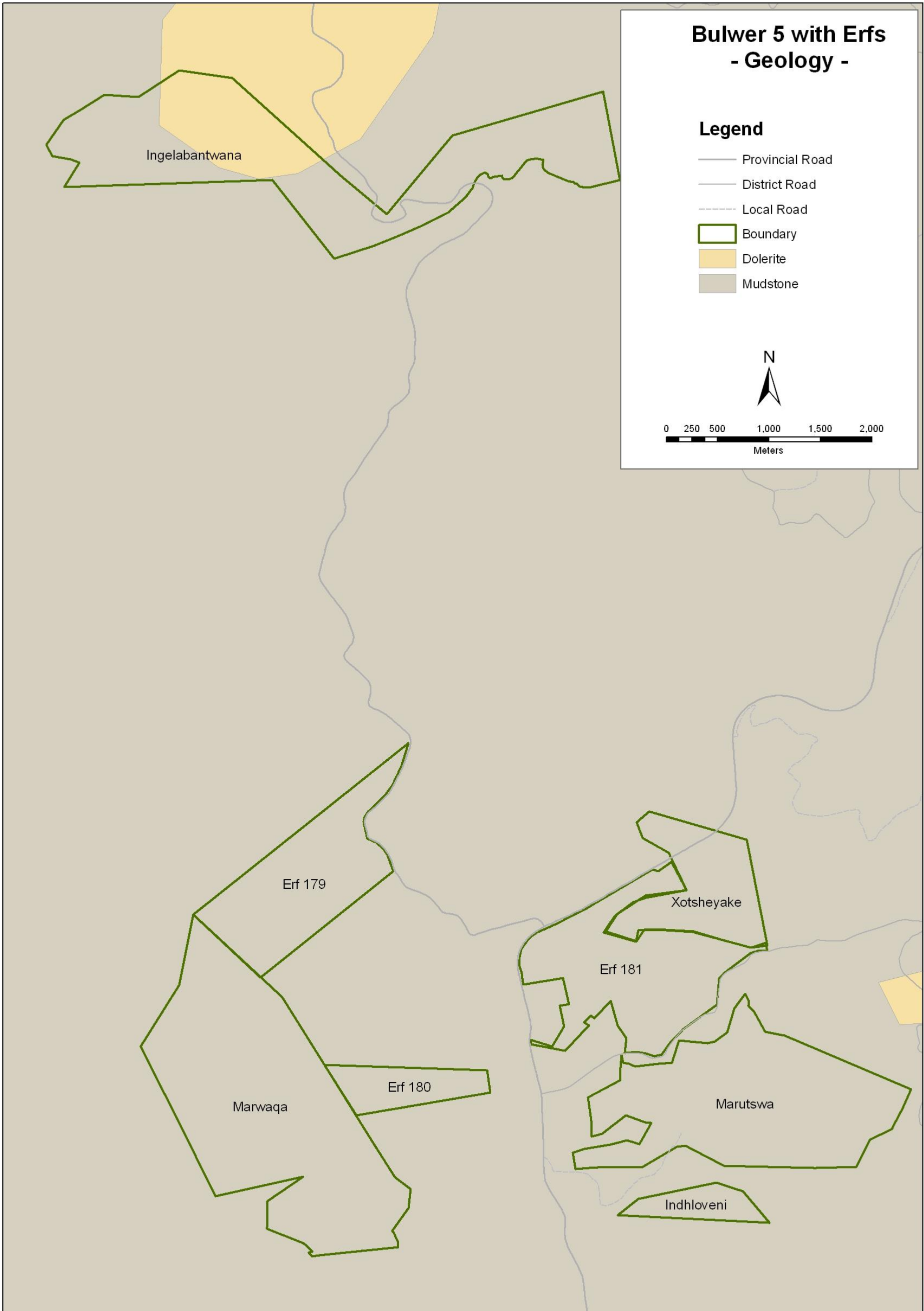
Map 1



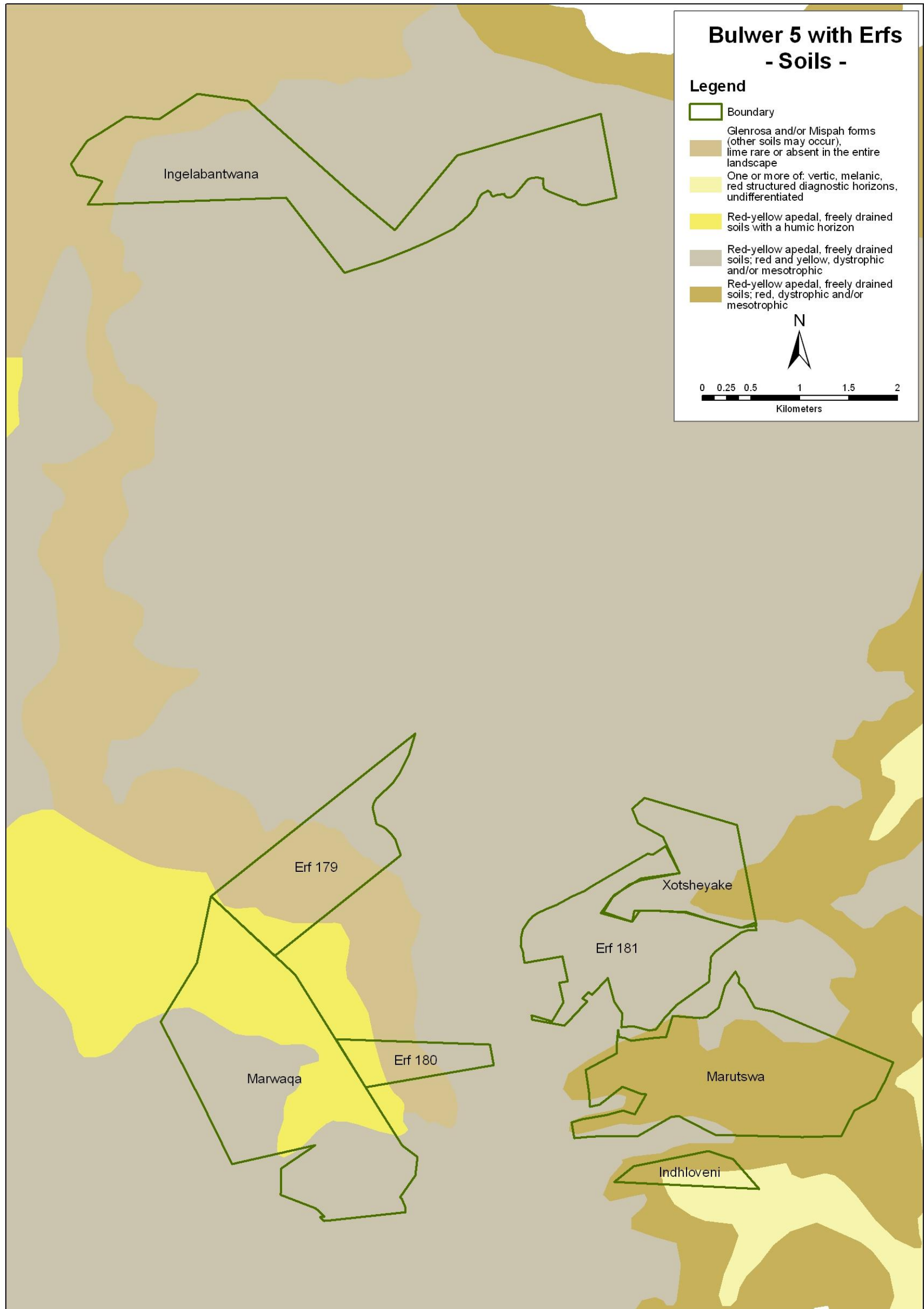
Map 2



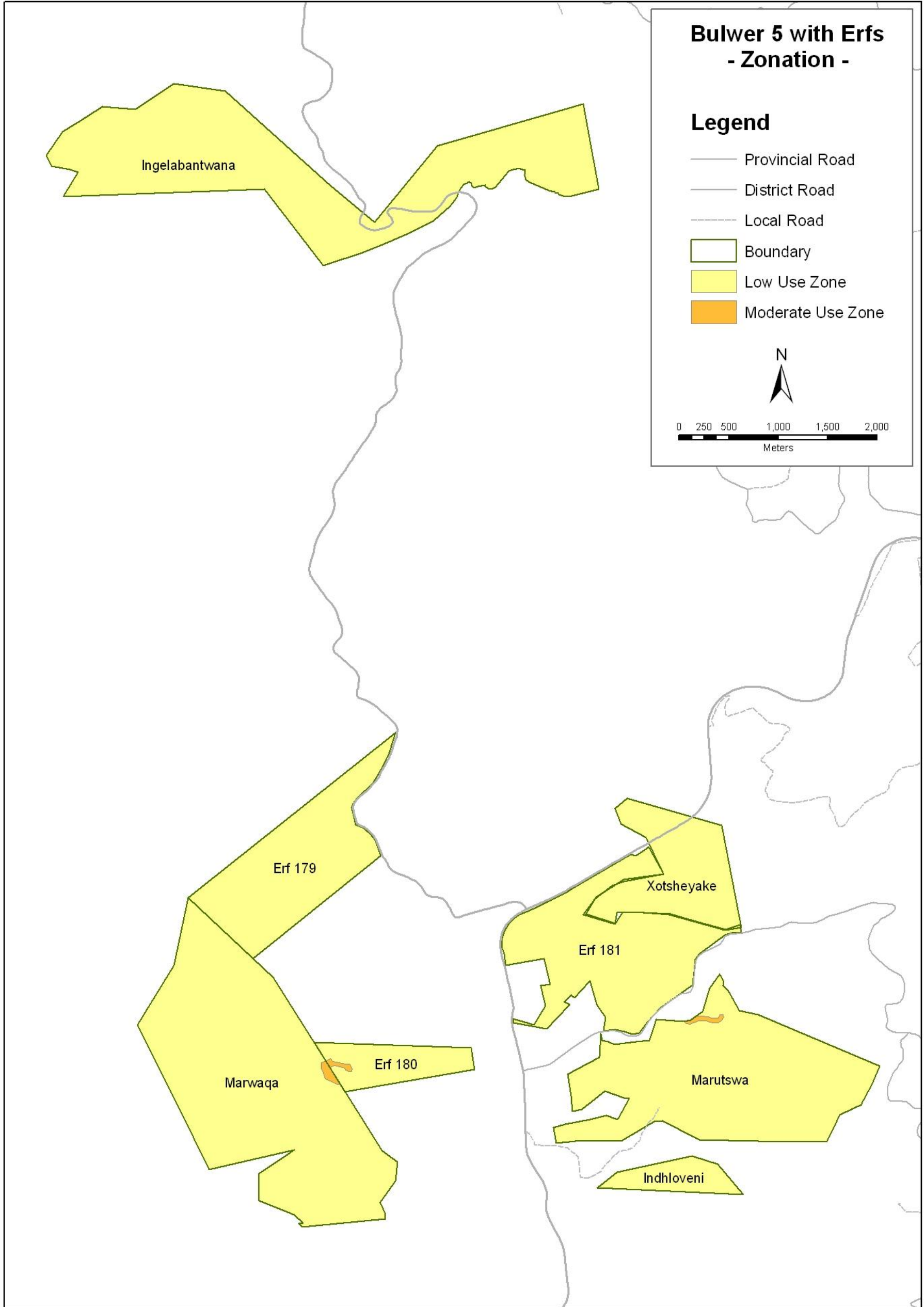
Map 3



Map 4



Map 5



Map 6

